



# MINING WITH NATURE

## The Swedish mining and minerals industry's road map for **biodiversity net gain**

SveMin



## About the road map

Report November 2020

The road map for increased biodiversity has been produced within a project financed by the strategic innovation programme Swedish Mining Innovation, a joint venture by Vinnova, Formas and the Swedish Energy Agency. The strategic work has been jointly financed by Boliden, LKAB and Svemin.

The project has been led by Ecogain in close cooperation with Svemin's Nature Working Group. This working group includes representatives from Boliden, LKAB, Nordkalk, Zinkgruvan and Cementa.

The steering committee has been made up of representatives from Svemin, LKAB, Boliden and Swedish Mining Innovation.

The project has run during the period December 2019 – December 2020. This road map is a first step towards the Swedish mining and minerals industry's 2030 target for biodiversity.



## About Svemin

Svemin is an industry association for mines, and manufacturers of metals and minerals in Sweden. Svemin represents around 40 businesses with over 13 000 employees within manufacturing, prospecting and technology. Among the members are mining companies, prospecting companies, lime and cement companies as well as machinery and contracting companies. Member companies are located throughout the country. The mines are located in northern Sweden and the Bergslagen region. The lime deposits are mainly found on the island of Gotland.



**The Swedish mining and minerals industry's target is by 2030 to contribute to a biodiversity net gain in all regions where mining and minerals operations and prospecting take place.**

**This means that the industry will be investing further in developing innovative solutions for achieving sustainable land use in harmony with nature.**

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**Now is the time to join forces in our ambition to preserve and develop the biological diversity in areas where mining is taking place.**

## Förord

### The mining sector joins forces to develop unique roadmap

The year 2020 was planned to be the “super year” for biodiversity. Then came the Corona-pandemic and changed the global framework. However, biodiversity is no less important, and the work continues. The European Commission has presented its Biodiversity Strategy for 2030 and the review of the UN Convention on Biological Diversity (CBD) is ongoing, even if delayed. At the national level, the Swedish government is preparing actions based on the governmental inquiry into ecological compensation.

Where will we get the raw materials that will be needed for the transition of our energy system and to succeed in meeting the climate challenge are questions that are raised in the public debate. How can we source raw materials that are sustainably produced, taking responsibility for people and the environment? The EU is developing criteria for sustainable finance and another EU initiative is aiming at principles for sustainable extraction of raw materials. One important aspect of these initiatives is biodiversity. These are important initiatives with active participation from the Swedish mining sector.

Development of mining requires land. We cannot choose the location of mines. Mining can only exist where there is an ore in the ground. That is one reason why the sector has been actively engaged in work related to nature protection and site rehabilitation. While early actions were focusing on replanting of trees and greening of industrial areas and landfills, current activities are increasingly focusing on compensation of lost natural values and on creating net positive ecological values. Several of our member companies are front runners in this development.

Now is the time to join forces in our ambition to preserve and develop the biological diversity in areas where mining is taking place. Based on positive experiences from the development of our road map for a fossil free mining sector, we have chosen to work with a road map again. In this project, we have developed common goals and together we have identified actions that will have to be taken by us and others to reach those goals.

This road map is unique, and our ambition is that it will serve as inspiration also for the international mining community and for other industrial sectors.

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SveMin

## Summary

### Biodiversity is the basis for welfare

Biodiversity is the basic precondition for humanity's life on Earth. At the same time, biodiversity is being lost at a dramatic pace as a consequence of human activities on Earth. But there are great opportunities to reverse this trend, and several initiatives are underway around the world, such as those initiated for the new strategic targets within the framework for the United Nations Convention on Biological Diversity. There is a strong expectation and drive among the business community to contribute to this work for biodiversity in the same manner as for the climate goals.

### The mining and minerals industry, a part of the sustainable society

Metals and minerals are needed in people's everyday lives and for the transition to a sustainable society. In Sweden, there are unique opportunities to contribute to the supply of raw materials. At the same time, mining and mineral mining can affect biodiversity. This applies both in Sweden and internationally. Within the Swedish mining and mineral industry, we have been working for a long time to minimise our impact and also to contribute with added values. Now we see that we can, and want to, further contribute to sustainable development and at the same time strengthen ourselves nationally and internationally. Therefore, we have adopted a common goal for biodiversity and this roadmap.

### Target: Biodiversity Net Gain by 2030

The Swedish mining and minerals industry's target is by 2030 to contribute to a biodiversity net gain in all regions where mining and minerals operations and prospecting take place.

This means that the industry will be investing further in developing innovative solutions for achieving sustainable land use in harmony with nature.

### The road to increased biodiversity

A fundamental basis of the work is to start from science and the mitigation hierarchy; to avoid, minimize, restore and compensate for impact on biodiversity. A success factor for each actor behind this goal is to set their own goals for biodiversity, appoint mandates and allocate resources to work towards those goals. More specifically, the work can involve mapping risks, dependencies and opportunities to create added value for biodiversity. Hence, the work can be more systematic and reach further. It is also important to document, follow up and communicate the work for biodiversity. This enables joint learning within the industry and in society at large.

Achieving the industry goal requires increased knowledge, innovation and collaborations with other actors, such as academia and public sector. We need to build knowledge about species and natural environments for work with restoration and ecological compensation. We also need systems to assess biodiversity and to streamline this work, and further, to include impacts in the value chains.

A fundamental basis is that we are provided with the proper conditions to work effectively for increased biodiversity. There is currently a lack of structures and frameworks needed for the public sector to enable support to business actors that want to contribute to national and global goals for biodiversity. Therefore, in this roadmap, we address a number of calls to politicians and authorities, including the importance of predictability, clarity and a holistic perspective in environmental permit processes, as well as the importance of committed interlocutors in the public sector.

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**We in the Swedish mining and mineral industry can and want to contribute to a sustainable development.**



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Photo: Rúnar Gudmundsson / Alm & ME

# 1. INTRODUCTION

Biodiversity and the ecosystem services that nature provides form the basis for our survival and wellbeing. However, as a result of humans' use of natural resources, pollution and climate change, biodiversity is declining at an alarming rate across the world.<sup>1, 2, 3</sup> This poses a risk for long-term consequences that are difficult to predict. Science shows that biodiversity loss is as great a threat to our wellbeing as climate change<sup>1</sup>, and that these two threats enhance each other.<sup>3, 4</sup> However, opportunities exist for promoting biodiversity, for example through management and restoration measures, to reverse the downward trend.

## Biodiversity

Biological diversity. The variability among living organisms from all sources, including, 'inter alia', terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems. (Definition used by the United Nations Convention on Biological Diversity).

## Ecosystem services

Ecosystem services are those products and services that nature by itself freely provides, and that we need for our survival and wellbeing. Biodiversity is required for the maintenance of ecosystem functions and processes and therefore affects the generation of ecosystem services such as food production and biological control. Water purification, erosion protection, climate regulation and recreation are other examples of ecosystem services. In some cases, measures to promote increased biodiversity may conflict with or make it more difficult for, for example, forestry and reindeer husbandry. These industries are directly dependent on ecosystem services producing timber and pasture as well as aspects such as accessibility, while biodiversity may benefit from nature conservation actions such as burning and increased amounts of dead wood in a system, which could have a negative impact on forestry and reindeer husbandry.

Nature is complex and under constant change. As a result of climate change, the conditions for plants and animals will be different in the future compared to how they are today. This means that it is even more important to work towards an increased diversity of plants and animals, since a greater variation increases nature's resilience, i.e. improves nature's ability to withstand change and continue to deliver ecosystem services.

Within the United Nations Convention on Biological Diversity (CBD) ongoing work is the formulation of new targets for biodiversity for 2030 and 2050. The targets will be resolved in 2021. The CBD's draft from August 2020 proposes, among other things, that the goal by 2030 should be that the areas, connectivity and integrity in natural systems shall increase by at least 5%, that the number of threatened species shall have decreased and that species richness shall have increased.<sup>5</sup> There is great expectation and driving force within the business sector to contribute to these targets, in the same way as for climate targets.

1 Steffen, W. et al., 2015. Planetary boundaries: guiding human development on a changing planet. Science 347: 736–745.

2 WWF, 2018. Living planet report.

3 IPBES, 2019. The Global Assessment of Biodiversity and Ecosystem services.

4 Parrotta, J. A., Wildburger, C., Mansourian, S. (eds.), 2012. Understanding Relationships between Biodiversity, Carbon, Forests and People: The Key to Achieving REDD+ Objectives. A Global Assessment Report. Prepared by the Global Forest Expert Panel on Biodiversity, Forest Management, and REDD+. IUFRO World Series Volume 31.

