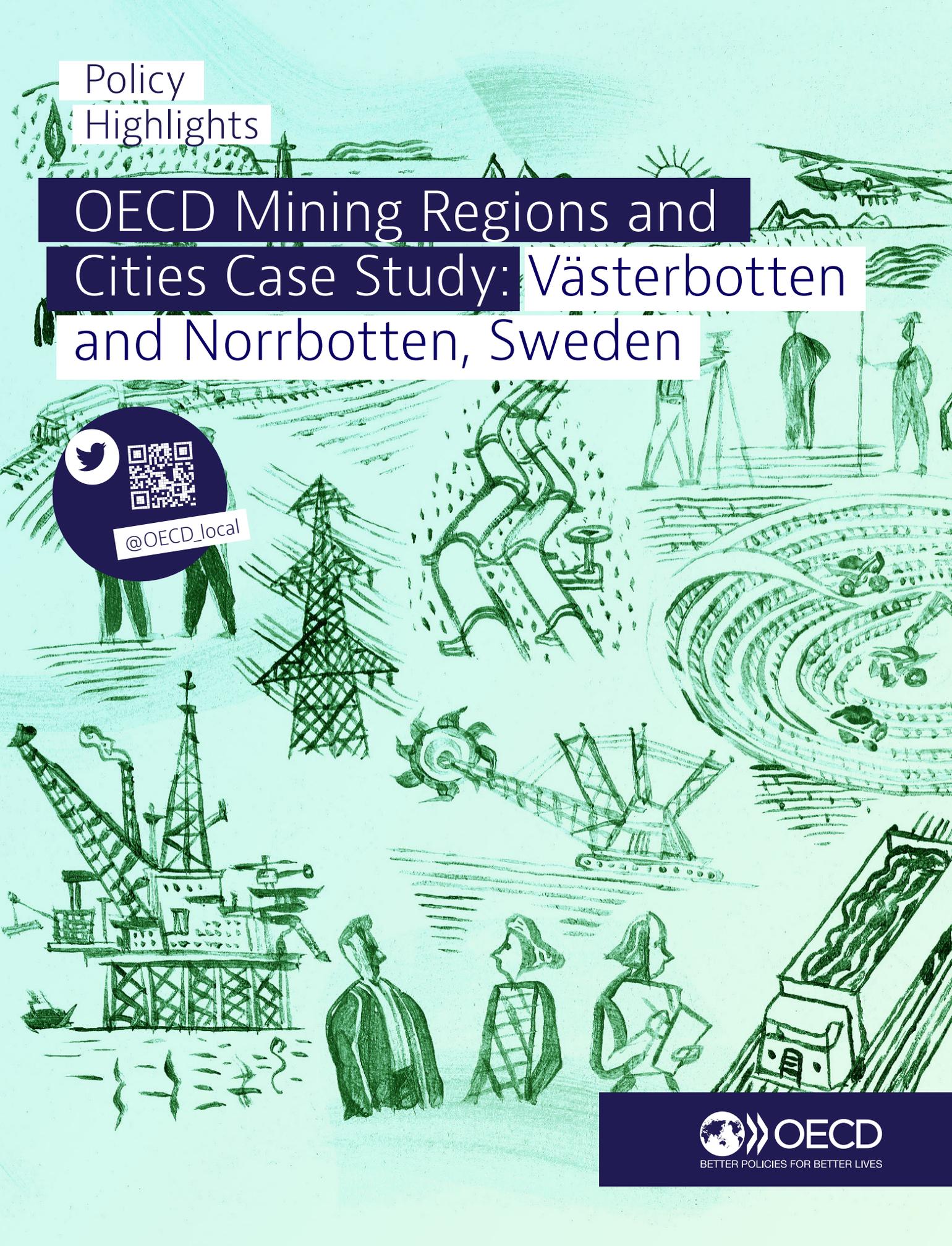


Policy
Highlights

OECD Mining Regions and Cities Case Study: Västerbotten and Norrbotten, Sweden



Introduction

These policy highlights provide a summary of the OECD Mining Regions and Cities Case Study of Västerbotten and Norrbotten. Together both sub-regions form the larger region of Upper Norrland in Sweden. This study is part of an OECD project that has built a platform for knowledge sharing and co-operation on increasing productivity and enhancing the well-being of cities and regions with a specialisation in mining and extractive industries.

