



Evidence of spheroidal weathering at Åsby diabase, Rämna. Photo: J-O Svedlund/SGU.

any Sami villages that are affected, with more and better information. This information is to be provided as early as possible in the process and contain relevant details of what will happen on their land.

To tackle this issue, the Government appointed a one-man commission in 2011 to review how the system of work plans has functioned since it was introduced in the Minerals Act 2005 and to submit proposals for how to improve the information given to landowners and other relevant stakeholders. The commission presented the report *Exploration permits and work plans* (SOU 2012:73) at the end of 2012. The report was sent out for consultation during the spring of 2013.

More efficient environmental assessment with shorter lead times

The Government has implemented several measures to simplify and coordinate environmental assessment and shorten lead times. One of these measures is the formation of five land

and environment courts and a land and environment court of appeal to replace the previous environmental courts, land tribunals and environmental court of appeal. As a result of the reform, the processing of environmental cases, cases linked to the Planning and Building Act and property cases has been concentrated to the new courts. The land and environment courts have received additional funding of SEK 35 million (EUR 4.2 million) in 2013 and will receive another SEK 25 million (EUR 3 million) per year as from 2014. This increased funding will hopefully lead to more efficient handling of mining and quarrying cases.

Another measure is the concentration of assessment procedures for operations that require a permit to just 12 county administrative boards instead of the previous 21. This is an important reform measure that has been called for by the business sector. The county administrative boards will receive an extra SEK 40 million (EUR 4.8 million) for 2013, SEK 30 million (EUR 3.6 million) for 2014 and SEK 15



*The picture shows white, radial scapolite aggregate on a crack through the iron ore in Sahavaara, Pajala.
Photo: Erik Jonsson/SGU.*

million (EUR 1.8 million) as from 2015. These extra resources may result in more administrators at the county administrative boards.

The boards have also been tasked to report lead times based on when an application is submitted and when it is deemed to be complete. The goal is to ensure that an application submitted to an environmental assessment delegation is dealt with within six months from the date a complete application is received. A report on this task is to be submitted in March 2013.

A further measure is the survey and analysis of the permitting process for quarrying operations, classed as “B operations”. The survey/analysis has been performed by the National Council for Innovation and Quality in Public Administration, appointed by the Government in May 2011. The Council’s work has involved the land and environment courts, municipalities and various agencies and resulted in a model for identifying and clearing bottlenecks in the environmental assessment procedure based on a systematic approach. Following on from the Council’s work, the Västerbotten County Administrative Board has been tasked to continue developing the model so that it also covers the permitting of “A operations”, which include mining activities, and to submit proposals for how environmental assessment can be improved. This task may be expanded to include counties other than Västerbotten. It is to be implemented over a two-year period and be reported to the Government at regular intervals. Västerbotten County Administrative Board has been allocated SEK 2 million (EUR 240 000) for this purpose.

The current provisions on environmental impact assessments (EIAs) under Chapter 6 of the Environmental Code have been criticised by both the business sector and municipalities for being complicated and difficult to apply. In addition, the requirements laid down are too rigid and do not give the environment more protection. The business sector has on several occasions also pointed out that it is the initial phase of the assessment process for environmentally hazardous operations, the phase which includes consultation and the drafting of EIAs, that takes the longest time and is most resource-demanding for the enterprise. Work to simplify and improve the provisions in Chapter 6 of the Environmental

¹⁴Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (EUT L 26, 28.1.2012, p. 1, Celex 32011L0092).

Code is currently ongoing within the Swedish Ministry of the Environment. The aim of this work is to develop a more efficient system for identifying, describing and assessing environmental impact, which includes the drafting of EIAs. In the autumn of 2012, a proposal has been circulated to a large number of agencies and organisations for comments. The Ministry of the Environment intends to have a dialogue on the proposal in parallel with the negotiations in the European Council of Ministers' working group on the Commission's proposal for amendments to the Environmental Impact Assessment Directive.

Guidance when applying for a permit

An application for an environmental permit to perform mining activities is subject to extensive assessment in accordance with the regulations laid down in the Environmental Code. The background documentation submitted by the business operator to the assessment authority is to include detailed descriptions of how the planned activities will be pursued and can be assumed to impact on the surrounding natural environment.

The business sector has called for clearer guidance as to what background documentation will be required as a basis for assessment. With clearer guidance and guidelines, more complete background documentation can be submitted to the assessment authority, which in turn will shorten lead times since there will be less need to submit supplementary information.

The Government has therefore tasked SGU to produce an industry-specific manual on mining activity assessment in close cooperation with the Swedish EPA. This manual will be an aid for both the business operator and the relevant authorities. SGU is to submit a report on this task to the Ministry of Enterprise, Energy and Communications at the end of May 2013.

Land use and considering different interests

In order to promote long-term sustainable development, it is important to have good cooperation when planning, both among municipalities and between municipalities and counties, as well as between planning authorities and other activities. The emphasis of the Regional Growth Ordinance (2007:713) and the new focus of the Planning and Building Act are strengthening the link and the syner-

gies between regional objectives, plans and programmes and the municipal comprehensive plan. Cooperation is particularly important when it comes to major establishments and activities that don't just affect the conditions in a single municipality, e.g. new mines. On the regional level, it may be a question of adding a spatial dimension, where geographical relationships and conditions in the physical, economic and social environment are highlighted in the background documentation that forms the basis of the counties' development strategies. This would help to facilitate and increase the scope for coordinated actions and cooperation between the local and regional level. It may also increase the scope of the municipalities to take a cross-border strategic approach to activities that promote sustainable growth. Since the establishment of new mines often affects and is dependent on good interaction both within and between the different sectors and remits of municipalities, there is a need for planning that goes beyond municipal borders. A comprehensive plan that covers several municipalities can facilitate each municipality's detailed planning work and constitute a basis for discussions on cross-border issues.

In cases where SGU assesses the short-term and long-term public interest in extracting minerals in certain areas that are very large, the agency earmarks such areas as areas of national interest for mineral extraction. The Government is keen to ensure that the national interest system is fit for purpose and simple to apply in municipal planning work and when assessing permits. The regulations governing national interests were introduced many years ago and since then, as society has developed, opinions on what is a national interest have changed somewhat. In light of this, the Government has ascertained in its 2013 Budget Bill (Govt Bill 2012/13:1, expenditure area 20) that these regulations and their application are in need of an overhaul. As a result, the Government intends to appoint an inquiry to clarify and improve the system.

To help improve and clarify the regulations on mineral extraction, it is proposed within the framework of the minerals strategy that:

- The Swedish Agency for Growth Policy Analysis be given the task to, first of all,

follow up the actions that have been initiated and implemented. When doing this task, the Agency shall take the experiences of business operators into consideration. Secondly, the Agency shall, where it is possible, evaluate the effects of the actions, which includes assessing whether government funding has been used efficiently. Thirdly, the work is to include an international comparison between the environmental assessment processes and regulations of relevant countries when it comes to mining and quarrying operations. The work shall include a comparison of lead times in the permitting processes.

- The Norrbotten County Administrative Board be given the task of running a pilot project in 2013 to investigate how a comprehensive plan covering several municipalities can be developed aimed at providing support to the municipalities in their detailed planning work. This task is to be performed in consultation with the county's municipalities. The benefit of such an approach is to be evaluated within the framework of the task.