5 CBD 2020-09-15. Update of the CBD Zero draft of the post-2020 global biodiversity framework published by the secretariat <https://www.cbd.int/conferences/post2020/post2020-prep-01/documents>

Metals and minerals are fundamental building blocks in our society. Metals are needed for everything from medical equipment, food production and wind turbines to batteries and electric cars. Lime is used in the metal, chemical, paper and cellulose industries, flue gas and water purification and for soil improvement and ground supports. Lime is also the main ingredient in cement, which allows us to construct stable and durable buildings and bridges. To enable the sustainable development of our society, we need to extract more of these building blocks. Even though metals are well-suited to recycling, the recycling process is not enough to meet our current and future needs.<sup>6</sup> Therefore, we will continue to be dependent on the mining and minerals industry.

The Swedish mining and minerals industry wants to and can contribute to sustainable development. Several of Svemin's member companies are already working for their operations to not lead to a net loss of biodiversity.

We want to become stronger nationally and internationally and show leadership by becoming the first branch of industry to produce a road map for biodiversity with an ambitious target that exceeds the draft version of CBD's targets for 2030. This road map is supported by the Swedish mining and minerals industry, working together through the industry organisation Svemin.

## SVEMIN

Svemin is the industry organisation for mines, mineral and metal manufacturers in Sweden. Svemin represents over 40 businesses within manufacturing, prospecting and technology. The manufacturing operations are comprised mainly of metals and lime.<sup>7</sup>

A road map links our current understanding or experience with what we can envisage about the future. A road map supports planning that is carried out in other contexts. It is therefore not a plan that can be directly transferred to something each member company can undertake. The road map is a plan with targets and milestones for businesses to navigate towards in their specific operations.

<sup>6</sup> SGU 2020-04-05 <https://www.sgu.se/mineralnaring/metall--och-mineralatervinning/>, <https://www.svemin.se/en/three-reasons-why-mining-is-important-for-sweden/>.

<sup>7</sup> Svemin 2020-05-25 [www.svemin.se](https://www.svemin.se)

## 2. THE SWEDISH MINING AND MINERALS INDUSTRY'S TARGET

The Swedish mining and minerals industry's target is to contribute to a net gain in biodiversity in all regions where mining and minerals operations and prospecting take place at the latest by 2030.

This means that the industry will be investing further to develop innovative solutions to achieve sustainable land use in harmony with nature.

### 2.1 Clarifications and definitions

The target of a net gain in biodiversity is specified to, with a margin, outweigh direct and indirect impacts on biodiversity that arise from 2030 in the regions where mining operations and prospecting take place. There is currently no generally accepted method for assessing biodiversity either in connection with the use of land, offsetting or restoration. This means that it is not yet possible to, together with authorities, measure progress towards the industry target of biodiversity net gain in a standardised way (see section 7.2 on innovation needs). Of course, this doesn't mean that the work for preserving biodiversity has to wait. The work is in progress, and will be intensified and coordinated by the road map that is now presented.

The basis for achieving the target is to fully implement all the steps of the mitigation hierarchy. Ecological compensation, or offsetting, the final step in the mitigation hierarchy, focuses on benefitting threatened species and their habitats, as well as habitat types that are limited or under decline in the region. We are aware that many natural values require long delivery times following the time of offsetting or restoration measures. We intend to manage such time losses and uncertainties by offsetting larger areas, in the same way as is recognised in ecological compensation today. This means that businesses can be credited for biodiversity net gain before any natural values have developed, as long as the company ensures that it itself, or an external party that has taken over the responsibility, are to

1. take appropriate measures for allowing a site to develop higher natural values than would otherwise have been the case,
2. commit to monitoring that the measures have the desired effect and, if needed, carry out revised measures, and
3. protect the site in the long-term.

We will monitor and communicate the progress towards the target both within the industry and externally. Monitoring will enable mutual learning and ensure that standards and policies are implemented in operations. At this stage impacts are not included in the value chain. The intention is that these impacts will be included in due course.

This road map is the first step towards the target. The road map and action plans will need to be updated along the way.

<sup>8</sup> Forest trends 2020-05-25 <https://www.forest-trends.org/bbop/bbop-key-concepts/mitigation-hierarchy/>



**The basis for achieving the target is to fully implement all the steps of the mitigation hierarchy.**

## THE MITIGATION HIERARCHY



FIGURE 1 A framework with four steps to handle risks and possible impact on biodiversity and ecosystem services; avoid, minimise, restore, and compensate.<sup>8</sup>





### 3. ACTION PLAN – RECOMMENDATIONS FOR ACHIEVING THE TARGET

#### 3.1 Cross-industry cooperation through Svemin

Several issues, challenges and solutions affect the industry as a whole and therefore, we therefore see great opportunities for businesses to cooperate on these within Svemin. For the industry to achieve its common goal, a number of cross-industry working areas and milestones are listed below.

By 2022, at the latest:

- ▶ Set up a specific forum for exchanging information and experience on biodiversity measures.
- ▶ Ensure that aspects concerning biodiversity are included in relevant guidelines and training courses that the industry provides.
- ▶ Produce supporting documents such as templates, checklists and educational material, for example guidelines for how member companies can survey their most important risks for direct and indirect impacts on biodiversity as well as opportunities to create added value for biodiversity and ecosystem services.
- ▶ Produce a first version of a plan for monitoring, followed by annual monitoring of the work at an industry level and reporting progress towards the industry target.
- ▶ Increase awareness in society by initiating research and distributing information on good examples within the industry.

In 2025:

- ▶ Carry out a half-time evaluation which includes that the road map will be reviewed and updated.

By around 2027:

- ▶ Produce and implement a system for member companies to report and monitor progress towards the target, based on existing evaluation systems for biodiversity.
- ▶ Carry out an analysis within the industry to identify how far the industry as a whole is from the biodiversity net gain target, and any further steps required to achieve the target by 2030.

Continually:

- ▶ Initiate dialogues with stakeholders on various issues.
- ▶ Conduct a dialogue with legislators and authorities on possible solutions connected to adaptations in legislation.<sup>9</sup>
- ▶ Keep abreast with the world at large and hold international dialogues on biodiversity solutions.
- ▶ Gather and disseminate knowledge and provide arenas for knowledge exchange, for example, recurring events and study visits.

<sup>9</sup> The dialogue is suitably coordinated with other issues within Svemin's initiative "Kraftsamling tillstånd"

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**Added  
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We will also show leadership and influence society beyond our own member companies. This involves influencing political and legal frameworks and supporting other trade and industry initiatives in raising ambitions for biodiversity to a level equal or higher than the upcoming CBD targets.

## 3.2 At a business level in the Swedish mining and minerals industry

### Corporate governance level

A clear ambition from management or governance in every member company is crucial for the biodiversity issue to gain the weight required to achieve the target at industry level. Companies can contribute to the industry target of a net gain in biodiversity by:

- ▶ Setting targets for biodiversity in line with the industry target, with a clear commitment to fully implementing every step of the mitigation hierarchy in their operations.
- ▶ Clearly allocating responsibility and roles for implementation within the business.
- ▶ Communicating this commitment with affected partners and stakeholders.
- ▶ Monitoring progress towards the target and communicating this transparently to affected partners and stakeholders.

### Operational level

Added value for biodiversity is created on site where the operational work takes place. At an operational level, achieving the industry target of a net gain in biodiversity involves:

#### Assigning mandates, allocating resources and developing competence

- ▶ Ensuring that the responsibility and mandate to pursue the issue and carry out measures connected with biodiversity are clearly allocated.
- ▶ Integrating mitigation and biodiversity measures in the annual business plan and budget processes to ensure that sufficient resources in terms of time, staff and money are allocated.
- ▶ Allocating resources for implementing new working methods.
- ▶ Developing and spreading awareness within the organisation and encourage personnel to raise their own suggestions for solutions.
- ▶ Developing awareness and cooperation with suppliers and contractors.

### Surveying risks, dependencies and opportunities and implementing the mitigation hierarchy

- ▶ Surveying the most important aspects connected to biodiversity for each area of operations. This includes risks of impact (direct and indirect), dependences on ecosystem services and opportunities for creating added value for biodiversity. Analyses should also account for changing conditions caused by climate change.
- ▶ Defining targets, developing and integrating a plan for risk management and making use of opportunities for biodiversity in everyday work, through environmental management systems or a specific biodiversity management plan. This plan should be based on the survey of the most important aspects.
- ▶ Implementing the mitigation hierarchy in all phases of operations (prospecting, operations, remediation and post-closure).

### Documenting, monitoring and communicating

- ▶ Ensuring that measures carried out and target fulfilment are documented and communicated both internally and externally.
- ▶ Reporting any impacts on, and contributions to, biodiversity in a clear and transparent manner.