Sweden's most northern region, Upper Norrland, is one of the most important mining regions in Europe. It is the largest producer of iron ore in Europe providing roughly 90% of the European Union's iron (EU) and also has the largest mineral reserves in the country, containing 9 of the country's 12 active mines. Amongst the two sub-regions, Västerbotten is more densely populated and has a more diversified economy, while Norrbotten is larger in terms of land surface and more specialised in mining, concentrating most of the active mines and production volumes in Sweden.

Upper Norrland has the potential to become a global leader in environmentally conscious mining due to a range of competitive advantages. These include: 1) a pool of large mining companies that work closely with research centres and universities on reducing emissions and waste production across the mining value chain; 2) a highly skilled labour force, 3) a stable supply of green energy from hydropower and 4) high quality broadband coverage. Unlocking this potential will allow Sweden and the region to contribute to global climate agendas and the EU's self-sufficiency strategy of raw materials.

To do this, the region must overcome a number of bottlenecks. They include a shrinking workforce, low interaction between municipalities and small businesses in the innovation processes for mining and a lack of preparation of the workforce for future technological changes. Furthermore, regional development objectives are not sufficiently linked to land-use planning and there is an increasing opposition to mining due to socio-environmental concerns and land-use conflicts.

This study identifies 7 recommendations and 20 sub-recommendations, that can assist Västerbotten and Norrbotten to build on their competitive advantages and address current challenges to support a resilient future through sustainable mining. These recommendations require action at local, regional and national levels. To this end, Sweden's national government needs to update the national mining strategy, define mechanisms to help the regions capture greater value from mining ventures and improve the efficiency, predictability and transparency of the regulatory framework for mining. Likewise, both sub-regions need to enhance their innovation ecosystem, the local business environment and internal and external co-operation.



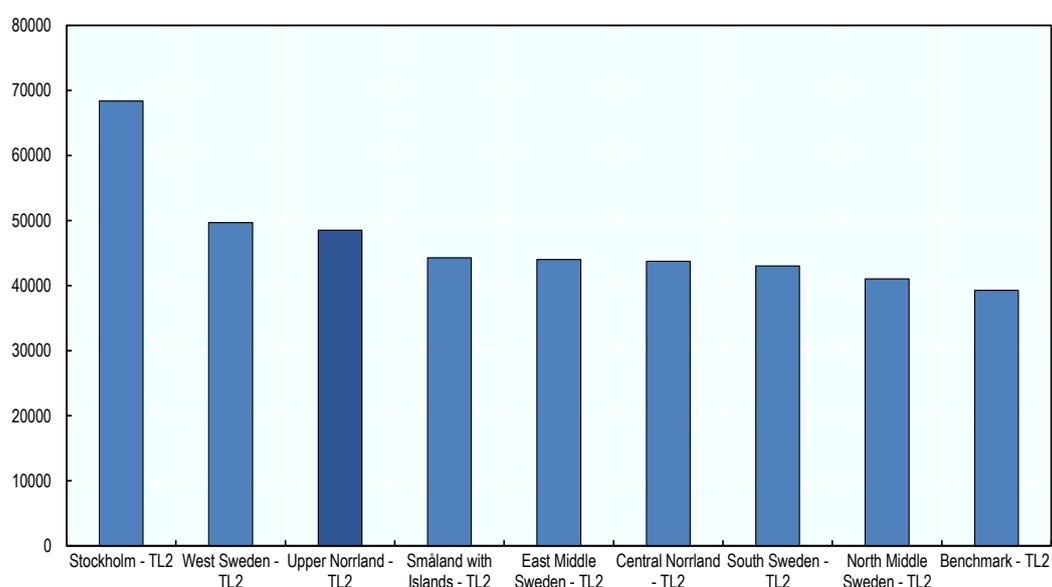
Note: LKABs mine in Kiruna (Upper Norrland, Sweden) during the winter.
Photographer: Berit Djuse

Upper Norrland is the key mining region in Sweden and has the potential to become a global leader in environmentally sustainable mining

Upper Norrland is the largest Swedish Territorial Level 2 (TL2) region in terms of land area and concentrates 5% of Sweden's population, which makes it the least densely populated region in the country (3.4 inhabitants per square kilometre). Upper Norrland includes two TL3 regions (Västerbotten and Norrbotten). Amongst the two, Västerbotten is more densely populated (4.8 inhabitants per square kilometre) and hosts the largest city in the region (Umeå), home to 24% of Upper Norrland's population. Norrbotten, in turn, is larger in land area (64% of Upper Norrland) and concentrates most of the active mines and largest production volumes in Sweden.