Infrastructure investments for growth in the mining industry

Objective: To create robust and reliable infrastructure that meets the needs of the mining industry.

The expanding mining industry is exposing the shortcomings in Sweden's transport system as regards its carrying capacity, operation and maintenance, etc. It is the Government's opinion that the needs of the mining industry must be satisfied quickly in order to make full use of the opportunities provided by the current boom in the industry. The Government has therefore proposed an investment in mining-related infrastructure of SEK 3,5 billion (EUR 420 million). This doesn't just include investment in the Iron Ore Line (Malmbanan) and in the road between Pajala and Svappavaara, but also other investments in the mining industry in, for example, Bergslagen, on which a final decision is due in the spring of 2014 once the Government has established the

National Transport Plan 2014-2025.

The Iron Ore Line between Boden and Riksgränsen and on to Narvik in Norway is currently Sweden's busiest railway line mainly running iron ore trains that are up to 750 metres long. Ore transport on the Luleå-Riksgränsen line is expected to rise by over 80 percent between 2010 and 2020, the majority of this increase occurring before 2015. The planned expansion in passenger transport between Luleå and Kiruna is also to be added to this. To rectify this expected lack of capacity, the Government has proposed more resources to enable investment in greater capacity on the Iron Ore Line. Some sections of the busiest line between Kiruna and Riksgränsen may need to be double-track. These measures will hopefully satisfy the capacity requirements for freight transport and reduce travelling times between Kiruna and Luleå. At the same time, robustness and punctuality are also expected to improve.

A brand new iron ore mine opened in Pajala in the autumn of 2012; an investment of several hundred million euros. The ore will be transported by road to Svappavaara and then by rail on the Iron Ore Line to Narvik. As mining is already underway, improvements to the local infrastructure are now a matter of urgency. Among the measures to be taken is the modernisation of the Pajala to Svappavaara road so that it can take heavy goods transport. Within the framework of the action planning, the Swedish Transport Administration has looked at the possibility of building a rail link between the mining area of Kaunisvaara and the existing railway line in Svappavaara. The Administration will also consider electrification which in the long term can lead to more efficient transport with less environmental impact by meeting future transport needs with minimum expansion of the infrastructure.

The Administration will also consider various alternative transport routes to satisfy the needs of the mining industry in cooperation with relevant stakeholders as part of the action planning. The various alternatives will be highlighted based on a holistic perspective, where the total benefit for all travel and transport needs, including those of the mining industry, will be taken into consideration. These alternatives shall present cost-benefit

assessments as well as consider and describe other aspects and consequences, not least environmental impact, but also reloading requirements, effects on traffic safety, effects on the possibility of labour commuting and interregional accessibility, etc.

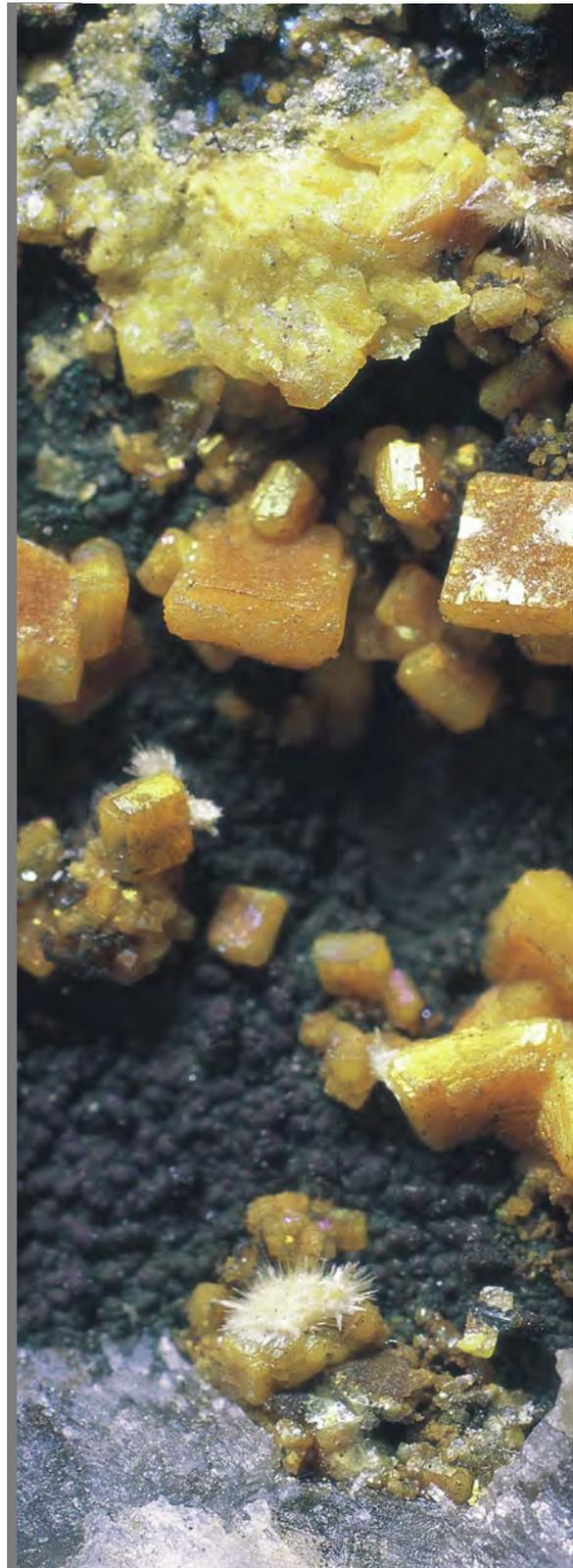
In connection with the production of background documentation and decisions on the implementation of infrastructure projects, the Transport Administration will look into the scope for cofinancing from different stakeholders. The Government's opinion is that the ongoing infrastructure projects shall contribute to the achievement of transport policy objectives and as a rule of thumb be socioeconomically profitable regardless of how they are financed. The same arguments shall apply when prioritising projects irrespective of whether they are cofinanced through contributions or not. Regarding any cofinanced project, its benefit to financial contributors should be an important starting-point. Cofinancing of government transport infrastructure via contributions from municipalities, county councils and businesses can be a good way of achieving effective solutions in the transport system.

To help create a robust infrastructure that meets the needs of the mining industry, it is proposed within the framework of the minerals strategy that:

- The Swedish Transport Administration, as part its task to investigate new electric propulsion systems for trucks on the road, makes use of the lessons learned from previous and ongoing projects within the Programme for Strategic Vehicle Research and Innovation (FFI). Field tests and pilot facilities are important development steps to ensure the technology is ready for full-scale use.

An innovative mining and minerals industry with an excellent knowledge base

The Swedish mining and minerals industry currently faces a number of challenges, to which the solutions can be found in research and innovation. The mining industry is very energy-demanding. Ore is mined at ever-greater depths and the process must be efficient to be profitable at the same time as new demands are being placed on safety measures and on



The picture shows brownish yellow crystals, up to about 1.5 mm, of the lead-antimony-oxychloride mineral nadorite, a character mineral for the complex and extremely mineral-diversified iron and manganese ore deposits in western Bergslagen, similar to those found in Långban in Värmland. Photo: Erik Jonsson/SGU.

knowledge of the bedrock's geology at greater depths. The minerals, ballast and stone industry are facing challenges in terms of energy-efficiency in mining and crushing, product development, the environment and safety.