## 3.3 In cooperation with other stakeholders

Through dialogue and cooperation with other stakeholders, we within the Swedish mining and minerals industry can find solutions to the challenges that need to be addressed to achieve the industry target. This can involve:

- ▶ Initiating dialogue with stakeholders such as scientists, public authorities and other industry actors to gather information and find solutions for promoting biodiversity (see section 7.1).
- ▶ Initiating the development of evaluation systems for biodiversity (see section 7.2).
- ▶ Seeking win-win solutions with other stakeholders that operate within the same region, to maximise benefits for biodiversity through common measures.
- ▶ Establishing a system of traceability of metals and minerals that includes biodiversity and allows other stakeholders to trace their impact on biodiversity for metals in the value chain (see section 7.4).
- ▶ Cooperating with suppliers to, in due course, implement the mining and minerals industry's impact in the value chain within the work towards biodiversity net gain (see section 7.4).
- ▶ Carrying out awareness campaigns, for example by developing web-based courses in environmental mitigation and health and safety for prospecting drillers. This is currently being carried out in a collaboration between Svemin and Borrforetagen, the Swedish association for drilling contractors, and financed by Swedish Mining Innovation.





## 4. MOTIVES

It has long become established that the business sector should contribute to reducing climate change. Biodiversity loss will become the next big environmental issue where the business sector can be a key player for success.

In recent years, global insight has emerged on humans' fundamental dependence on biodiversity and ecosystem services. This dependence goes beyond the most basic needs: food, clean water and oxygen. Studies also show that over half of the world's BNP, with an economic value of 44 trillion dollars, is wholly or partly dependent on nature and ecosystem services.<sup>10</sup> This provides several motives for us in the Swedish mining and minerals industry to work proactively for biodiversity net gain.

### 4.1 Create social benefits by supporting global development goals

We want to contribute to positive social development. Through ambitious work for biodiversity the industry can contribute to achieving the UN's sustainable development goals and the Convention on Biological Diversity (CBD) target.

We can and will create even greater social benefits than our direct contributions to biodiversity. We will achieve this by being a proactive force in society, that shows leadership on issues of responsible business enterprise and inspires other stakeholders to raise their ambitions on biodiversity.

### 4.2 Gain access to land through environmental permits

The requirements for environmental permitting may be increased when the conditions for biodiversity deteriorate. Gaining access to new land for developing new or existing operations is one of the most challenging issues for the Swedish mining and minerals industry. At the same time, access to land and gaining permits for extraction and processing is crucial.

By working proactively with biodiversity, we hope as an industry to bolster trust between operators, society and authorities. An operator that demonstrates that it can carry out operations with a high degree of environmental mitigation ought to be regarded as having a good chance of obtaining an environmental permit for new and continued operations. Working towards a net gain in biodiversity also raises an operators own competence in predicting and dealing with important issues in future environmental permitting procedures.

### 4.3 Meet owners' demands

In 2020 the World Economic Forum ranked biodiversity loss as one of the five most serious risks for businesses, society and, in the end, all of humanity.<sup>11</sup> This provides a clear signal to investors that survey their risks. Many investors also want to take more responsibility for moving towards increased sustainability. One of the most important events within sustainable finance is the unified EU Taxonomy system,<sup>12</sup> an agreement within the EU on sustainable investments, that was agreed upon in December 2019. One of the six environmental objectives to be achieved through sustainable finance

<sup>10</sup> World economic forum, 2020. Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy. <https://www.weforum.org/reports/nature-risk-rising-why-the-crisis-engulfing-nature-matters-for-business-and-the-economy>

<sup>11</sup> World Economic Forum, 2020. Global risks report. <https://www.weforum.org/reports/the-global-risks-report-2020>

<sup>12</sup> EU Commission Sustainable finance, 2020. [https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance\\_en](https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en)

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**The business sector is a key player for success in halting biodiversity loss.**

is *the protection and restoration of biodiversity and ecosystems*.<sup>13</sup> Through proactive work for biodiversity we can meet our owners' and future financiers' demands and secure access to capital.

## 4.4 Meet clients' demands

While the world's eyes are focused on the state of biodiversity, clients and customers will make demands on higher standards. Just as an increasing demand for climate-neutral metals and minerals is expected, there is reason to also be proactive as a supplier and position oneself on the issue of biodiversity.

## 4.5 Meet stakeholders' expectations

Working for biodiversity net gain is an important part of being a good neighbour and meeting stakeholders' expectations. Measures that benefit biodiversity, for example, during remediation and ecological compensation, can often be combined with measures that create added value for outdoor pursuits and recreation and benefit local society. In a similar manner, measures that increase biodiversity can create added value for reindeer husbandry.

## 4.6 Attract and retain competent staff

A key factor for a prosperous mining and minerals industry is attracting and retaining competent staff. Studies show that an appreciation of sustainability is becoming increasingly important for the young workforce,<sup>14, 15</sup> i.e. that the employee is responsible for society as a whole. The industry's image as an attractive employer can be strengthened through ambitious environmental work. In order to retain staff, it is vital that these high ambitions are also reflected in concrete measures and results, and that staff are given the opportunity to develop with and within the organisation.

## 4.7 Increase support from the society

Today, in parts of society, there is a lack of support for the mining and minerals industry. This may be due to how the mining and minerals industry previously has worked with environmental issues<sup>16</sup> or that the type of land that the mining and minerals industry exploits can be of high value for other interests. It might also depend on a mine or quarry being a visible, and often large-scale land transformation, while the benefits to society being less apparent. To earn support from the society, it is important to demonstrate both the benefits that the products provide, as well as the societal benefits that arise by how operations are carried out and closed.

<sup>13</sup> EU Commission, 2020. Taxonomy: Final report of the Technical Expert Group on Sustainable Finance March 2020 [https://ec.europa.eu/info/sites/info/files/business\\_economy\\_euro/banking\\_and\\_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy\\_en.pdf](https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf)

<sup>14</sup> Academic Work & Kantar Sifo, 2019. Young Professional Attraction Index. <https://www.academicwork.se/foretag/ypai19>

<sup>15</sup> Deloitte Millennial Survey, 2018. <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/About-Deloitte/gx-2018-millennial-survey-report.pdf>

<sup>16</sup> Sweden has a centuries old mining history. Many of the early mines that today cause soil pollution were operated and closed before society had developed an understanding of the environmental effects of discharge or developed technologies for minimising discharge or remediating disused mines. With today's technology, the impact on the surrounding environment is limited during operations and remediation. The Official Report of the Swedish Government SOU 2018:59, The Nation's Mining Risks, shows that the economic security for remediation has been insufficient for mines that were closed during the period 2012 - 2018. Two of these mines were run with permits in accordance with the Swedish Environmental Code. The permit requirements for economic security according to the Swedish Environmental Code have since been tightened. The current permit requirements shall ensure that the economic security covers the remediation costs. The two earlier mines were permitted according to the environmental protection law and the Finnish-Swedish Transboundary River Commission, respectively.

Some of the keys to increased acceptance are:

- ▶ Involving local NGOs and local stakeholders in finding solutions for increasing biodiversity.
- ▶ In a transparent manner, reporting results of measures the industry has carried out to reduce its environmental impact.
- ▶ Clarifying how the results of the industry's sustainability investments contribute to global, European and national sustainability goals.

## 4.8 Minimise risks

The mining and minerals industry is dependent on ecosystem services such as clean water, flood protection, erosion protection and dust control. It is therefore important for us to secure access to these services. By gaining information on ecosystems and their services we reduce the risk of inadvertently damaging the systems operations are dependent upon today and in the future. If the ecosystems that provide ecosystem services instead can be bolstered, operations will gain increased stability. By strengthening the supply of ecosystem services, we reduce the risk of being affected by, for example, reduced water supplies or flooding in a changed climate.

If an operator lacks information on local species and their habitats, there is a risk of inadvertently damaging a species or habitat, which can lead to fines or other legal consequences. Increased information therefore leads to reduced operational risks, for example, by increased awareness of how to avoid or reduce environmental effects that would otherwise have caused increased costs to the operator.

## 4.9 Facilitate business planning and increase the rate of innovation

Through strategic planning for increased biodiversity during the lifetime of a mine or quarry, businesses see opportunities for maintaining and increasing biodiversity in connection with project development, operations and remediation. Biodiversity plans are deemed to minimise the risk for restarts or duplication, for example, by conserving green areas, more efficient aggregate deposition and reducing future remediation costs while improving results. A key factor here is to increase internal capability.

International experience shows that businesses with ambitious environmental targets have a greater potential for finding innovative solutions and leading the transition to a green economy.<sup>17</sup>

<sup>17</sup> Science Based Targets Network 2020-05-25 <http://sciencebasedtargetsnetwork.org/business-benefits.html>





## 5. COSTS

The work towards biodiversity net gain will require resources. However, in many cases this work is already ongoing, for example, in permitting processes, remediation and monitoring of permit conditions. Experience within businesses so far show that we can come a long way and keep costs down with information and creativity, sound planning and innovation. Here, Svemin can play an important role by supporting member companies and providing arenas for the exchange of information and ideas.

