A vision of growth for the Swedish mining industry
The mining industry – a growth engine for Sweden

Swedish mining in a strong market

The continuous demand on the global mineral and metal markets gives Sweden an extraordinary position with its favourable investment climate and mineral-rich bedrock. Our vision of growth is that Sweden will triple its mining production by 2025. This would create more than 50,000 new jobs.

Increased wealth and urbanization result in increased demand for minerals

Example: steel

<table>
<thead>
<tr>
<th>Steel intensity</th>
<th>kg finished steel/capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP intensity</td>
<td>Real USD (2005)/capita, PPP-adjusted, thousand</td>
</tr>
</tbody>
</table>

In a modern society, access to minerals and metals is essential for increasing prosperity. Several minerals are being mined in different regions of Sweden and the country is a significant ore producer in EU accounting for between 80 and 90 percent of the EU’s iron ore in 2011. Even with respect to other metals such as copper, zinc and silver, Sweden is among the major producers in the EU.

Sweden’s three main mining regions account for a large part of the European production

Three regions in Sweden produce several different minerals today

<table>
<thead>
<tr>
<th>Northern Norrland</th>
<th>Bergslagen</th>
<th>Gotland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>Permit received or in process</td>
<td></td>
</tr>
</tbody>
</table>

Sweden’s share of European production

Mine production, EU27+3 (EU and Norway, Switzerland and Island)

- Iron: ~90%
- Lead: ~30%
- Zinc: 25%
- Silver: ~20%
- Copper: ~10%

Source: SGU, UNCTAD, WBMSA
Policy landscape for investments
Percent which do not see policies as a hurdle for investments

1 Including e.g. political stability, safety in country, tax systems as well as predictability, consequences and discipline in governments
2 Mineral index, not taking current regulations and investment climate into account

Source: Fraser institute "Survey of mining companies 2010/2011"; team analysis
Mining in Sweden is performed with world leading technique, high standards and productivity. For example is LKAB developing their energy efficient pellets to customer’s needs with their unique research blast furnace and Boliden has developed their Aitik mine to world class productivity.

Mining companies, equipment manufacturers and service companies have developed environmental and cost-effective options to satisfy the demands for more sustainable solutions. This development has turned Sweden into a world leader in the manufacture of mining equipment, especially for operations underground. The innovations and rapid technological progress has given Swedish research and development in mineral extraction an excellent reputation internationally.

**Tripled mine production**

In 2025 Sweden could have tripled its mine production. Based on the exploration carried out to date, iron ore shows the greatest potential, where production volumes could more than triple by 2025, corresponding to 90 million tonnes of iron ore products annually. Volumes for other minerals could be doubled over the same period and continued exploration will generate additional deposits. The mining industry would then account for 3 to 5 percent of GDP growth and over 20 percent of industrial investment in Sweden until 2025. In addition, mining output strongly contributes to increased employment in the country.

Today, about 10,000 people are directly employed in the mining industry and a further 35,000 are indirectly employed at subcontractors and other sectors. A threefold increase in the mining industry would create 10,000 to 15,000 new direct jobs and between 30,000 and 45,000 indirect jobs. Most of the new jobs would be created outside urban areas. In other words, an expansion of the mining industry would benefit rural areas, especially in northern Sweden, where the majority of both existing mines and new projects are located.
An expanding Swedish mining industry would also contribute to greater self-sufficiency in the EU, which was a priority in the “Raw Materials Initiative – meeting our critical need for growth and jobs in Europe” presented by the EU Commission in 2008 and 2010.

An example of this is iron ore: Swedish expansion to an annual production of 90 million tonnes would increase Europe’s self-sufficiency from the current rate of around 20 percent to 40-50 percent\(^1\).

The industry’s long investment cycles demand that investment decisions must be made as soon as possible in order for the potential to be realised.

\(^1\) Total demand for iron ore in Europe was about 155 million tonnes in 2010, and according to McKinsey & Company Basic Materials Institute it is expected to grow to around 185 million tonnes by 2025

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**The Swedish mining industry has the opportunity to increase the production with a factor three until 2025**

<table>
<thead>
<tr>
<th>IRON ORE</th>
<th>LKAB plans to expand to ~40 million tons per year (2015) and has potential to reach &gt;50 million tons per year (2025)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Million tons finished product per year</td>
<td>Planed projects for e.g. Dannemora, Northland Resources and Avalon</td>
</tr>
<tr>
<td>25</td>
<td>2015</td>
</tr>
<tr>
<td>40</td>
<td>2010</td>
</tr>
<tr>
<td>90</td>
<td>2025</td>
</tr>
<tr>
<td>x 3-4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER MINERALS (Cu, Au, Ag, Zn, Pb)</th>
<th>Good conditions for increase copper production</th>
<th>Resources of gold, silver, zinc and lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indexed production/year</td>
<td>Additional potential</td>
<td>In company growth plans</td>
</tr>
<tr>
<td>100</td>
<td>2015</td>
<td>2025</td>
</tr>
<tr>
<td>50</td>
<td>2010</td>
<td>150</td>
</tr>
<tr>
<td>200</td>
<td>x 2</td>
<td></td>
</tr>
</tbody>
</table>

Source: Worldsteel Association; interviews; WBMS World Metal Statistics Yearbook 2011; IMCOA; Roskill; press search

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**Growth requires more manpower, good infrastructure and effective environmental permitting processes**

Realising our vision for the next 15 years requires an eight to nine times higher growth rate in the industry\(^2\) than over the period 1995–2010. The mining industry could be one of Sweden’s leading industries of the future, but this requires the availability of manpower, a good infrastructure for handling goods, effective permitting processes and a competitive energy supply market. Capacity and effectiveness in these areas must be significantly enhanced to ensure that the potential growth is not prevented or restricted.