Investments in research and innovation in the mining and minerals field provide new knowledge that can be converted into new products and services as well as increase the industry's growth and competitiveness. With excellent research and a well-functioning innovation system, Sweden can retain its position as the EU's leading mining and minerals country in the face of tough international competition.

Major international research and innovation strategies have been announced or are in their infancy. It is important to have good Swedish representation and active participation in these. Synergies should be sought between national and international programmes. An efficient information flow needs to be safeguarded among relevant actors to promote successful participation.

To enable the mining and mineral industry to expand at the pace made possible by today's strong demand for metal and minerals, businesses must have access to a skilled workforce. The signs are that there will be a need for skilled labour in a wide variety of professions. The industry needs to work together with the relevant actors on the local and regional level to clarify this need based on local conditions. The attractiveness of the industry to the la-

bour force of the future should be improved in order to increase the interest in and the intake to relevant educational programmes.

Research and innovation that create growth and competitiveness

Objective: To ensure that Swedish research in mining- and mineral-related areas is world-class and characterised by good cooperation between the business sector and the academic world. Research findings are to be applied by the industry and strengthen its competitiveness.

Research in the mining and minerals field takes place to a great extent in close cooperation between businesses, universities and research institutes. Today's mining enterprises are very demanding as regards the efficiency and safety of mining equipment. This tests the boundaries of technological development. Swedish mining technology research is at the cutting edge and Swedish researchers are taking part in several major international research projects.

In its 2013 Budget Bill (Govt Bill 2012/13:1, expenditure area 24) and presented in more detail in its Research and Innovation Bill (Govt Bill 2012/13:30) from October 2012, the Government proposes a number of measures to strengthen mining, minerals and steel research from 2013. Between 2013 and 2016, the National Innovation Systems Agency (Vinnova) will receive SEK 205 million (EUR 24.6 million) to finance outstanding research in the mining, minerals and steel field. Other investments are being made that can strengthen mining and minerals research.

The vast majority of Swedish mining and minerals research is international and takes place in close cooperation with research groups and enterprises operating in other countries. International cooperation provides new ideas and new knowledge at the same time as internationally prominent researchers can be recruited to Swedish universities, research institutes and enterprises. Within the framework of its presidency of the Nordic Council of Ministers in 2013, Sweden has therefore launched the NordMin project - A Nordic Network of Excellence. This project will run for three years and be coordinated by

Brief facts: Investments outlined in the 2012 Research Bill:

- SEK 205 million (EUR 24.6 million) between 2013 and 2016 on a mining, minerals and steel research programme to be headed by Vinnova.
- Strategic areas of innovation based on societal challenges.
- Increase in the strategic skills funding for the Research Institutes of Sweden (RISE).
- Improved scope for recruiting world-class international researchers to Sweden.
- Support to Swedish participation in Horizon 2020.
- Funding to facilitate participation in partnership programmes.



the Luleå University of Technology. Universities, enterprises and research institutes in the Nordic countries meet within NordMin with the aim of implementing joint research and innovation projects to stimulate green growth within the Nordic mining and minerals industry. The Nordic Council of Ministers is funding the project to the tune of DKK 10 million (EUR 1.34 million) per year for three years.

In the forthcoming Horizon 2020 European research programme, access to raw materials is expressed as a societal challenge. Specific raw materials research projects are likely to be announced within Horizon 2020. All in all, there will be plenty of opportunities for Swedish research players in the area of mining, minerals and steel to apply for research funding from both national and international sources. The funding comes from a number of different financiers with a variety of aims, regulations and tasks, to which research players will have to keep to.

As part of the development of new programmes at the EU level, open consultations are being carried out to analyse the needs of the business sector and the academic community for targeted research initiatives within specific areas. Strategic research agendas are being written and will later be turned into research projects. To increase the Swedish share of funding from EU programmes, it is important for Swedish representatives to work to ensure Swedish interests are considered in the strategic research agendas.

To further stimulate research and innovation in the mining and minerals industry, it is proposed within the framework of the minerals strategy that:

- Vinnova be given the task of performing a subject review of the mining and minerals research area in cooperation with the Swedish Research Council. This review should contain a biometric evaluation and a survey of historical and future research initiatives in the mining and minerals area. The survey is to identify recycling and substitution initiatives, for which progress reports are to be presented in 2013 as a basis for the work done within the European Innovation Partnership on Raw Materials. Sweden's strengths and challenges within mining



Photo: LKAB.

and minerals research in an international perspective are to be identified and the strategic benefit of implementing initiatives on these is to be assessed. The task shall also include submitting proposals for how to improve forms of cooperation among research players in the mining and minerals area.

Skills supply that meets the needs of the industry and the regions

Objective: To safeguard the supply of skills to the industry and the regions by means of close cooperation between the industry and local regional and national actors.

Forecasts from the Swedish Public Employment Service indicate that the mining industry alone may need to recruit around 5 000 people over the next few years. The employers' and industrial association for mines, mineral and metal producers in Sweden, SveMin, has recently published a Vision for Growth for the

Swedish mining sector. The vision presents a forecast showing that the mining sector may need to employ 10 000 - 15 000 people up until 2025 in order to cope with the expansion.

The labour requirement is expected to be on all levels, both on the mining and on the minerals side, where large-scale retirements are to be expected. It is, however, the need for academically educated staff, such as geologists, rock engineers and process engineers, that is most urgent since these types of degree programmes take several years to complete. The need for mine workers and process operators is also considerable.

A survey carried out by SveMin of university programmes in relevant subjects for the mining and minerals industry has shown that the number of available places is relatively high. The lack of an appropriately skilled workforce is instead due to the low number of programme applicants. The mining and minerals industry does not seem to be a first-hand choice for young people when choosing their career path. Efforts should therefore be made especially by the mining and minerals industry to promote itself as an attractive career proposition with interesting and stimulating jobs. Initiatives to improve gender equality within the industry are a key issue when it comes to increasing the recruitment base and enhancing the industry's attractiveness.

The future skills base in mathematics, sci-

ence and technology in Sweden has been under threat due to the weak interest shown by children and young people in these types of subjects. The Government has therefore carried out a number of measures to stimulate interest among children and young people in science and technology and to safeguard the future skills base in these subjects on the Swedish labour market.

Only national programmes, diploma objectives and subject plans may be used in Sweden's new upper secondary school system. Geology is not a subject on its own, but is studied as part of subjects such as sustainable society, geography, chemistry, biology and nature studies. If there are requests for new courses, subjects or special alternatives, applications to provide them can be submitted to the National Agency for Education. Every vocational programme has a national programme council linked to it, the aim of which is to listen to and survey the opinions and requests of the relevant industry and other actors to improve the programme. The relevant industry can also communicate to the programme council any new skill requirements that need to be satisfied within the programme. School governors, i.e. the municipalities or independent governors, can also profile their programmes within the framework of the national programmes.

A pilot scheme with a four-year upper secondary technology programme is currently underway. In its 2013 Budget Bill (Govt Bill 2012/13, expenditure area 16), the Government has proposed an extension to the pilot scheme for an extra academic year, up to and including 30 June 2015. The profiles currently on offer within the pilot scheme are Innovation and Production, Information Technology and Community Planning. In this context, different industries have the opportunity to submit comments on any skill requirements that need to be satisfied or might be worth satisfying within the framework of the extra fourth year of the technology programme.