Costs are expected to arise in connection with:

- ▶ Siting adaptations and technology selection when designing new projects.
- ▶ Increased resources for training and development of staff and contractor skills.
- ▶ Carrying out compensation measures or offsetting when new mines and quarries are established or when existing operations are expanded in a way that affects biodiversity.
- ▶ Possible research and method development for instance with regards to offsetting for specific species and habitats, or other comparable measures.
- ▶ An initial analysis of risk, dependency and opportunity of one's own operations.
- ▶ Producing a biodiversity management plan that clarifies measures for dealing with risks and seizing opportunities based on biodiversity targets.
- ▶ Carrying out measures for biodiversity during operations and remediation.
- ▶ Implementing systems for documenting and monitoring biodiversity measures, to some extent also monitoring in cases where this has not already been carried out.

Several of these cost items are initial costs for mapping and building up systems and competence for working with biodiversity. When the systems are in place there are cost savings owing to the lower risk for drawn-out permitting processes or unexpected costs for remediating environmental impacts.





Photo: Fredric Alm / LKAB

## 6. THE CURRENT SITUATION

### 6.1 The Swedish mining and minerals industry in brief

#### The mining and minerals industry contributes to society

Everyone uses metals and minerals every day. Besides making up an integrated part of all our daily lives, we need metals and minerals to achieve the UN's sustainable development goals. This particularly applies to:

- ▶ goal 7 Affordable and clean energy,
- ▶ goal 8 Decent work and economic growth,
- ▶ goal 9 Industry, innovation and infrastructure,
- ▶ goal 11 Sustainable cities and communities, and
- ▶ goal 13 Climate action.

Thanks to its bedrock, Sweden is the EU's largest mining nation. With tough environmental requirements and the industry's own ambitions, this provides the opportunity for providing a large part of Sweden's and other countries' demand for metals and minerals from sustainable sources.



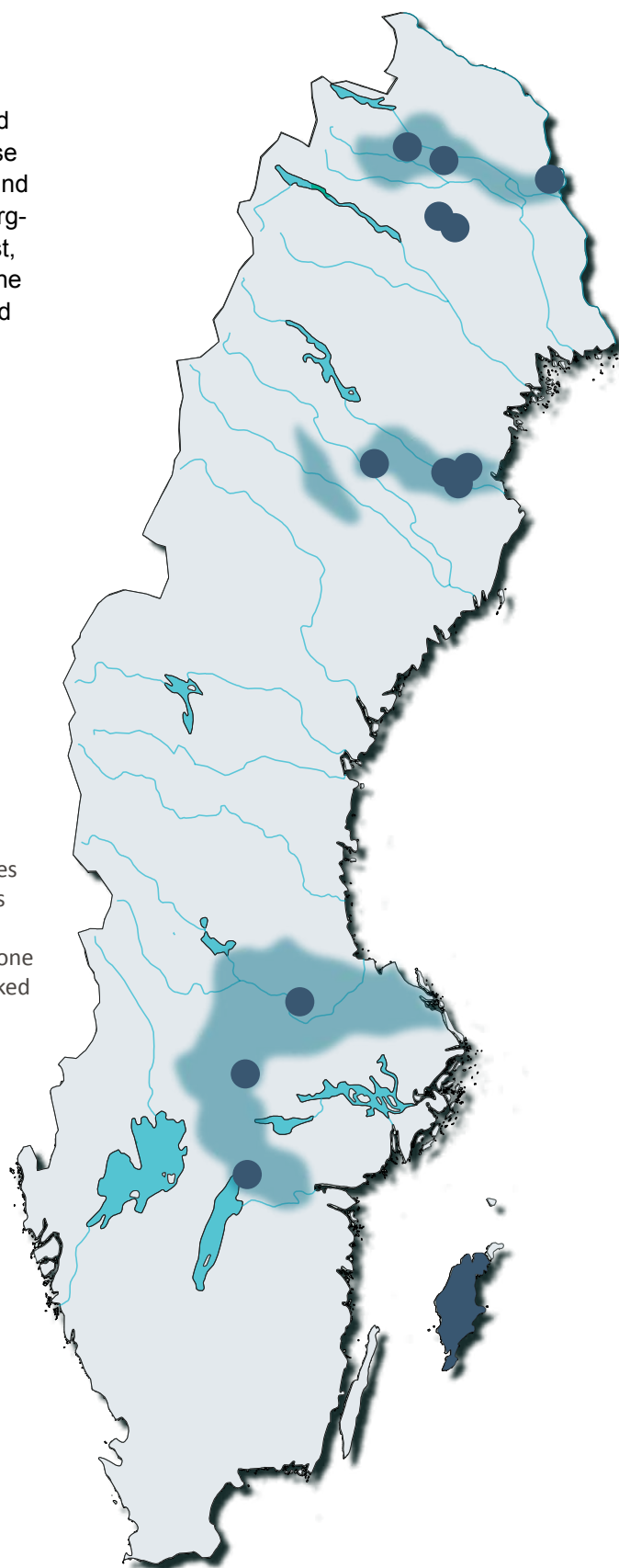


## Our locations

Iron ore deposits are mainly located in northernmost Sweden, while base and precious metals are mainly found in the Skellefteå field and in the Bergslagen region (figure 2). The largest, best quality limestone deposits in the Baltic region are found on the island of Gotland.

Sites such as mines, limestone quarries and associated operations cover a very small part of Sweden's land area, approx. 0.04 % (177 km<sup>2</sup>). This can be compared with the area used by retail and businesses, that cover approx. 0.06 % (240 km<sup>2</sup>), golf courses that cover approx. 0.07 % (280 km<sup>2</sup>) and manufacturing industries that cover 0.15 % (600 km<sup>2</sup>).<sup>18</sup>

FIGURE 2 The major mineralisation sites are marked as blue areas, while mines in operation in 2020 are marked with blue dots. The most significant limestone deposits are located on Gotland, marked in dark blue.



18 SCB, Statistics Sweden 2019. Markanvändningen i Sverige, Sjunde utgåvan. (English title: Land use in Sweden, Seventh edition.)

## The players in the Swedish mining and minerals industry

The players in the Swedish mining and minerals industry are mining companies, minerals companies, prospecting companies, businesses that develop and manufacture mining equipment and mining technology, industry-specific workshop and machinery companies and industry-specific haulage companies. The largest mining and minerals companies in Sweden are LKAB, Boliden, Zinkgruvan, Cementa and Nordkalk. The Swedish mining cluster also includes some of Sweden's largest companies such as ABB, Sandvik, Atlas Copco, Epiroc and SSAB.

### The operation in numbers

- ▶ 12 operational mines.<sup>19</sup>
- ▶ 14 operational limestone quarries.<sup>20</sup>
- ▶ Of the EU's total production, Sweden produces:<sup>19</sup>
  - ▶ just over 90 % of its iron ore
  - ▶ just over 38 % of its lead
  - ▶ nearly 37 % of its zinc
  - ▶ 23 % of its gold
  - ▶ 20 % of its silver
  - ▶ nearly 11 % of its copper.
- ▶ Mining and minerals companies employ just over 8,500 people in Sweden.<sup>21</sup> The mining and steel industry directly employs 38,000 people in the production of metals and steel. The knock-on effect of this is estimated at almost 68,000 jobs.<sup>22</sup>
- ▶ Swedish machinery suppliers supply approximately 60 % of the world's underground equipment.<sup>23</sup>
- ▶ In 2018 the Swedish mining and minerals industry made up 5 % of the country's export, at a total value of SEK 120 billion.<sup>19</sup>
- ▶ The total discharge of metals to water from Swedish mines in operation was 2,079 kg in 2019. In comparison, the country's largest water treatment works, Henriksdal in Stockholm, released 3,845 kg of metals to water during the same time period.<sup>24</sup>



19 SGU, 2020. Statistics of the Swedish Mining Industry 2019. Periodic publications 2020:1.

20 Out of which seven are run by Svemin's member companies.

21 The Confederation of Swedish Enterprise's wage statistics, 2019. [https://www.svensktnaringsliv.se/sakomraden/lonestatistik/lonerapportering-lonestatistik\\_1147444.html](https://www.svensktnaringsliv.se/sakomraden/lonestatistik/lonerapportering-lonestatistik_1147444.html)

22 Svemin m.fl., 2019. Kompetensfärdplan. Vägen framåt för gruv- och stål nationen Sverige. (English title: Road map for competence. The way forward for the mining- and steel nation Sweden.)

23 Svemin, 2012. Gruvbranschen – en tillväxtmotor för Sverige. September 2012. (English title: The mining industry - a growth engine for Sweden. September 2012)

24 The information is based on the data reported to the Swedish Environmental Protection Agency's database as well as information specifically obtained from Kaunis Iron. Public documentation can be found via The Swedish Environmental Protection Agency <http://utslappisiffror.naturvardsverket.se/Sok/Anlaggningsida/?pid=3490>

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The main impact on biodiversity occurs during the establishment and operations of a mine or quarry.