Upper Norrland achieved a fast recovery after the financial crisis, and is characterised by a high labour productivity and low unemployment rates. The region has the third-highest level of gross domestic product (GDP) per capita across the 8 TL2 regions in Sweden and a lower unemployment rate (5.1%) than Sweden (6.9%) and 40 TL2 OECD mining regions (also referred to as benchmark) (7.3%).

Figure 1. GDP per capita of regions of Sweden compared to OECD TL2 Benchmark, 2018



Note: USD per head, constant prices, constant PPP, base year 2015, Benchmark refers to 40 OECD mining regions.

Source: OECD database. "Regional Economy", OECD Regional Statistics (database), <http://dx.doi.org/10.1787/a8f15243-en> (accessed 27 January 2020)

Upper Norrland benefits from a number of assets to attain a sustainable regional development and play a key role in the European raw materials strategy. These include:

- A pool of mining and metallurgic companies at the technological frontier, working in close collaboration with universities and research centres to increase energy efficiency and establish a carbon free mining value chain.
- Relatively high skilled labour force (35.7% with tertiary education in 2017), which is above the average level in OECD TL2 benchmark of mining regions (34.5%).

- Strategic geographic location in the Arctic Circle, with unique bio-diversity and large variety of natural-ecosystems, positioning the region at the frontline of global environmental agendas.
- Bedrock with high potential of rare minerals, needed to support the clean energy transition.
- Reliable green energy infrastructure, providing 21% of the energy in Sweden, mainly from hydropower.
- High broadband coverage with a higher share of households connected to broadband (99% in 2019) than the average European TL2 (98% on average in 2019) regions and 40 comparable OECD TL2 mining regions (70%)



Note: Northern lights in Västerbotten
Photographer: Torbjorn Thomsen

Drawing on Upper Norland's assets, Sweden can play a key role in global environmental agendas and the European Union strategy of raw materials

Sweden's policy framework puts a strong emphasis on innovation in mining as a vehicle to boost economic growth and accelerate the transition towards a zero-carbon economy

Sweden's Mineral Strategy, the National Strategy for Regional Growth and the National Innovation Strategy, provide guidelines for the sustainable development of the Swedish mining ecosystem. Sweden's policy strategies point in the right direction by supporting a

close interaction among innovation, mining development and environmental sustainability policies. This strategic vision has enabled the implementation of a number of cross-sectorial initiatives on mining innovation to minimise waste products and the environmental footprint of mining operations (e.g. projects associated with the Strategic Innovation Programme for the Swedish Mining and Metal Producing Industry).

Yet, Sweden's Mineral Strategy needs to be updated and the mining regulatory framework has scope for improvement.

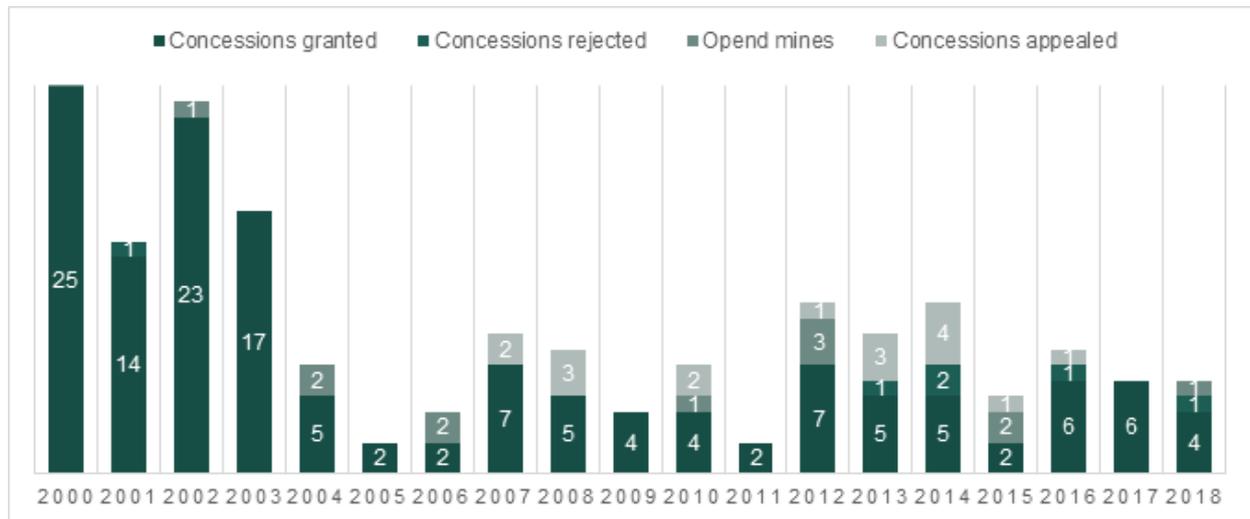
The national policy framework – due to expire in 2020 – lacks a regional lens and a coherent vision of how mining development can create regional well-being and unlock the innovative potential of local mining ecosystems. An updated mineral strategy will need to better integrate regional strategies on mining development and put greater emphasis on supporting SMEs and suppliers involved in the mining value chain. Becoming a powerhouse in sustainable mining also requires a clear communication strategy to attract local and international actors.