The activities at colleges of higher vocational education are based on the idea of the labour market creating educational programmes that can be included in the colleges' regulatory framework. The Swedish National Agency for Higher Vocational Education does not run programmes itself, nor can it commis-

Brief facts:

Government education initiatives that can help meet the need for a skilled workforce in the mining and minerals industry include:

- An assignment given to the National Agency for Education aimed at increasing students' interest in science and technology.
- Policy documents and curricula for all forms of education, from preschool up to upper secondary school, that clarify objectives, content and knowledge requirements for science and technology.
- The initiation of a campaign to attract interested students to science and technology teacher training programmes.



sion them. Its remit is to distribute state subsidies to programmes that satisfy the regulatory requirements in terms of available resources, and to have a supervisory role. Considerable emphasis is placed on the skill requirements being documented and on the programmes being on the tertiary level. The mining and minerals industry is not a defined vocational field within higher vocational education. It is instead included in Technology and Manufacturing, Transport Services or Community Planning and Construction Technology depending on the programme focus. Between 2008 and 2011, Technology and Manufacturing has seen the biggest increase in the number of students. There is currently a handful of programmes directly focused on mining work/mining technology within these three areas.

It can be ascertained that the number of applicants to graduate engineering programmes has risen in recent years. In order to make use of the interest and skills of technology students, the Government has increased the number of places on graduate engineering programmes at universities and university colleges. In 2013, the number of places on current programmes will have risen by 600 first-year places compared to 2011. Universities and university colleges are themselves responsible for deciding the dimensions of their programmes and it is the needs of the labour market and the students' own choices that are to influence the range of programmes on offer. If the demand for engineers increases, universities and university colleges should therefore allocate greater priority to these programmes.

In the global economy, the availability of knowledge and skills is of crucial importance for the innovativeness and competitiveness of countries, regions and individual enterprises. The mobility of individuals between sectors, labour market regions and countries has also become a strong competitive factor. A key priority is therefore to safeguard a good skills supply on the national, regional and local level alike. This is important not least for the expanding mining industry in different parts of the country.

Actors with a responsibility for regional development in all Swedish counties have, at the



*Jingjing Jiao, geology student at Uppsala University, studies and samples bore cores from Blötberget in the SGU borecore archive in Malå.
Photo: Erik Jonsson/SGU.*

behest of the Government, established regional skills platforms for collaboration in skills supply and education planning in both the short and the long term¹⁵. How far the counties have progressed regarding this task varies somewhat. Furthermore, in total compliance with the task they have received, the counties focus on different things depending on their varied regional priorities. In the start-up phase, most of the counties have focused on creating a knowledge base in the form of relevant forecasts and needs analyses, sometimes general in nature and sometimes more industry-specific. The priority industries in the majority of the counties are technology and manufacturing, IT and health and social care. In Norrbotten County, the actors in the skills platform have agreed to focus on the mining industry and its various support sectors.

The Government takes a long-term view of the work to achieve an efficient organisation and good cooperation within the framework of the regional skills platforms. Within the framework of its policy for regional growth, the Government has therefore decided to invest SEK 60 million (EUR 7.2 million) in 2013-2016 to strengthen and further develop the regional skills platforms as important tools to safeguard skills supply across the entire country. Within the framework of the regional skills platforms, the counties cooperate with

¹⁵See key facts on page 29 for information on actors.



Stores of blast-furnace slag, SSAB Tunnpåt, Luleå. Photo: Stig-Göran Nilsson, Jernkontoret.

both neighbouring counties as well as with other regions whose conditions are similar to theirs. Current work commuting for functional labour market regions is far more important than formal county borders. A limitation caused by the current county boundaries is that it can lead to over-dimensioning in the education sector with the associated risks of locking effects and mismatch on the labour market. According to the Swedish Public Employment Service, it is unusual for people with special skills to move around between different enterprises. Interregional coordination is therefore necessary in a long-term cross-border matching perspective. Such a perspective not only combats any mismatch problems but also makes it easier to coordinate the measures that the labour market policy can solve in the short term with education policy measures that need to be taken in the longer term.

To guarantee the skills supply needs of the industry and the regions, it is proposed within the framework of the minerals strategy that:

- As part of its remit to promote sustainable growth and entrepreneurship in the mining and minerals sector, SGU be given the task of leading a project stretching over several years to increase knowledge about the role of geology in society and its significance for growth in all parts of the country. Businesses are to be given the chance of participating in this project provided that they cofinance it. The participation and cofinancing of the business sector will help to highlight the industry as a workplace. Financing options via different EU funding instruments should be utilised.
- Actors with a responsibility for the regional skills platforms in the relevant counties be given the task of drawing up a com-

mon plan for how to meet the long-term skills supply needs of the mining and minerals industry in the respective regions. The platforms will be allocated resources to allow them to produce the necessary background documentation. The work should be characterised by coordination and a cross-border perspective.

An internationally renowned, active and attractive mining and minerals industry

Historically, foreign capital and foreign skills have played an important role in the development of the Swedish mining industry, even though it was dominated by Swedish enterprises for most of the twentieth century. Since the beginning of the 1980s, however, an increasing number of foreign enterprises have expressed an interest in mineral exploration and mining operations in Sweden, especially once the state's half-share in a mining concern and the requirement for a special permit allowing overseas citizens to acquire mineral rights were abolished at the beginning of the 1990s.

The Geological Survey of Sweden (SGU) assists prospectors and other enterprises by supplying them with advanced geological data. Material produced during state-financed mineral exploration over the last one hundred years is stored at the SGU local office in Malå along with material from private exploration activities since 1999. From 2012 onwards, the Government has allocated extra funding to SGU of SEK 30 million (EUR 3.6 million) per year over four years to further improve mineral data. Measures implemented include the digitalisation of archive material and the scanning of core samples that can be accessed via web-based technologies.

Sweden is a small, export-dependent coun-

try. To maintain the country's position as both the leading mining and mineral nation in the EU and as a world-leader in certain segments, internationalisation is of the utmost importance. The Swedish mining brand is characterised by innovation, cost-efficiency, quality and sustainability. Sweden's strong global brand in the mining industry should be used to further strengthen the country's large-scale enterprises while utilising the opportunities for small and medium-sized enterprises (SMEs) to develop into the mining companies of the future. There is potential to widen service exports, e.g. concerning green, resource-efficient and energy-efficient technology, to attract investment in Sweden, and to export Swedish knowhow in recycling and sustainable business operation.

There are currently several different, though interlinked, activities in the EU to strengthen European access to metal and mineral raw materials. One of these activities is the start-up of a European Innovation Partnership on Raw Materials, in which Sweden, via the Government, is represented in the partnership's management group. The Swedish EPA, SGU and the National Innovation Systems Agency (Vinnova) have been given the task to assist the Government in its work with the Innovation Partnership. Another activity is the planned Knowledge and Innovation Communities (KICs) within the European Institute of Innovation & Technology. Various communities working on metal and mineral issues on the international level have already been established, such as advisory groups to DG Enterprise, the international metal study groups and various UN-led configurations. It is important that Sweden is active in the relevant international communities and that Swedish standpoints have an impact in the ongoing international discussions.