## 6.2 The Swedish mining and minerals industry's impact on biodiversity

Within the Swedish mining and minerals industry we have long been working on minimising our impact on biodiversity, for example, through thorough siting inquiries, minimising discharge of harmful substances to the air or water and to reduce waste. During the 2010s, more and more mining and minerals companies have implemented the mitigation hierarchy, a stepwise process to avoid, minimise, restore and, as a last resort, offset impacts on biodiversity. Mining and minerals companies were among the first in Sweden to start applying biodiversity offsetting at a large scale.

Extracting metals and minerals can be split into four phases: prospecting, project development, operations and remediation. The main impact on biodiversity occurs during the establishment and operations of a mine or quarry.

### Impacts during prospecting

Prospecting usually entails little or no impact on biodiversity. Prospecting using geophysical measurements does not impact on the natural environment. Test drilling, that often involves off-road driving, can entail some risk of impacting biodiversity through driving damage on the ground and vegetation at the specific drilling site. In these cases, it is often possible to avoid or minimise impacts through good planning and protective measures. Occasionally, restoration measures may be required.

### Impacts during project development

It is not possible to freely select the site of a mine or limestone quarry. The deposits are located in certain places, and establishment and operations often mean that the ground is permanently altered, since the bedrock is affected, and aggregates are deposited. Impacts on biodiversity can also arise, for example, through dusting, noise disturbances, and groundwater level changes. How biodiversity is affected depends on the amount and type of impact and on the specific ecological values that are affected. The specific geology that produces mineral deposits often provide conditions for a high species richness and rare plants. Mine and quarry establishment can also take place in areas that are relatively unaffected by people and are therefore of high ecological value.

During the permitting process for new or expanding operations, thorough surveys and site inquiries are carried out, and considerations are taken to minimise any impacts that might arise. By fully applying the mitigation hierarchy and as a last resort offsetting any residual impacts, negative effects on the natural environment are reduced and biodiversity increased in other places. If biodiversity offsetting outweighs impacts by a wide margin, we in the mining and minerals industry can contribute to a net gain in biodiversity from a regional perspective, even though local negative impact is unavoidable. Several of Svemin's member companies are already working for their operational development and new projects not to entail a net loss of regional biodiversity.

### Impact during operations

During operations the main impact is via discharge to water, the ground and the air. The amount that may be discharged is regulated in the permit conditions for the operations. The operator, permitting and regulatory authorities carry out monitoring to see how the operations affect the surrounding environment and to ensure that the permit conditions are sufficient and relevant.

The mining and minerals industry also works closely with other businesses, such as agriculture, forestry and other industries. Mines and quarries are also surrounded by infrastructure and often towns. All this human activity affects nature in different ways and it often causes a cumulative effect on biodiversity. This might, for example, mean that the cumulative impact leads to a reduction in a species' conservation status or that habitats become regionally scarce.

## DRIVING FORCES BEHIND BIODIVERSITY LOSS

Biodiversity is declining at a dramatic rate over the whole world. Globally, the main driving factor is changed land use, largely in the form of the expansion of agriculture, cities and infrastructure. Other driving forces are direct exploitation of animals and plants, climate change, pollution and invasive species.<sup>25</sup>

From a Swedish perspective, the driving forces of biodiversity loss are mainly forest clear-felling and forest encroachment of open land. The number of species in the 2020 Red List increased from the previous listing. This shows there is a continued negative trend for Sweden's biodiversity.<sup>26</sup>

### Impact and opportunity during remediation

When a mine or a quarry is closed down, various types of technical remediation are carried out to reduce the risk of both short and long-term health problems and environmental damage.<sup>27</sup> The conditions for remediation vary for different types of mines and for quarries. With the best available techniques, it is possible to remediate so that remaining negative ecological impact is avoided. After remediation, function is monitored until it is ascertained that the objectives have been fulfilled. The remediation techniques for mining waste are constantly being developed.

Remediation can provide great opportunities to make room for nature and create new value for biodiversity on the site that used to be a mine or quarry. Both in Sweden and internationally there are several examples of disused mines and quarries that have become highly species-rich environments. A mine or a quarry creates structures that can be scarce in the landscape, and by leaving these areas undisturbed by other land-uses, nature is given the opportunity to reclaim the area and develop freely or as directed according to the remediation plan. In a long-term perspective, the mining and minerals industry can be regarded as a way of borrowing from nature, since the site will eventually be given back to nature.

## 6.3 Indirect impacts in the value chain

While the mining and minerals industry companies' main impacts on biodiversity occur directly on land or in water, the impacts of prospecting and engineering companies mainly occur indirectly, via the value chain and through energy consumption. This indirect impact occurs, for example, when material is extracted and energy is produced for constructing machinery and running operations. Since machinery and energy are also consumed during mining and quarrying operations, these effects also arise during extraction.

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In a long-term perspective, the mining and minerals industry can be regarded as a way of borrowing from nature.

25 IPBES, 2019. The Global Assessment of Biodiversity and Ecosystem services.

26 Artdatabanken, 2020. Rödlistade arter i Sverige 2020. (English title: Redlisted species in Sweden 2020) <https://www.artdatabanken.se/var-verksamhet/rodlistning/Sammanfattning-rodlista-2020/>

27 SOU 2018:59. Statens gruvliga risker. (English title: The state's mining risks)



Climate change poses a threat to biodiversity. The indirect effect on biodiversity that is caused by the release of greenhouse gases is therefore an important aspect to highlight. The efforts to reduce climate impacts contribute to limiting the negative effects on biodiversity, as long as these do not in themselves negatively affect biodiversity. The mining and minerals industry is currently responsible for 7-9 % of Sweden's emissions and has set a target of achieving fossil-free extraction operations by 2030 and fossil-free refinement operations by 2045.<sup>28</sup> Work is ongoing on modelling impacts on biodiversity caused by climate change.<sup>29</sup> There are currently, however, no available tools for calculating different operators' impacts on biodiversity caused by greenhouse gas emissions.

## 6.4 The mining and minerals industry's dependence on biodiversity

The mining and minerals industry's dependence on biodiversity and ecosystem services is not as well charted as its impacts. Our operations are nevertheless dependent on ecosystem services such as clean water, flood protection, vegetation establishment for preventing erosion and vegetation for air purification and soundproofing.

Access to water, which is required in most extraction processes, is often something that is taken for granted in Sweden. In a changed climate, with increased temperature and evaporation and changed precipitation patterns, there is a risk of drought in parts of the country. Reduced, or a lack of, water resources would entail great consequences for industry and society. Several actors within the mining and minerals industry has developed water resource management during operations with advanced water balance so that as far as possible water is recycled. The mining and minerals industry can also play an important role in securing water resources. For example, by constructing a reservoir in a disused quarry, water can be stored during the often wetter winter period which can then be used during the dryer parts of the year.

Another example is natural vegetation establishment during remediation. At remediation, it often becomes relevant with a combination of manual sowing or planting and natural vegetation establishment. If natural vegetation establishment would fail, it would entail significantly higher costs for a business to achieve the same level of species richness and ecosystem services that nature otherwise provides for free.

In the value chain there are several dependencies, for example, energy and raw materials for machinery, protective equipment, office furniture, etc.

28 Svemin, 2019. Färdplan för en konkurrenskraftig och fossilfri gruv- och mineralnärings. Rapport april 2019. (English title: Roadmap for a competitive and fossil free mining and mineral industry)

29 Schipper et al. 2020. Projecting terrestrial biodiversity interactness with GLOBIO 4. Global Change Biology, 26: 760-771. <https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.14848>

## 7. RESEARCH AND INNOVATION NEEDS

Research and innovation are needed to enable the efforts towards achieving biodiversity net gain to be more predictable, effective and to ensure that any measures are used correctly. There are several ongoing research projects on biodiversity offsetting, which is an important part of achieving biodiversity net gain.<sup>30</sup> For example, research is underway on how biodiversity offsetting can contribute to achieving biodiversity targets<sup>31</sup> and research on the efficiency of ecological offsetting for conserving biodiversity and ecosystem services.<sup>32</sup> Besides the information these projects will provide, further understanding, methods and systems are needed.

### 7.1 Understanding species and habitats during restoration and ecological offsetting

When an operator plans for restoration or biodiversity offsetting, many questions are raised on how one should carry this out in practice, in order to achieve the desired objectives. The Society for Ecological Restoration has produced an international standard for restoring nature.<sup>33</sup> However, in many cases research and proven experience are often lacking for the planned measures. Several of us in the mining and minerals industry work on our own or together with the scientific community to develop the necessary understanding and experience.<sup>34</sup> The following innovation requirements concerning species and habitats have so far been identified by the mining and minerals industry, and in many cases, ongoing initiatives are:

- ▶ Developing methods for conserving or transplanting biodiversity values linked with old forests and other habitats that require long continuity to develop.
- ▶ Developing methods that benefit for example threatened species and species with very specific habitat requirements.
- ▶ Developing methods for establishing reindeer lichen in connection with restoration and ecological compensation.
- ▶ Developing methods for combatting invasive species and replacing these with native vegetation.
- ▶ Identifying solutions for benefitting biodiversity in streams and rivers.
- ▶ Developing knowledge on the effects of damming on vegetation.
- ▶ Developing knowledge on the consequences of a changed climate, for example, how ecosystems' ability to deliver ecosystem services might change and how remediation and offsetting measures should be designed to be adapted to changed conditions.