A revised mining strategy in Sweden needs also to outline a set of measures to help improve how mining regions and municipalities benefit from mining activities and ensure shared value creation with communities. To this end, the strategy needs to first identify suitable monetary and non-monetary benefits for mining communities and, second, create the conditions to make the most of them.

A well-defined mining regulatory policy is essential to systematically manage risk and benefits. In recent years, the number of exploration permits and exploitation permits issued has decreased in Sweden, while the number of appeals has increased (figure 2). This suggests that the permitting process for mining development has become increasingly unpredictable and at times lengthy. This affects especially small mining investors, who have limited resources in comparison to large established companies.

Key challenges in the permitting process include its complexity, uncertainty on the scope of permit applications, limited transparency and fragmented decision-making that gives only limited consideration to social, economic and cultural aspects as well as combined impacts of past, present and future mining activities. This reduces the possibilities for assuring that mine development makes positive contributions to sustainable regional development.

Figure 2. Approved, rejected and appealed exploitation concessions 2000 -2018



Note: For 2017 and 2018 no data on appeals were available.

Source: (Swedish Geological Survey, 2018^[1]); (Rolmer, 2018^[2])

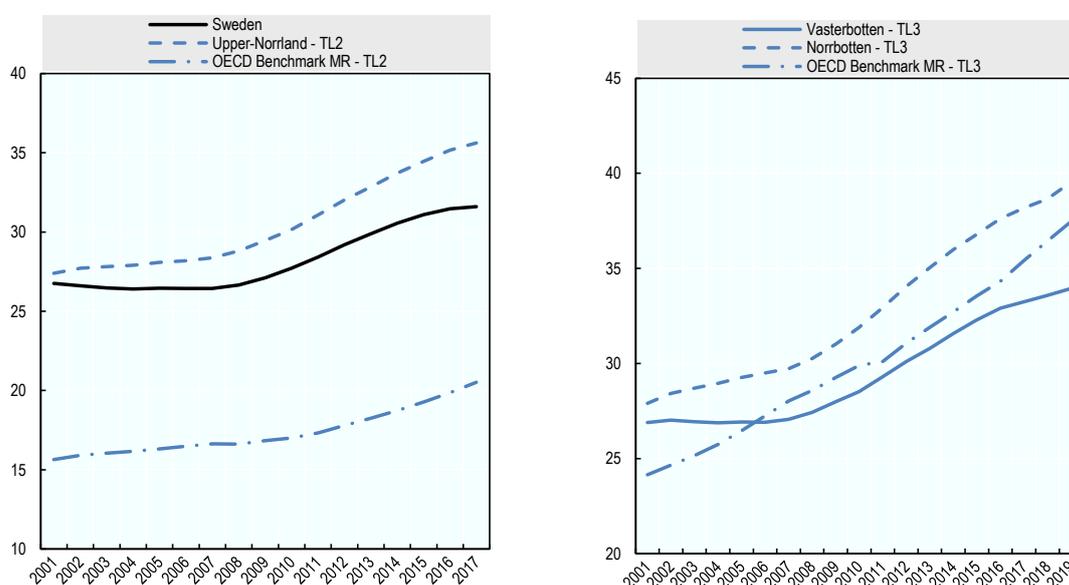
Upper Norrland needs to strengthen its business ecosystem to mobilise its local assets and support a sustainable and resilient future for people and local business

Outmigration of young people and population ageing have led to a shrinking workforce that threatens the future economic growth of the region

Upper Norrland's working age population is shrinking (from a share of 64.2% in 2001, to 61% in 2019). This phenomenon is driven by a rapid population decline that is fuelled by a high rate of outmigration, especially from young women. Between 2000 and 2019, population growth in Upper-Norrland (1.7%) was far below the rates of Sweden (15.2%) and the TL2 benchmark of mining regions (17.5%).