A good supply of capital and promotion of investments

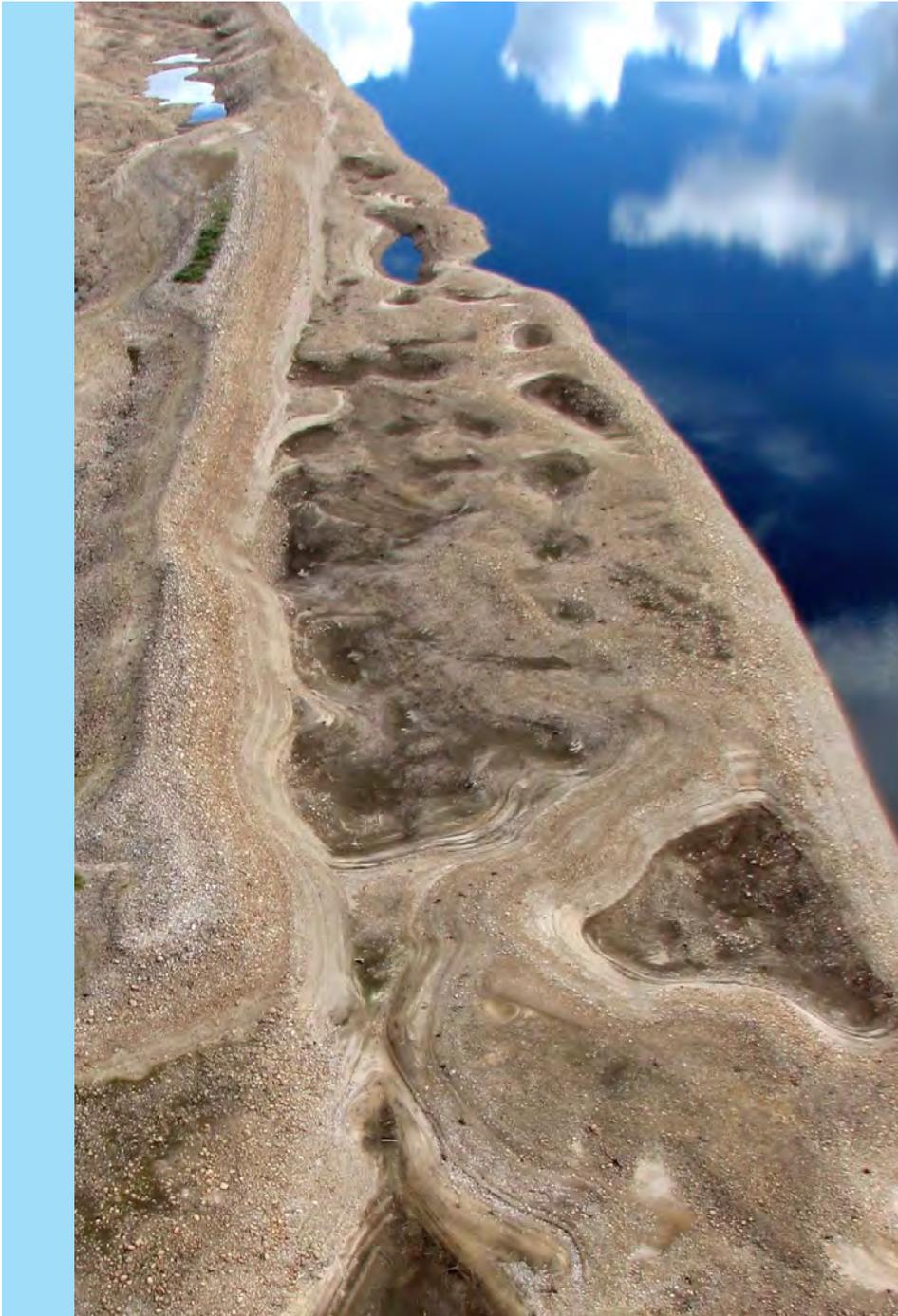
Objective: To promote Sweden's attractiveness as a mining nation and to improve the investment climate

An efficient capital supply system is crucial for the start-up and growth of businesses all over Sweden. Initiatives to promote the funding of enterprises are hence an incontro-

vertible part of the Government's efforts to improve the business climate. In addition to good framework conditions and a well-developed system for private financing, supplementary market financing shall, via central government actors, contribute to a better funding situation at those stages and in those segments where the private market is only involved to a limited extent. The Swedish Export Credits Guarantee Board and SEK (Swedish Export Credit Corporation) are bodies that promote Swedish exports by providing competitive financing solutions aimed at facilitating export-related transactions. The Swedish Export Credits Guarantee Board is increasingly providing active support to Swedish enterprises that supply equipment to the mining industry all over the world, both for direct mineral extraction and for transport and other types of contracting equipment linked to mines. Guaranteeing these business transactions creates opportunities for enterprises to cover their risks, offer export financing and thereby increase their exports. There is a demand for export credits to cover risks both in OECD countries and on less developed markets. The Swedish Export Credits Guarantee Board works together with other agencies and participates in both domestic and international conferences to highlight the opportunities that export credits can offer.



Koster diabase off the coast of Bohuslän. Photo: Thomas Eliasson/SGU.



*Glacial river sediment, ridge with kettle holes in Trängseldammen, Dalarna, 2006.
Photo: J-O Svedlund/SGU.*

Seen in an international perspective, Sweden is relatively well-off when it comes to both public and private risk capital. Areas where there is currently a relatively small amount of both private and public capital include the early stages of an enterprises development and concerning larger-scale projects with long lead-times and where financial yield takes a long time to materialise. Against this background, the scope for direct investment in

the mining industry is in certain cases limited since investment of this nature is capital-intensive and characterised by long lead-times.

The newly established enterprise Inlandsinnovation AB started operating in 2011 and is active in Support Area A (The inland districts of northern Sweden and parts of northern Dalarna and northern Värmland). The enterprise has an explicit mission to invest in business projects with a longer investment horizon and

more substantial undertakings, where other financiers cannot underwrite the entire project themselves, something which is a common scenario in mining and mineral investments. The enterprise's equity amounts to SEK 2 billion (EUR 240 million), which suggests that Inlandsinnovation AB can only help finance the construction and operation of new mines to a very limited extent since investments of this type are very capital-intensive. On the other hand, it is possible for the enterprise to finance exploration activities, on condition that it views the financial risk as defensible. In its 2013 Budget Bill, (Govt Bill 2012/13:1, expenditure area 24), the Government announces that the geographical investment mandate of Inlandsinnovation AB is to be expanded to include other parts of Support Area A. An extended investment mandate will enable Innovation AB to work to a greater extent in environments that drive forward renewal and innovation in northern Sweden. This will in all likelihood enable Inlandsinnovation AB to promote more clusters of existing and new enterprises, in e.g. the mining and mineral field.

Government financiers can promote the establishment of new mines by helping to finance different types of activities associated with such establishments. This might consist of support industries to provide the mining industry with the goods and services it requires or consist of basic service industries to make it attractive for people to live close to the mine, as well as for other businesses to ensure an overall well-functioning labour market. It may also consist of more innovation- and knowledge-intensive activities linked to the mining industry, with the aim of developing products and services to increase productivity and profitability in mine exploration, mine establishment and mine operations.

To promote capital supply and investment, it is proposed within the framework of the minerals strategy that:

- The Swedish Agency for Growth Policy Analysis be given the task of analysing Sweden's attractiveness and investment climate as a mining nation and to identify which factors have a particular impact on this. The analysis should include an international perspective and include an analysis of how conditions can be

created to combine a long-term sustainable mining industry in Sweden with an investment climate that can attract overseas investors.