30 The Swedish Environmental Protection Agency 2020-05-25 <http://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Forskning/Forskning-for-miljomalen/Pagaende-forskning-for-miljomalen/Forskning-om-ekologisk-kompensation/>

31 Lund University 2020-05-25. <https://www.cec.lu.se/sv/forskning/pagaende-forskningsprojekt/ekologisk-kompensation/>

32 The Swedish University of Agricultural Sciences 2020-05-25. <https://www.slu.se/ecologicalcompensation>

33 Society for Ecological Restoration 2019. SER International Principles and Standards for the Practice of Ecological Restoration, 2nd edition.

34 Examples of initiatives are LKABs project on plant establishment in Kiruna, Bolidens research project on compensation of old growth forest at Aitik, Cementas knowledge building on Pulsatilla patens and Euphydryas aurinia as well as Nordkalks knowledge building on Phengaris arion and Parnassius apollo.

”Research and innovation are needed to effectively achieve biodiversity net gain.”

## 7.2 Systems for evaluating biodiversity

To identify, quantify and report a project's impact on biodiversity, it is necessary to be able to

- ▶ measure diversity and
- ▶ evaluate and report this diversity.

There are no established methods, either nationally or internationally, for measuring and evaluating biodiversity as a whole, or for businesses to report their impacts on biodiversity. This means it is not currently possible to quantify a company's or branch of industry's impact on biodiversity or measure its progress towards set targets.<sup>35</sup> Several different international initiatives are currently underway to produce methods for measuring and evaluating biodiversity, as well as initiatives for identifying common positions and principles for these methods.<sup>36, 37</sup>

In Sweden there are several standardised methods for measuring parts of biodiversity, for example, for birds, fish and plants. There is also a standardised method, developed by the Swedish Institute for Standards, for ecological habitat surveys based on the presence of species and habitats. There are several examples of biodiversity offsetting, both in Sweden and internationally, where losses and gains are compared in specific cases.

The Swedish mining and minerals industry is driving cross-sectoral business cooperation at a national level for developing a method for evaluating biodiversity in land-based exploitation projects. This will enable businesses to measure and report their progress towards set targets. Standardised evaluation methods will increase the transparency and comparability between different projects' and businesses' impacts on biodiversity and measures used to increase biodiversity.

## 7.3 Systems for streamlining biodiversity efforts

A possible way to streamline biodiversity efforts and achieve more predictable outcomes is implementing compensation or offsetting pools (see section 8.1). This also sets requirements on an evaluation system for biodiversity (see section 7.2).

Another way, in connection with planning offsets, is to find out which species and habitats in the region are in greatest need of restoration measures and where these can be found (see also section 8.1). In such cases it is good to cooperate with other regional stakeholders, both public and private, to achieve the best possible benefits for biodiversity. Priorities should be based on scientific knowledge on threatened species and habitats in order to benefit these in the short and long term.

<sup>35</sup> da Silva et al., 2019. The evolution of corporate no net loss and net positive impact biodiversity commitments: Understanding appetite and addressing challenges. Business Strategy and The Environment published by ERP Environment and John Wiley & Sons Ltd

<sup>36</sup> Lammerant, J. et al., 2019. Assessment of biodiversity measurement approaches for business and financial institutions. Update Report 2. The EU Business @ Biodiversity platform.

<sup>37</sup> Lammerant, J., Müller, L. & Kisielewicz, J., 2018. Assessment of biodiversity accounting measurement approaches for business and financial institutions. Update Report 1. The EU Business @ Biodiversity platform.

## 7.4 Systems for including impacts in value chains

For greenhouse gas emissions, businesses' impacts are often assessed in different scopes,<sup>38</sup> where

- ▶ scope 1 includes emissions from one's own operations
- ▶ scope 2 includes emissions from electricity consumption and
- ▶ scope 3 includes emissions from downstream effects.

Several of the methods that have been developed for measuring and evaluating biodiversity impacts use similar approaches. Since the development of the various evaluation methods for biodiversity is taking place simultaneously, and they use somewhat differing definitions, there is currently no established method for the definition of scopes when it comes to biodiversity.<sup>39</sup>

We, as organisations in the Swedish mining and minerals industry, intend in due course to work with different scopes to describe biodiversity impacts, both within our own operations and by providing well-documented information to clients who want to describe their impacts from metals and minerals in their business value chains. Traceability in the supply chain is needed to be able to survey and reduce one's own impacts. In order to provide information to clients who want to identify their impacts in different scopes, traceability for metals is needed that includes biodiversity aspects. Suitable KPIs (Key Performance Indicators) for biodiversity are required. This can support the growth of sustainable financing.

<sup>38</sup> The Greenhouse Gas Protocol 2020-05-25 <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

<sup>39</sup> Lammerant, J. et al., 2019. Assessment of biodiversity measurement approaches for business and financial institutions. Update Report 2. The EU Business @ Biodiversity platform.

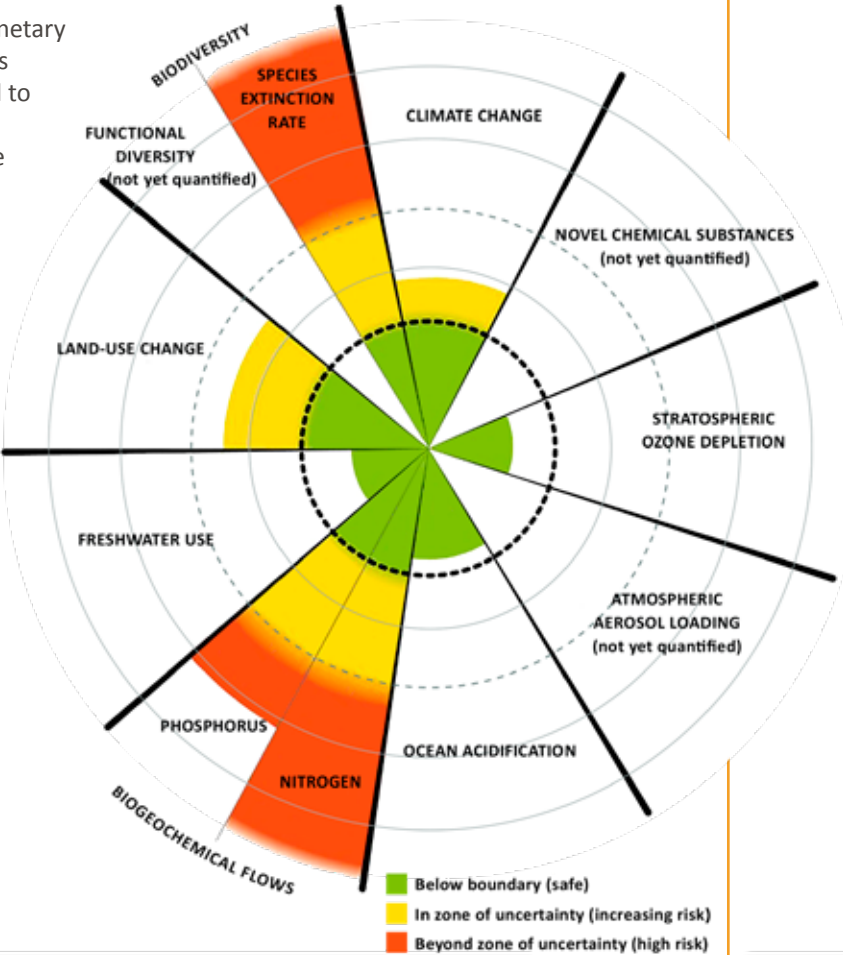


# 7.5 Guidelines for setting science-based targets

Science-based targets are the norm for global businesses that want to set climate targets. The Science Based Target Network<sup>40</sup> (SBTN) helps businesses set targets for biodiversity that are based on science. The network bases its work on the planetary boundaries approach,<sup>41</sup> and has defined its target as reaching the safe operating space for biodiversity.

## PLANETARY BOUNDARIES AND THE SAFE OPERATING SPACE<sup>42</sup>

FIGURE 3 The sustainable planetary boundaries concept identifies nine global processes related to environmental changes caused by human activity. These processes together create the conditions on Earth that our societies are dependent upon. The safe operating space (green in the figure) is the space within which humans can live sustainably. The status for some of these processes have yet to be quantified. Scientists have designated two of these boundaries as “core boundaries”: climate change and biodiversity. To significantly change or exceed either of these, risks driving the planetary system into a new state.



We still do not know how much we need to invest in biodiversity in order to work within the planetary boundary. Unlike climate impacts, conditions for biodiversity are placed in a regional context, so the need for biodiversity measures can vary between different projects depending on where they operate and where they impact within the value chain.