Concurrent with outmigration, the elderly dependency ratio in Upper Norrland (36.6% in 2019) has increased almost twice as fast (9.2 percentage points) than in Sweden (5.2 percentage points) over 2001-19. At the TL3 level, Norrbotten is experiencing a higher outmigration and population ageing than Västerbotten. Mining municipalities in both regions are most affected by population decline (-3.8% on average between 2000-19) when compared to regional urban centres (17.5%).

Figure 3. Elderly dependency ratio in Swedish TL2 and TL3 regions, 2001-2019



Note: Calculated as a share of individuals >65 over total population 15-65 years old.

Source: OECD database, "Regional Demography", OECD Regional Statistics (database), <http://dx.doi.org/10.1787/a8f15243-en> (accessed 03 March 2020).

Upper Norrland needs to involve municipalities and SMEs in the mining innovation process, boost entrepreneurship culture and prepare its workforce for technological changes

Upper Norrland's municipalities and small businesses have a low interaction within the innovation process of large firms and universities. Mining and manufacturing companies are the main drivers of the technological innovation process in Upper Norrland, with a weak involvement of municipal development strategies or local business.

The traditionally nature-based economy and small market size have led to local economies being dominated by a small number of large mining firms, leaving many SMEs locked into supplier relationships. This phenomenon, coupled with a low unemployment rate, hampers incentives to create new companies in sectors outside mining.

To support the transition towards new economic activities linked to green technologies and to meet industry demands, Upper Norrland needs to ensure the supply of labour with the right skills. The region currently faces challenges to fulfil the labour demand of current and future industry needs (e.g. the future cluster of batteries).

Upper Norrland can improve internal and external co-operation to consolidate its vision of development and support global environmental agendas

Västerbotten and Norrbotten currently lack a common brand and vision to promote the region as a provider of environmentally sustainable practices and technologies. Both sub-regions have differences in their economic structures, which provides scope for complementarities in strategic policies. A common vision will help to strengthen the co-ordination with the national government and attract international investment. To this

end, both regions require a clear brand to become internationally visible as an attractive region on mining and environmental technology

Upper Norrland's transition towards a high technological and know-how hub for environmentally sustainable mining and minerals value chains is very much in line with the efforts undertaken by various EU networks and international environmental agendas (EU and Arctic strategy). To make the most of these common goals, Upper Norrland needs to enhance its involvement in international mining networks and adopt and active participation in global environmental agendas (Arctic strategy).



Note: Mountaineer walking in the woods of Upper-Norrland
Photographer: Jonas Westling

A more developed and inclusive mechanism of dialogue and consultation with all local stakeholders is necessary to improve acceptance and promote sustainable mining in Upper Norrland

Local support for mining and extractive activities is crucial for the success of mining ventures and social climate. In Sweden, opposition to mining has increased in recent years due to concerns around socio-environmental externalities and demands to recognise Indigenous peoples' rights. The institutional framework regulating permitting processes is not seen as fair or trustworthy by all parties largely because the system provides few entry points to the process and offers limited direction for authorities and proponents on the consultations with local communities.

Relationships with Sami people are of particular importance in this context as 99 per cent of the value of the mineral extraction was produced in Sápmi¹ in 2016 and to date twelve mining concession permit applications for large-scale mines are within Sápmi.

In Västerbotten and Norrbotten, there is a need to better link regional development objectives with land use

The latest reforms have enabled Västerbotten and Norrbotten to take the lead in regional development including regional growth policy. Yet, these priorities and visions are not always reflected or considered in how land is planned as responsibilities for competencies related to economic development and land use are separated. Consequently, regional development programmes miss a physical planning perspective and municipal planning misses a regional development perspective

Furthermore, decisions on land use are often largely based on compliance with national guidelines (such as areas of national interests) and are limited in their flexibility to respond to rapidly arising needs. In order to deliver on regional development objectives in both TL3 regions land use planning needs to be better linked with regional development.