Greater participation in the international arena

Objective: To ensure that Sweden is an internationally well-known mining nation that participates actively and successfully in relevant international communities where mining and mineral issues are discussed. Exports of mining equipment and recycling and underground technology are to be promoted.

Business Sweden works together with enterprises and other actors in the mining sector to strengthen Sweden's mining industry. International conferences, seminars and delegations are arranged, in cooperation with agencies and enterprises, aimed at highlighting the Swedish mining industry and finding new markets for Swedish suppliers of underground technology and mining equipment. In its guideline decision on investment promotion, the Government has tasked Business Sweden to help implement the Swedish minerals strategy. In order to promote exports and investment in Sweden as a mining nation even more clearly, an active tool in the form of a marketing and communication platform, is being developed with the aim of presenting different activities and initiatives carried out in the field in a uniform fashion. Such an initiative should include mining enterprises, companies who supply equipment and services to the mining sector and enterprises that develop recycling technologies. These industries are close-knit and strong Swedish suppliers of mineral extraction technology contribute to a strong domestic market and make the Swedish mining industry competitive. The initiative may act as a catalyst for increased trade by presenting the Swedish mining sector internationally in a uniform and logical way, in the form of a platform. A number of specific areas should be highlighted in the platform; areas where Sweden and Swedish enterprises are well placed and where there is demand from the rest of the world. For individual enterprises, the platform can put their products and

services in a bigger context. Individual enterprises can also use the platform for sales and customer contacts.

At the Swedish Ministry for Foreign Affairs, the Office for Project Export (PES) is working closely with the Ministry's geographical departments and Swedish missions abroad on strategic, targeted initiatives to promote Swedish project exports and other types of business deals in industries where Sweden has a competitive edge, including the mining sector. In order to promote exports of system solutions, products and services in the mining sector, PES can cofinance strategic, targeted initiatives on fast-growing markets in Africa, Asia, Central Asia, Latin America and the Middle East.

International work can also be based on a long-term development assistance perspective. SGU is currently involved in projects financed by the Swedish International Development Cooperation Agency (Sida)¹⁶, together with countries in Africa to stimulate and strengthen emerging relationships between Swedish actors and actors in the participating countries. This work shall contribute to good management of mineral resources which creates better conditions for sustainable growth in developing countries, economically, socially and ecologically.

It is crucial for the Swedish agencies affected to monitor and participate in the development that is taking place under the management of various international bodies so that they can quickly identify and keep abreast of changes in the minerals area as regards e.g. demand. International trends should be linked to the national minerals strategy at an early stage in order to influence and supplement national thinking. Sweden is currently making an active contribution in various international forums in order to develop international standards and principles on business ethics and corporate social responsibility. It is also important to assert Swedish potential and role as a leading mining nation and international cooperation and commitment should increase, not least to create synergies and exchange with our Nordic neighbours. To achieve maximum success in the international work on raw materials issues in the various configurations, information needs to flow

freely between participating national representatives and the issues need to be as coordinated as possible.

To increase the participation of the Swedish mining and minerals industry in the international arena, it is proposed within the framework of the minerals strategy that:

- Business Sweden, in cooperation with the relevant actors, should investigate the conditions for establishing a communication and marketing platform. The platform is to include a web-portal that presents ongoing activities and projects aimed at internationalising the Swedish mining industry while at the same time placing Sweden in the international vanguard of mining nations.
- SGU be given the task of, in cooperation with Sida, putting forward proposals for how Sweden and Swedish enterprises can contribute to the development of a sustainable mining industry and good management of the mineral resources in developing countries, e.g. by means of actor-driven cooperation. As part of the work, SGU's experience of participating in the Meeting Points Mining and Meeting Points Mining /Systematic Facilitator Services projects should be considered.
- A survey and analysis of countries which the Government feels it may be interesting to have more in-depth contact with in the mining and minerals area should be implemented. This survey and analysis must make it clear which Swedish enterprises are already active in those countries that are deemed to be of particular interest. The survey can also include how Swedish experience of a sustainable mining and minerals industry can help to strengthen management practices and the institutions in the minerals area in a purposeful way. Based on the survey, an action plan is to be drawn up stating which issues are to be discussed in dialogue with identified countries, taking the countries' democratic development into consideration.

¹⁶Meeting Points Mining (MPM) och Meeting Points Mining/Systematic Facilitator Services (MPM/SFS) (<http://www.meetingpoints-mining.net/>).

Implementation of the strategy

The Swedish Minerals Strategy has been developed with the support of the Geological Survey of Sweden, SGU. During the process, challenges, strengths and measures have been identified in an open dialogue together with actors from the industry and with other who contribute to or are affected by the industry's operations.

In early 2012, the Minister for Enterprise issued an open invitation for actors to describe in writing their expectations of the minerals strategy. About forty written contributions were submitted from enterprises, agencies and interest groups. These have been analysed within the Government Offices and are publicly available on the Government's website (www.regeringen.se/mis).

In addition, four dialogue meetings have been arranged to discuss areas that, based on the analysis of the contributions, have been deemed of particular importance to discuss within the framework of the strategy. These meetings have been open to anyone interested in taking part and each one has attracted between 80 and 100 delegates.

Action plan

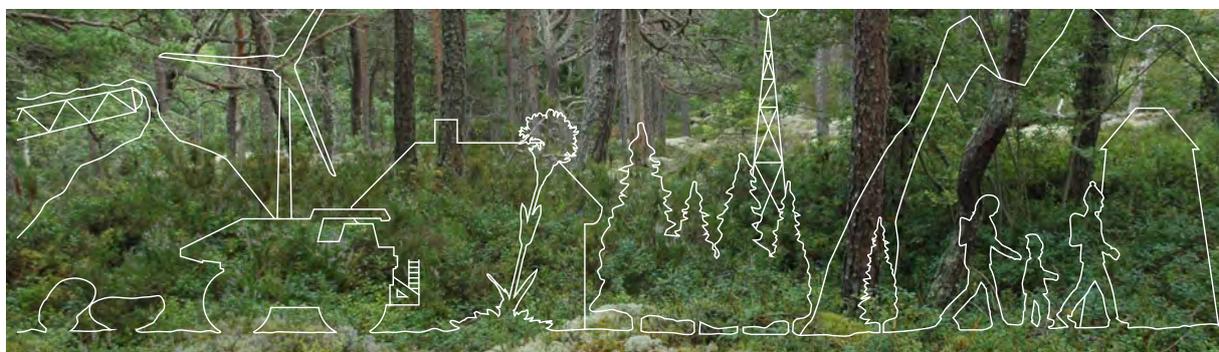
In the minerals strategy, the Government highlights strategic areas that have been identified as being of special importance for discussion, in order to strengthen the Swedish mining and minerals industry in a long-term sustainable way and to utilise the opportunities presented by the current strong international demand for metals and minerals. These

strategic areas have been identified from a time-perspective of ten years based on current prerequisites and framework conditions. The descriptions of the strategic areas are partly of a general nature, while other parts contain concrete proposals for measures, where such proposals have been possible to formulate. Based on further work on the strategy, more measures are to be identified, concretised and carried out.

To aid further work, an action plan has been established based on the measures proposed within the framework of the strategy. These measures are described in Chapter 6 and listed in Chapter 8. Additional measures are to be identified in a continuous dialogue with the relevant actors and within the framework of the work done by the national minerals forum, the establishment of which is proposed as one of the measures.