A scientific basis is key to setting clear biodiversity targets, that correspond to impacts in a given region and provide sufficient environmental benefits for achieving sustainability.<sup>43</sup> Examples of scientific basis for defining how far a species or habitat lies from the safe operating space are conservation status (Natura 2000) or a species' Red List category.

In September 2020, SBTN published its first guide to scientific goals for nature, in which biological diversity is included as a part.<sup>44</sup> They define science-based goals as "measurable, action-oriented and time-bound, based on the best available science". SBTN will dedicate the next two years to defining a science-based measurement framework that companies can use to set science-based goals for biodiversity.

In the Swedish mining and mineral industry we can, as an industry, support SBTN by engaging in the network and contributing to developing methods and guidelines, sharing our experiences, mapping our significant imprints on biodiversity (including value chains) and push for national work to apply SBTN in more industries.

40 Science Based Targets Network 2020-05-25 <http://sciencebasedtargetsnetwork.org/index.html>

41 Steffen, W. et al., 2015. Planetary boundaries: guiding human development on a changing planet. Science 347: 736–745.

42 Stockholm University 2020-05-25 <https://www.su.se/forskning/forskningsnyheter/fyra-av-nio-planet%C3%A4r-i-ett-olika-tilstand-1.218028> Image source: Azote Images/Stockholm Resilience Centre.

43 da Silva et al., 2019. The evolution of corporate no net loss and net positive impact biodiversity commitments: Understanding appetite and addressing challenges. Business Strategy and The Environment published by ERP Environment and John Wiley & Sons Ltd

44 Science Based Targets Network 2020-10-15. <https://sciencebasedtargetsnetwork.org/wp-content/uploads/2020/09/SBTN-initial-guidance-for-business.pdf>





## 8. Calls

Biodiversity loss is a shared responsibility for the whole of society. Since the business sector and other stakeholders have begun to engage voluntarily in working with biodiversity, it has become apparent that structures and frameworks for how businesses and other stakeholders can contribute to national and global targets are lacking. It is also apparent that legislation and practice are not wholly adapted to issues on biodiversity offsetting (where access to land has been shown to be a challenge) and to voluntary measures for biodiversity. It is therefore important that we collectively, in all branches of industry as well as in society as a whole, find solutions and ways forward for achieving biodiversity targets.

### 8.1 Call to politicians

#### **Clearly define responsibility to support the industry's work for biodiversity**

We in the mining and mineral industry want to drive the work for biological diversity forward. In the process of achieving the goal of biodiversity, we will need help and support from the authorities. The state has responsibility to increase values for biodiversity in a manner that also strengthens other societal goals, such as the transition towards a fossil fuel free society, which is tied closely to the energy and infrastructural development. Coexistence between industry and nature is key in this transition process. Therefore, the state should take on a greater responsibility to plan how Sweden's land and water resources are to be used in the best possible way to achieve these societal goals.

We want authorities at various levels to be more involved in finding forms of cooperation on issues related to biodiversity. An example to discuss is how the mining and minerals industry can best contribute to the green infrastructure or to support the implementation of action programs for endangered species. Today, there is frustration within the industry as we find it difficult to find parties on the government side to engage in this conversation with on these matters.

Relevant authorities should be instructed in their regulatory letters to be a driving force and support in the business community's work with measures to promote biodiversity. It is important that the issue of biodiversity does not become a sectoral issue, but an issue that spans all relevant sectors as well as different levels; state, regional and municipal, in the same way as the climate issue.

#### **Provide conditions for predictability and clarity in the permit application process**

Task authorities with facilitating effective and legally binding permit processes. Permit application processes are unpredictable, take increasingly more time and require more and more resources from the applicant company. This affects businesses' investment ability and impede transitions to new technologies, more efficient production and implementation of solutions for biodiversity. Clear regulations and competent public authorities are needed to maintain a stable and predictable investment climate.

#### **Provide conditions for biodiversity offsetting**

Establish the legal conditions for predictability within biodiversity offsetting, state which requirements are reasonable, and what level of offsetting is sufficient. Effective solutions are required for access to land and long-term protection of land used for offsetting, both for voluntary offsetting and offsetting regulated by

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**It is important that we collectively, across sectors, find solutions and ways forward for achieving biodiversity targets.**



permit conditions. The need for establishing conditions for land access has also been raised in the Official Report for the Swedish Government on ecological compensation.<sup>45</sup>

### **Implement systematics and a legal framework for compensation pools**

Implement systematics and a legal framework for compensation pools to facilitate more efficient biodiversity offsetting efforts. Compensation (or offsetting) pools entail that an ecosystem is restored, often by an external third party, before any damage is done. This means that the offsetting value is established before the onset of operations. Compensation pools prevent or minimise the temporary loss of ecological value that would otherwise arise. An equally important aspect is that more effective environmental benefit is achieved when resources are pooled from several project operators at the same offsetting site. Additionally, a clear assignment of roles between operators and third parties establishes greater efficiency and more biodiversity for the same amount of money. Internationally there are several different systems with compensation pools (also called habitat banking systems).<sup>45</sup>

### **Facilitate investments where they benefit biodiversity most**

The public authorities that deal with biodiversity issues from a landscape perspective should be tasked to define how biodiversity efforts should be directed in different regions, and where in the landscape these efforts should be implemented. The purpose should be to achieve synergy effects with other restoration projects and achieve greater collective benefits for biodiversity.<sup>46</sup> This task should also include establishing a forum for cooperation between different stakeholders and guidelines for how trade-offs in biodiversity offsetting should be assessed and evaluated.

Under the current legal framework, it is sometimes difficult to invest in measures where they would provide the greatest positive benefits to biodiversity. Political will towards greater flexibility would enable the achievement of overall targets. One example is impacts on streams and rivers. Ecological expertise deems that in certain cases it would be more beneficial to biodiversity to remediate harm caused by historic log driving, forestry drainage and hydro power than by further reducing discharge. Inquiries into this and other examples should be carried out to ensure cost-effective measures for biodiversity.

The Official Report for the Swedish Government on ecological compensation states that in many cases it may be socio-economically more profitable to enable greater flexibility, when offsetting further away from the impacted site can create more benefits for the same price.<sup>45</sup>

### **Provide conditions to rectify others' "old sins"**

There is a desire from the industry to contribute to rectifying other operators' "old sins". However, it is not currently possible as a business to do this without shouldering full responsibility for, e.g. a contaminated site, which in practice hampers such industry initiatives. A possible solution to this is through contracts between the state and businesses who are willing to rectify "old sins" without being affected by others' responsibilities. An alternative could be to change the legislation to allow for new solutions. This needs to be investigated and clarified.

45 SOU 2017:34. Ekologisk kompensation – Åtgärder för att motverka nettoförluster av biologisk mångfald och ekosystemtjänster, samtidigt som behovet av markexploatering tillgodoses. (English title: Ecological compensation - measures to mitigate net loss of biodiversity and ecosystem services, at the same time as the need for exploiting land is met)

46 Nordic Council of Ministers, 2016. Restoration priorities and strategies - Restoration to protect biodiversity and enhance GreenInfrastructure: Nordic examples of priorities and needs for strategic solutions. TemaNord 2016:534

## **8.2 Calls to permitting and inspecting authorities**

### **Clarify practice and ensure uniform implementation**

Effective efforts for biodiversity net gain require predictability, clarity and thereby legal security in permit application procedures. For the industry, as well as society as a whole, it is vital that the business sector's resources for biodiversity are used effectively. With effectively we mean that the resources should largely be used for concrete measures in the environment and learning about the effects of these measures, rather than in application processes. From an enviro-economic perspective the industry wants to optimise biodiversity investments and reduce transaction costs.<sup>47</sup>

Biodiversity issues are becoming increasingly important in environmental permit application processes, e.g. through the implementation of biodiversity offsetting and species protection. With this arises the need for increased efficiency of permitting authorities' administration of cases involving biodiversity. Authorities need to be clearer in their process management. Effective measures would involve authorities being more involved in each case at an earlier stage to minimise restarts and considerable correspondence. Likewise, referral authorities are encouraged to focus more on collaboration during the permitting process, to view the permit in its entirety and prioritise those aspects that are of most relevance.

More specifically, clarity is needed in how biodiversity offsetting should be evaluated, what is deemed sufficient from a legal perspective and how land access and long-term protection should be dealt with. In particular, the permitting authorities need to coordinate themselves to enable uniform implementation throughout the country.

### **Develop understanding of the issue**

Biodiversity offsetting and remediation with a focus on creating biodiversity net gain are relatively new in Sweden. Many permitting and inspecting authorities are unaccustomed to working with these issues and a clear practice is lacking. We want to underline the need for permitting and inspecting authorities to develop an understanding of the issue, and initiate dialogues for learning. A result of this would be that different stakeholders can together achieve increased efficiency and greater success in their efforts for biodiversity.