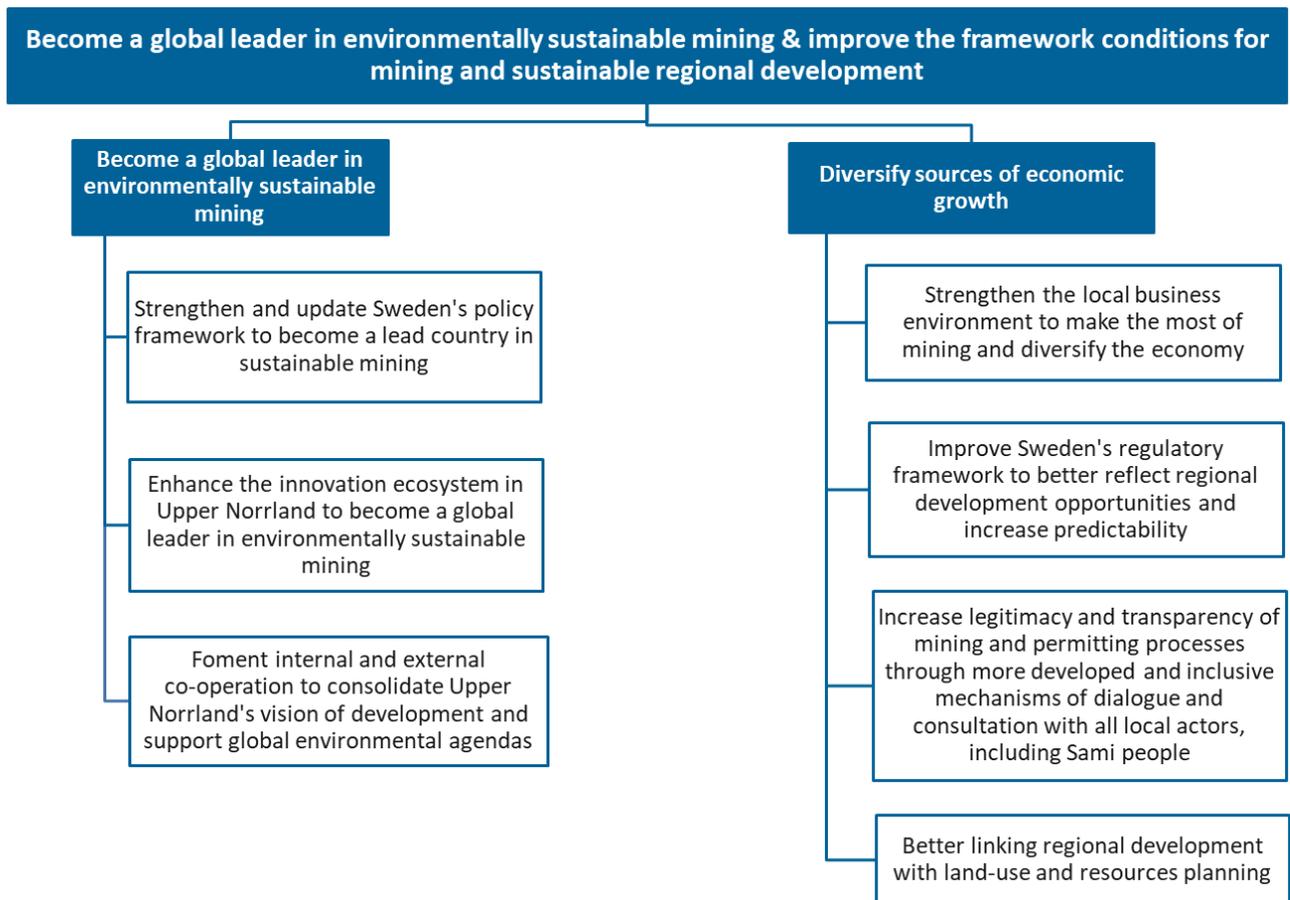


Note: Industrial landscape of the company SSAB in Luleå during the winter.
Photographer: Mikael Svens

Recommendations: A framework for action

The study has identified a framework for action based on 7 recommendations to help Upper Norrland and Sweden to **become a global leader in environmentally sustainable mining**, and **improve the framework conditions for mining and sustainable regional development**.