Monitoring of the strategy's implementation and goal achievement

One of the measures proposed within the framework of the strategy is to establish a national minerals forum to monitor implementation of the strategy. It is proposed that one of the tasks of the forum be to monitor and evaluate the measures initiated as a result of the strategy. The forum is also to identify new measures that need to be taken to strengthen the Swedish mining and minerals industry. It is the Government's intention to review implementation of the strategy on an annual basis.



List of proposed measures

In order to increase the resource efficiency of the mining and minerals industry, it is proposed within the Swedish minerals strategy that:

1. SGU be given the task of performing an analysis of the extraction and recycling potential for various metal and mineral assets in Sweden in partnership with the Swedish EPA and with the support of the mining and recycling industries. The analysis is to be linked to the total supply requirement in the whole of Europe. The findings of such an analysis could form one of several bases to stimulate more efficient use of Swedish metal and mineral resources, show how Sweden can contribute to the European sales situation and identify potential business opportunities.

2. SGU be given the task of working together with the Swedish EPA, with the support of the Swedish Transport Administration and the National Board for Housing, Building and Planning, to submit proposals for how a system for reporting shot rock production data can be designed and used together with data that has already been compiled on the production of crushed rock and natural gravel. Improved statistics on ballast production including shot rock will help provide a better planning basis and better monitoring of the target to reduce natural gravel use.

To promote greater cooperation and synergy between the mining and minerals industry and other industries, it is proposed within the minerals strategy that:

3. The Norrbotten County Administrative Board be given the task to head a project to develop a manual for consultation and communication between reindeer husbandry and the mining industry during the permitting process for exploration and exploitation. Both the industries' sector organisations, the Sameting (Sami Parliament) and the Mining

Inspectorate of Sweden, are to be given the opportunity to take part in this project.

To promote attractive natural and cultural environments in new and existing mining communities, it is proposed within the framework of the strategy that:

4. The Swedish National Heritage Board to be given the task of developing, compiling and disseminating best practice as regards how to utilise the cultural environment and make it into an important resource in areas where mines are reopening. This task should also include striving to ensure that cultural heritage is utilised by both the mining industry and tourism and promoting collaboration between them. The task should focus primarily on Bergslagen and be performed in cooperation with the relevant county administrative boards, actors that are responsible for coordinating regional growth initiatives, and in consultation with other interested parties.

To help promote societal development and regional growth, it is proposed within the framework of the strategy that:

5. The Swedish Agency for Economic and Regional Growth be given the task of establishing and implementing a national programme for support when planning major investments from the business sector. The programme shall aim to promote knowledge building, stimulate dialogue, cooperation, the exchange of experiences and coordination between municipalities and public actors on the regional and national level. The programme shall also aim to identify and manage the requirements of such a major business sector investment so that existing resources are used more efficiently in order to meet the requirements.

6. The Swedish Agency for Economic and Regional Growth be given the task of, in

cooperation with the Swedish EPA, to produce a manual for municipalities in which new large-scale mines are about to be set up or in which existing mining and quarrying activities are to be expanded. The manual shall list the measures that need to be implemented by the municipality and will act as an aid to the municipality in the dialogue with the developer. The manual shall also show how the process can be managed and hence how a set of common objectives can be created in partnership with the developer.

7. The National Board of Housing, Building and Planning be given the task of reviewing the obstacles that are preventing an increase in housing production and what experience there is of how municipalities have managed housing construction, coupled to the expansion of the mining industry.

8. SGU be given the task, within the framework of its responsibility for the environmental quality objectives, of further developing and finalising the work that is underway at the agency to develop a methodology for how regional material supply plans can be implemented. SGU shall also support the county administrative boards in their use of the methodology as well as the map service that is being developed for the purpose.

To help stimulate dialogue and clarify the division of responsibility, it is proposed within the framework of the strategy that:

9. A national minerals forum be established to follow the implementation of the Swedish Minerals Strategy and with the task of identifying supplementary measures to achieve the strategy's objectives and vision. The forum is to promote dialogue among stakeholders, provide opportunity for exchanging information and experience and coordinate business intelligence and analysis activities. The forum is to be led by the Minister for Enterprise and gather together companies in the mining and minerals industry, municipalities, stakeholders who are responsible for coordinating regional growth promotion, authorities and sector organisations/interest groups that are affected by and contribute to activities in the mining and minerals industry.

To help improve and clarify the regulations on mineral extraction, it is proposed within the framework of the minerals strategy that:

10. The Swedish Agency for Growth Policy Analysis be given the task to, first of all, follow up the actions that have been initiated and implemented. When doing this task, the Agency shall take the experiences of business operators into consideration. Secondly, the Agency shall, where it is possible, evaluate the effects of the actions, which includes assessing whether government funding has been used efficiently. Thirdly, the work is to include an international comparison between the environmental assessment processes and regulations of relevant countries when it comes to mining and quarrying operations. The work shall include a comparison of lead times in the permitting processes.

11. The Norrbotten County Administrative Board be given the task of running a pilot project in 2013 to investigate how a comprehensive plan covering several municipalities can be developed aimed at providing support to the municipalities in their detailed planning work. This task is to be performed in consultation with the county's municipalities. The benefit of such an approach is to be evaluated within the framework of the task.

To help create a robust infrastructure that meets the needs of the mining industry, it is proposed within the minerals strategy that:

12. The Swedish Transport Administration, as part its task to investigate new electric propulsion systems for trucks on the road, makes use of the lessons learned from previous and ongoing projects within the Programme for Strategic Vehicle Research and Innovation (FFI). Field tests and pilot facilities are important development steps to ensure the technology is ready for full-scale use.

To further stimulate research and innovation in the mining and minerals industry, it is proposed within the framework of the minerals strategy that:

13. Vinnova be given the task of performing a subject review of the mining and minerals research area in cooperation with the Swedish Research Council. This review should contain a biometric evaluation and a survey

of historical and future research initiatives in the mining and minerals area. The survey is to identify recycling and substitution initiatives, for which progress reports are to be presented in 2013 as a basis for the work done within the European Innovation Partnership on Raw Materials. Sweden's strengths and challenges within mining and minerals research in an international perspective are to be identified and the strategic benefit of implementing initiatives on these is to be assessed. The task shall also include submitting proposals for how to improve forms of cooperation among research actors in the mining and minerals area.

To guarantee the skills supply needs of the industry and the regions, it is proposed within the framework of the minerals strategy that:

14. As part of its remit to promote sustainable growth and entrepreneurship in the mining and minerals sector, SGU be given the task of leading a project stretching over several years to increase knowledge about the role of geology in society and its significance for growth in all parts of the country. The business sector is to be given the chance of participating in this project provided that they cofinance it. The participation and cofinancing of the business sector shall help to highlight the industry as a workplace. Financing options via different EU funding instruments should be utilised.

15. Actors with a responsibility for the regional skills platforms in the relevant counties be given the task of drawing up a common plan for how to meet the long-term skills supply needs of the mining and minerals industry in the respective regions. The platforms will be allocated resources to allow them to produce the necessary background documentation. The work should be characterised by coordination and a cross-border perspective.