\(^2\) Over a fifteen year period from 1995 to 2010, the Swedish mining industry grew by about 1 percent per year according to the companies’ annual reports; a threefold increase over the next fifteen years would require an annual growth rate of between eight and 9 percent
**Skills:** In total, between 10,000 and 15,000 new direct jobs could be created in the mining industry, all in regions that have difficulty attracting workers. For example, it is estimated that about 7,000 of the new jobs would be created in northern Sweden, in regions which today are characterised by depopulation. In order to reverse the downward trend and satisfy the needs for new recruitment in the mining industry, immigration to the mining municipalities need to rise by a factor of three. Today people moving to these areas are fewer in number than those moving out creating a downward population trend. In addition to the regional challenge of attracting manpower to rural areas, the mining industry would need to hire as many as 30 percent of all examined engineers from Luleå University of Technology until 2025. To achieve this, the industry needs to be perceived as a future industry with good career opportunities in attractive locations.

**Infrastructure:** The Swedish rail network is currently suffering from capacity constraints and major delays to freight traffic. An expansion of the mining industry would greatly increase the need for freight, and the capacity expansion planned for the northern regions only covers 60 percent of the needs. Additional capacity is required, and the rate of expansion needs to be doubled.

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An expansion of the mining industry could generate more than 50,000 new job opportunities, whereof 10–15,000 are directly related to the mining operations.

**Number of employed**

<table>
<thead>
<tr>
<th>Thousand people</th>
<th>2010</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directly employed by the mining industry</td>
<td>7</td>
<td>13–15</td>
</tr>
<tr>
<td>Contractors</td>
<td>30</td>
<td>60–75</td>
</tr>
<tr>
<td>Indirect and induced effect</td>
<td>40</td>
<td>80–100</td>
</tr>
</tbody>
</table>

Source: SCB, Tillväxtanalys: Rapport 2010:05, "Malmfälten under förändring"; interviews
Environmental permitting processes: From an international perspective, Sweden has effective environmental regulations. However, the variation in the permitting processing times are great and the predictability is low, which is inhibiting investments in new projects. Long referral times, often the result of individual respondents requesting repeated deferrals, supplemental inquiries in several rounds and multiple appeals, have all been identified as the main causes of waiting times being sometimes years-long until the final decision is made.

The challenges faced in terms of infrastructure, manpower and environmental permitting process time vary between different regions in Sweden. In northern Sweden, where mining expansion is expected to be largest in terms of production volume, growth could be significantly restricted by the constraints in infrastructure. Skill levels are an international problem for the mining industry and the affected regions are expected to have major difficulties in attracting the required manpower.

Five initiatives enables the vision of growth for the Swedish mining industry

To overcome these expansion constraints, Sweden should learn from other mining countries who over the past decade have created the conditions for strong growth. Specifically, we recommend that work begins on the following five initiatives:

1. A joint action plan for the regions, industry and universities with national and regional initiatives to make the industry and key regions more attractive and improve the provision of skills

2. A national plan for rail infrastructure to support the mining industry’s needs for freight traffic
3. A joint action plan with the relevant authorities for greater discipline and speed in the process of environmental permitting within the framework of the existing environmental legislation

4. A program to maintain Sweden’s leadership in R&D and industry expertise along the entire value added chain, in order to ensure the efficient use of resources and sustainable development in Sweden and globally

5. Continued cross-industry collaboration to ensure access to competitive energy, for example, by creating access to natural gas in Sweden.

These initiatives are an initial step in overcoming the challenges and enabling future growth. The complex situation calls for cooperation between a large number of authorities and decision-making bodies. Work needs to be conducted in the form of an extensive partnership involving the mining industry, national and regional authorities and related industries. The first steps have been taken in the development of Sweden’s mineral strategy, which represents the starting point for the continued development of the industry.

- Sweden is an important mining country in Europe and a major contributor to the EU’s self-sufficiency in, for example, iron ore (20 percent) and copper (55 percent)

- In 2011, LKAB shipped 26 million tonnes of iron ore products and Boliden mined 34 million tonnes of copper ore equivalent to 80,000 tonnes of copper metal

- The Swedish mining industry contributed SEK 26 billion to Sweden’s GDP in 2010

- The mining industry in Sweden contributes to 10,000 direct jobs and 35,000 indirect jobs

- In 2010, mining accounted for 13 percent of all industrial investment in Sweden
SveMin is an industry association for mines and mineral and metal producers in Sweden.