Figure 4. Framework for action



Becoming a global leader in environmentally sustainable mining

I. Strengthen and update Sweden's policy framework to become a lead country in sustainable mining. For this, the national government should:

1. Define a long-term vision to clarify the role of mining for regional development and support environmentally sustainable mining processes and technologies within the National Strategy for Sustainable Regional growth, the National Innovation Strategy and Sweden's Mineral Strategy.
2. Update the National Mineral Strategy to incorporate the local strategies around mining. It involves clarifying the role of regions and municipalities in the implementation of the strategy, mobilising the potential of small business in mining value chains and helping prepare regions to face global megatrends. The Canada Minerals and Metals Plan is a good example of a national plan that involves both national and regional governments in strategic actions.
3. Identify mechanisms to help mining regions capture greater value from ongoing and planned mining ventures. It involves evaluating possible monetary and non-monetary benefit-sharing mechanism for mining communities and the framework to make the most out of them.
4. Strengthen the brand name of Sweden's mining ecosystem to consolidate it internationally as a "sustainable mining" trademark. It involves creating a single platform to consolidate and diffuse information of the national and local mining ecosystems as well as provide advisory services and networking activities.

II. Enhance the innovation ecosystem in Upper Norrland to become a global leader in environmentally sustainable mining. For this, the regional council of Västerbotten and Norrbotten should:

5. Strengthen the integration of municipal governments in the innovation process of universities and mining firms by:
 - Formalising the co-operation between municipal governments and mining companies around innovation projects. It can be done through formal meetings opened to local business, research institutions and non-mining and mining municipalities
 - Promoting a formal collaboration among universities and regional and municipal development strategies to improve the innovation capacity of municipal governments. The regional councils can learn from the partnership of Karlstad University and the Region Värmland.
6. Enhance entrepreneurship culture and innovation capacity of mining suppliers and SMEs by:
 - Strengthening the mechanisms to involve suppliers and SMEs in the innovation process of mining firms, especially concerning the transition to environmentally friendly practices. It includes collaborating with the large mining firms in the value chain (from producers to manufacturing) to lift up standards and innovation of mining suppliers and associated SMEs. The

example of the BHP accelerator programme for suppliers in Chile can be a guiding practice.

- Boosting entrepreneurship culture and micro companies' participation in innovation systems. It involves including an entrepreneurial angle to the education and training programmes for young and working age population as well as providing insurance support to entrepreneurs, with targeted programmes for women. Furthermore, the ongoing collaboration with universities needs to be expanded to engage smaller firms through training (i.e. personal counselling) and access to universities' research equipment and staff for business needs.

7. Reinforce the implementation of the Smart Specialisation strategies by:

- Developing an institutionalised platform for dialogue to monitor the implementation of the strategy and ensure continuous engagement of all actors. This platform should follow a cluster approach to channel funding for and implement strategies that connect mining innovation with other economic activities. It can follow the model of Georange by expanding it to other sectors and get inspiration from the Lapland approach.
- Leveraging on the European funds to align municipalities, universities and local business with the innovation strategy. It should involve a co-ordinated and approach to apply for these funds to realise policy complementarities among different levels of governments of Upper Norrland.

III. Foment internal and external co-operation to consolidate Upper Norrland's vision of development and support global environmental agendas for this, both regional councils should:

8. Define a common vision and brand for mining development in Västerbotten and Norrbotten. It should capitalise in the existing platform Georange to develop a clear regional branding and strengthen the international visibility by promoting mining industry as a green and high technology industry.
9. Co-ordinate Västerbotten and Norrbotten regional development strategies to develop and internationalise technologies and practices for a carbon-free mining value chain. This can be materialised through shared flagship projects that unlock synergies among ongoing local initiatives and actors, and attract funding from EU funds and external partners. Georange and the planned battery hub in Skellefteå can trigger such co-ordination.
10. Take a lead role in EU mining networks and Artic co-operation to promote the benefits of carbon-free mining value chain for global environmental agendas. It involves enhancing its participation in international networks and increasing knowledge exchange with other artic regions, EU official and environmental actors to position sustainable mining process as relevant mechanism to support the EU and Artic agenda for environmental transition and the EU agenda for self-sufficiency in raw materials.