To promote capital supply and investment, it is proposed within the framework of the minerals strategy that:

16. The Swedish Agency for Growth Policy Analysis be given the task of analysing Sweden's attractiveness and investment climate as a mining nation and to identify which factors have a particular impact on this. The analysis should include an international perspective and include an analysis of how con-

ditions can be created to combine a long-term sustainable mining industry in Sweden with an investment climate that can attract overseas investors.

To increase the participation of the Swedish mining and minerals industry in the international arena, it is proposed within the framework of the minerals strategy that:

17. Business Sweden, in cooperation with the relevant actors, should investigate the conditions for establishing a communication and marketing platform. The platform is to include a web-portal that presents ongoing activities and projects aimed at internationalising the Swedish mining industry while at the same time placing Sweden in the international vanguard of mining nations.

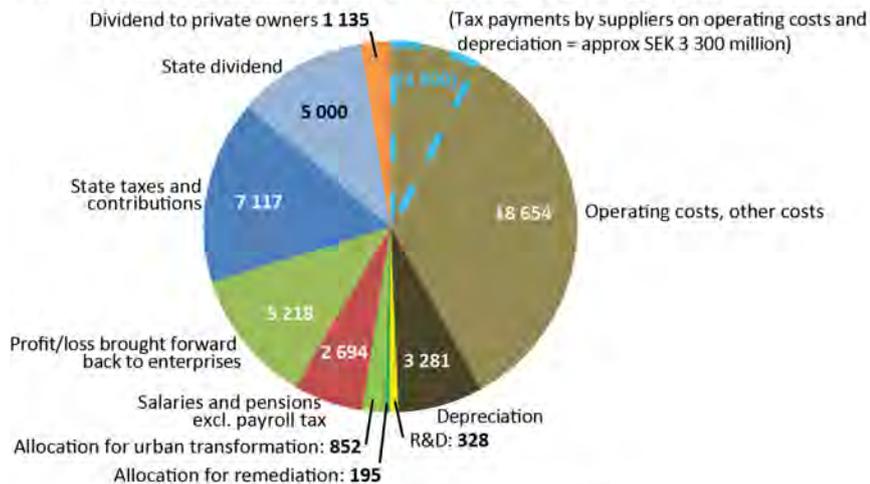
18. SGU be given the task of, in cooperation with Sida, putting forward proposals for how Sweden and Swedish enterprises can contribute to the development of a sustainable mining industry and good management of the mineral resources in developing countries, e.g. by means of actor-driven cooperation. As part of the work, SGU's experience of participating in the Meeting Points Mining and Meeting Points Mining /Systematic Facilitator Services projects should be considered.

19. A survey and analysis of countries which the Government feels it may be interesting to have more in-depth contact with in the mining and minerals area should be implemented. This survey and analysis must make it clear which Swedish enterprises are already active in those countries that are deemed to be of particular interest. The survey can also include how Swedish experience of a sustainable mining and minerals industry can help to strengthen management practices and the institutions in the minerals area in a purposeful way. Based on the survey, an action plan is to be drawn up stating which issues are to be discussed in dialogue with identified countries, taking the countries' democratic development into consideration.

Economic significance of the minerals industry

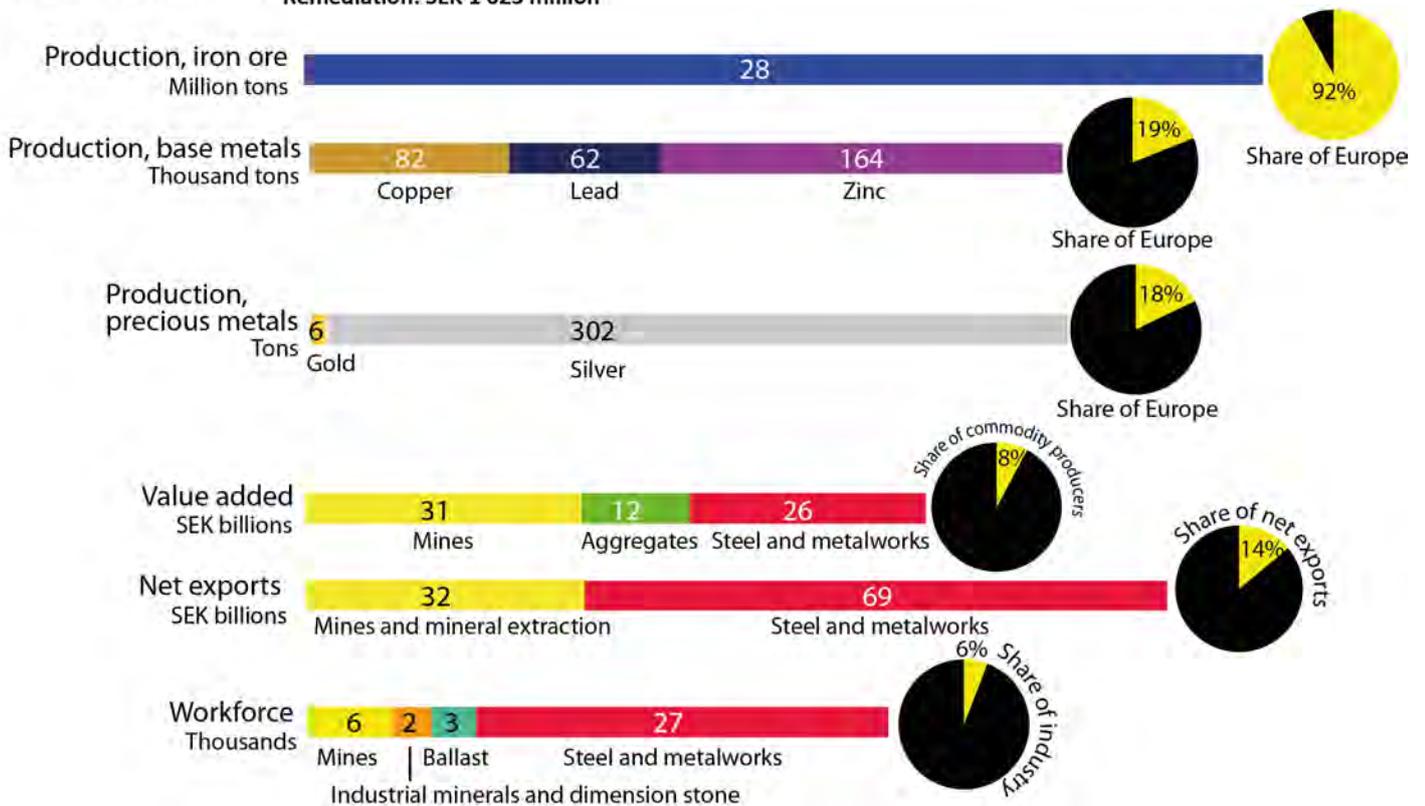
Economic significance of the minerals industry

Mining industry's turnover and expenditure 2011 = SEK 44 470 million



Investment during the year: SEK 9 251 million

Total allocation – urban transformation SEK 5 103 million
Remediation: SEK 1 623 million



Source: SGU.



Viscaria alpina /(Lychnis alpina) - a flower that can grow in copper-rich soil. This was known by geologist Paul Forsell at LKAB, which led to the discovery of the Viscaria copper deposit. The copper was mined between 1982 and 1997.

Photo: Bengt Hedberg/Johnér. Illustration: Blomquist.



REGERINGSKANSLIET

**Ministry of Enterprise
Energy and Communications
Sweden**

www.regeringen.se/mis