### **Enable greater environmental benefits through a holistic approach in permit processes**

It is important that resources are used for mitigation measures that provide the most environmental benefits.

During the permitting process we encourage the permitting authority to consider broadening the term "best possible technique" based on the values to be protected by mitigation measures. If, for example, scientific documentation shows that a stream would attain a better ability to withstand continued operational impacts if restoration measures were carried out in a different part in the catchment area, and that such measures would also create a larger combined environmental benefit than more traditional mitigation measures, then such measures ought to be regarded as the best possible technique.<sup>48</sup> This view is not currently implemented. Such flexibility, however, requires that it does not entail unacceptable damage to other public interests.

47 Nordic Council of Ministers, 2015. Environmental Compensation, Environmental compensation Key conditions for increased and cost effective application. Tema Nord 2015:572

48 This line of reasoning is also supported in prop. 1997/98:45 part 2, pp. 17-18 where it, among other things, is stated that "As a rule, it should lie closest at hand to perform protective measures on or in connection to a disturbing facility. Sometimes it can be more appropriate with preventative actions on adjacent areas."

**Effective efforts for biodiversity net gain require predictability, clarity and thereby legal security in permit application procedures.**

On the issue of biodiversity offsetting, we also encourage the permitting authorities to allow for greater flexibility of the principle of like-for-like and siting in relation to damages, by considering a greater landscape perspective than is used in current permitting processes. With support from statements from SBTN on the importance of a regional perspective in efforts to define targets and measures, we stress that prioritised measures should be those that create most benefits for biodiversity based on scientific documentation on the most threatened species and habitats in the region.<sup>49</sup>

### Clarify the trade-offs between different interests during prospecting

A significant challenge for prospecting in reindeer grazing areas is that consideration towards winter reindeer husbandry, combined with restrictions from the County Administrative Board limiting vehicle driving on frozen ground to prevent land damage in summer, means that the time available for prospecting is very limited.

Greater clarification on trade-offs between different interests, but also more efficient administrative procedures, are essential for clarifying and improving the opportunities for carrying out prospecting in large parts of Sweden. Trade-offs between prospecting interests (and environmental impacts in specific cases) and reindeer husbandry or environmental interests, need to be carried out suitably and coherently and with a consideration for the time limits of the survey permit. If, for example, reindeer husbandry interests weigh more heavily than environmental interests in a particular area, then the operator should be given the opportunity to prospect during the summer, and if required, move on to the next step of the mitigation hierarchy: minimise and then possibly restore or offset any impacts on the natural environment.

### Apply the EU's Habitat, Bird and Water Framework Directives pragmatically

We urge the permitting authorities to use a more pragmatic application of the EU's Habitats Directive, Birds Directive and Water Framework Directive, in order to generate environmental benefits in a broader sense.

The implementation and application of the directives has been problematic by leading to a formalised approach that contributes to exhaustive permitting processes. The transaction costs have become far too great in relation to the results in the form of actual investments in biodiversity on land and in water.

<sup>49</sup> This is also supported in the Swedish Environmental Protection Agency handbook 2016:1 on ecological compensation.

## 9. EXPLANATION OF TERMS

**Biodiversity, Biological diversity** is the variability among living organisms from all sources, including, 'inter alia', terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems. (Definition used by the United Nations Convention on Biological Diversity).

**Biodiversity Action Plan (BAP)** is a plan through which aims and objectives on biodiversity conservation can be achieved. A BAP can either be an independent document or integrated into an environmental management system.<sup>50</sup>

**Biodiversity Management Plan (BMP)** is a plan through which a business can progressively implement biodiversity in everyday tasks. A BMP should be synchronised with a site's remediation plan, environmental management system (for relevant aspects) and extraction plan.<sup>51</sup>

**Biodiversity Net Gain** means that a project's or operation's negative impact on biodiversity is offset, by a significant margin, through active measures such as ecological compensation or various forms of conservation measures in the same region. These measures can be directed towards improving habitats and green infrastructure. Actions should be measurable and rely on conditions for biodiversity being estimated both before and after they have been carried out.

**CBD, Convention on Biological Diversity**, is a UN treaty for the conservation and sustainable use of biodiversity and for a fair and equitable sharing of benefits arising from genetic resources. The countries that have signed and ratified the convention have a stated responsibility to conserve diversity at the genetic, species and ecosystem level.

**Compensation, or Offsetting, Pools** entail that an ecosystem is restored, often by an external third party, before any damage occurs. This means that the offsetting value is established before the onset of operations. Compensation pools prevent or minimise the temporary loss of ecological values that would otherwise arise. More effective environmental benefits can be achieved since resources from several project operators can be optimised within the same offsetting site.

**Conservation status** is assessed for each species and habitat listed in the EU's Habitats Directive. Four parameters are assessed for each species and habitat type and an aggregate of these is used. Distributions and future outlooks are assessed for both species and habitat types. For species, population size and its habitat are included, while for habitats, area covered and quality is included. The aggregated assessments result in favourable, unfavourable-inadequate or unfavourable-bad conservation status. Favourable conservation status describes the conditions to be achieved for a species or habitat to maintain itself on a long-term basis.<sup>52</sup>

**Ecological compensation or Offsetting** is the recompense through which those that damage the natural environment that is in the public interest, such as species, habitats, ecosystem functions and amenity value, provide new ecological values that would otherwise risk being lost. Offsetting measures might entail ecological restoration, conservation management measures, creating new habitats or protecting

<sup>50</sup> ICMM, 2006. Good Practice Guidance for Mining and Biodiversity  
<https://guidance.miningwithprinciples.com/good-practice-guide-mining-biodiversity/>

<sup>51</sup> WBCSD Cement Sustainability Initiative, 2014. Biodiversity management plan guidance.  
[https://docs.wbcsd.org/2014/09/CSI\\_BMP\\_Guidance.pdf](https://docs.wbcsd.org/2014/09/CSI_BMP_Guidance.pdf)

<sup>52</sup> Artdatabanken 2020-05-29 <https://www.artdatabanken.se/arter-och-natur/naturvard/skydd-av-art-och-habitatdirektivet/>



sites that would otherwise risk being exploited.<sup>53</sup>

**Ecological value** is significance for biodiversity, i.e. sites and structures that contribute to a diversity within and among species and among ecosystems.

**Ecosystem services** are those products and services that nature by itself freely provides, and that we need for our survival and wellbeing. Water purification, erosion protection, climate regulation and recreation are examples of ecosystem services.

**Mitigation hierarchy** is a framework with four steps for managing risks and potential impact on biodiversity and ecosystem services: avoid, minimise, restore, offset.<sup>54</sup>

**Resilience** is the long-term capacity of a system to withstand change and continue to develop.

**Science Based Target Network (SBTN)** is an international network that helps businesses and cities set targets for biodiversity that are based on scientific evidence.<sup>55</sup>

**Society for Ecological Restoration (SER)** is a global network within nature restoration of scientists, practitioners and decision makers with the aim of developing and sharing knowledge on ecological restoration for the benefit of biodiversity, ecosystems and people.

**The EU Taxonomy** is a common classification system and framework within the EU to facilitate sustainable finances. An operation is defined as environmentally sustainable if it contributes to at least one environmental objective and does not significantly harm any of the environmental objectives or violate employment legislation conventions.

**The Red List and Red-listed Species** is an assessment and summary of every species' risk of becoming extinct in Sweden (or a given country or region) and provides an overview of the state of species. The Red List does not in itself entail a priority listing of which species should be considered in conservation management but provides support for making these priorities. It can aid with identifying and prioritising conservation efforts and can provide information for achieving environmental targets.<sup>56</sup>

**World Economic Forum (WEF)** is a foundation that assembles the world's largest companies. The foundation is politically and nationally independent and aspires to improve the state of the world by engaging leaders in business, politics, academia and other branches of society to form global, regional and industrial agendas

53 Naturvårdsverket Handbok 2016:1. Ekologisk kompensation - En vägledning om kompensation vid förlust av naturvärden. (Eng: The Swedish Environmental Protection Agency Handbook 2016:1. Ecological compensation - A guide on compensation under lost of nature values).

54 Forest trends 2020-05-25 <https://www.forest-trends.org/bbop/bbop-key-concepts/mitigation-hierarchy/>

55 Science Based Targets Network 2020-05-25 <http://sciencebasedtargetsnetwork.org/index.html>

56 Artdatabanken 2020-05-25 <https://www.arterdatabanken.se/var-verksamhet/rodlisting/>

## NOTES

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Read more: [svemin.se/en/mineral-contribution/](https://svemin.se/en/mineral-contribution/)

*Svemin is the industry organization for mining, mineral, and metal producers in Sweden with more than 40 member companies active throughout Sweden. Members included mining companies, prospecting and exploration companies, limestone and cement companies and various equipment and service providers.*

44 | Svemin Mining & Minerals for Nature: The Swedish mining and minerals industry's contribution to biodiversity net gain