Improving framework conditions for mining and sustainable regional development

IV. Strengthen the local business environment to make the most of mining and diversify the economy. For this, both regional councils and municipal governments should:

11. Develop an institutional body to promote and oversee co-operation among Upper Norrland's municipalities. It can be done through an institutional body inside the regional council or the creation of an inter-municipal development agency. It should centralise economic information, co-ordinate municipal strategies and advise local businesses. Business Joensuu, in North Karelia, Finland represents a guiding example for this type of structure.
12. Accelerate the attraction and integration of skilled migrants through a better collaboration among municipalities and other regional actors. It should involve enhancing job-matching services and exchange of information on migrants' skills among municipal governments as well as promoting further partnerships between migrant organisations, unions and business. Joint programmes with universities, for example industrial PHD, can retain young people –especially women- and increase attraction of new residents.
13. Improve training and education programmes to prepare workforce for technological changes and further include women in value-added activities. It should be done through a joint work with mining companies and universities to align Vocational Education and Training programmes with future industry needs provide targeted grants for training to workers in jobs at risk of automation. (Individual Training Accounts) and leverage on technological changes to involve women in mining value-added activities.

V. Improve Sweden's regulatory framework to better reflect regional development opportunities and increase predictability. For this, the national government should:

14. Adopt instruments to improve predictability, by introducing set-timelines for decision-making at the onset of an application process. Outlining intermediate steps and windows for feedback and dialogue can provide project proponents with more clarity on when determinations are made and ensure that public consultations are planned with sufficient lead-time.
15. Strengthen the incorporation of socio-economic, cultural, and cumulative impacts in decision-making for mining concessions and environmental permits. This requires developing detailed explanations in the legislative language of the Environmental Code, and other provisions, that describe these impacts, as well as developing detailed guidance for project proponents on how impacts should be assessed. Considerations of cumulative aspects should include and their contribution to regional development objectives and make use of context-specified sustainability-based criteria that account for special and temporal impacts and interrelationships.

VI. Increase legitimacy and transparency of mining and permitting processes through more developed and inclusive mechanisms of dialogue and consultation with all local actors, including Sami people. For this the national government should

16. Develop clear and consistent guidelines for the mining industry. It should define how the consultation process should proceed; who should be involved in the process by including parameters around what type of information is provided to communities at each step of the process. It should also clarify to what extent project proponents and responsible authorities ought to take voiced perspectives and positions into account. Specific guidelines for consulting with Sami villages should be developed together with the Sami Parliament and other Sami stakeholders. These should also define the status of Sami traditional knowledge in the consultation.
17. Ensure early-stage engagement and consultation rules within the framework of the Minerals Act and Environmental Code. This should include how and when notifications should proceed and the nature of the engagement (format, etc.) as well as required documentation.
18. Strengthen the capacity of rights holders and interested parties for engagement, including of Sami villages. This should entail that proponents need to provide financial resources to affected parties to compensate for the cost incurred in corporate consultation without any obligation influencing the outcome. Further, greater overall institutional and analytical capacity should be provided to special interest holders to manage demands for consultation. For affected Sami people, the Sami Parliament could play a stronger co-ordinating role in distributing information to Sami villages with regards to making contributions in consultations, conducting consultations, and making agreements with mining companies.

VII. Better linking regional development with land-use and resources planning. For this, regional councils should:

19. Create an effective co-ordination mechanism that allows for strategic dialogue about land-use and economic development between municipalities and regional councils. Planning based on potentials and opportunities can be incentivised by developing strategic spatial plans at a regional scale. Regional spatial plans should account for interrelationships at functional scale, and can help guide regional and municipal planning. It should also be used to guide decisions made on regional development policies and cumulative impacts through informing the platform for resource development.
20. Develop a platform for resource development to facilitate regional and sustainability-based-planning for mines and natural resource projects together with other actors. The platform would oversee all mining and potentially other infrastructure and energy applications in the region, compile information on land-use through a geospatial database and act as a contact point for all stakeholders, including authorities, proponents for mining projects and landowners, interest holders and the general public. It could help to reduce frictions of multiple reviews and entities, ensure the neutrality of consultation processes and to inform decision-making on developments with regards to land-use and cumulative effects

¹ Region traditionally inhabited by the Sámi people
Photographer of the background image: Fredrik Ludvigsson

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The Centre for Entrepreneurship, SMEs, Regions and Cities helps local, regional and national governments unleash the potential of entrepreneurs and small and medium-sized enterprises, promote inclusive and sustainable regions and cities, boost local job creation and implement sound tourism policies.

About this booklet

This document summarises the key findings of OECD (2019), OECD Mining case study: Västerbotten and Norrbotten, OECD Publishing, Paris. The full publication is available at <https://doi.org/10.1787/802087e2-en>

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