

## Summary:

# Mining waste

## – financial risks for the State

### Summary and conclusions

The Swedish NAO has audited whether the current system of financial guarantees for mining activities minimises the risk of central government needing to pay for post-treatment of closed down mining activities.

The audit is based on the following overall questions:

- What financial guarantees have been allocated, and are they effectively and appropriately monitored?
- Are there good conditions for supervision of mining activities in operation, closed down mining activities and post-treatment measures?

### Audit background

Mining has long been an important part of Swedish industry and in relation to other EU countries it still plays a major role. The industry's value added as a percentage of GDP in the period 1980–2012 varied between 0.4 and 0.8 per cent. One reason is the great variations in world market prices for metals.

Mining activities have a considerable environmental impact. For example there is considerable impact in the form of noise and dust, interference with the natural landscape and emissions of pollutants to air and surrounding watercourses and groundwater. The most important environmental aspect of mining activities concerns the treatment of mining waste, which can create long-term problems. The costs of post-treatment of mining waste and contaminated land and water areas are often very great.

The *Polluter Pays Principle (PPP)*, is an established principle in environmental law. To avoid society, that is the taxpayers, having to pay for necessary post-treatment of contaminated mining areas, operators of mining activities must provide financial guarantees. If the

operator is declared bankrupt or is otherwise unable to fulfil its obligation to remedy environmental damage or carry out post-treatment of the mining area, the State must be able to exercise the guarantee.

## Audit findings

The audit shows that there are problems both in determining the financial guarantees and in monitoring allocated guarantees and in environmental supervision of mining activities. According to the Swedish NAO, taken together these problems mean that the current system of financial guarantees for mining activities do not sufficiently minimise the risks that central government and thereby tax payers will have to pay for necessary post-treatment of closed-down mines.

### *Volumes of waste from mining activities are increasing*

The nature of mining waste differs depending on the type of ore being mined. The greatest environmental problems are linked to mining waste from sulphide ores. This waste can give rise to acid leachate and leakage of metals in concentrations that may be harmful.

Mining waste accounts for a very great part of total waste arising in Sweden. Volumes of mining waste have increased substantially in the period 1975– 2014 and depending on how the industry develops, this increase may continue in the future. This development is influenced for example by falling metal concentrations in the ores and by increasing mining and extraction. Despite large volumes and considerable environmental impact, there is no long-term strategy for dealing with mining waste and assessment of measures for post-treatment.

A considerable proportion of mining waste has hazardous properties, but only about 6 000 tonnes of waste from the mining industry is classified as hazardous. The Swedish Environmental Protection Agency has the right to issue regulations concerning classification of waste as hazardous, but to date has not used this right as regards mining waste.

When the Mining Inspectorate of Sweden assesses the potential of a mineral deposit for economically profitable mining activities the costs of waste treatment and post-treatment are not included. Instead issues concerning these costs are not included until the Land and Environment Courts' assessment of financial guarantees for granting permits for mining activities.

*Improved possibilities of determining financial guarantees but there are still risks, not least in the long term*

Amendments to legislation and case law have improved the possibilities of determining financial guarantees for mining activities, for example through requirements for waste management plans that must be updated as needed or at least every fifth year. However, there are practical problems linked to determining guarantees and thus also a risk that central government will be forced to pay for necessary post-treatment of closed-down mines.

The environmental consequences of mining activities are in many cases not limited in time. At the same time the mining companies' proposals for financial guarantees are often based on covering post-treatment and follow-up inspections and maintenance for 30 years after mining activities have been discontinued. Several judgments by the Land and Environment Courts after 2008 refer to a period of 30 years. According to the Swedish NAO there is a risk that guarantees will be insufficient to cover the cost of inspection and any maintenance measures for the entire period of remaining environmental consequences.

In most cases where licenses for mining activities have been granted, there was no requirement for approval of financial guarantees before mining activities started. In these cases it is stated instead that the mining company must submit a guarantee proposal within a certain period after the issue of the licence for mining activities. In the judgments that the Swedish NAO has examined the period varied from one to six months. In practice this means that mining activities can be undertaken without financial guarantees for a certain period. Another aspect is that the form of guarantee may be reviewed, which may mean an extension of that period.

The Swedish NAO's examination of financial guarantees for mining activities shows that the total amount of guarantees issued is about SEK 2.7 billion. Various forms of bank guarantee account for just over 90 per cent of the total guarantee amount. Bank guarantees require a high level of activity on the part of the supervisory authority as regards monitoring whether the guarantee is always valid. In addition, varying terms and conditions concerning when the bank's obligation to pay comes into force may affect the ability of the Government to exercise the guarantee to pay for necessary post-treatment measures.

The supervisory authorities' monitoring of financial guarantees is resource-intensive and requires both legal and financial competence. It has happened that the financial guarantee for a mining activity ceased to apply, which went unnoticed by the supervisory

authority for some time. Thus in practice the mining activities in question were conducted without any financial guarantee for more than two years.

### *Environmental supervision of mining activities is not fully funded*

The mining companies' supervision fees for the County Administrative Boards' supervision are paid to the treasury and are included as an unspecified component of the County Administrative Board's administration appropriation. The Swedish NAO's calculation shows that for 2014 the costs of environmental supervision of mining activities exceeded revenues from fees by almost SEK 3.7 million. Thus there is no full cost coverage for the activities. Moreover there is no funding at all for supervision of mining waste disposal sites that have no operators.

### *Major expenditure for post-treatment of mines*

Central government has and will have major expenditure for post-treatment of closed-down mines. In many cases this is because the mines have been closed down for a long time and in some cases because the approved financial guarantees have proved to be insufficient. There are examples of mines that have been declared bankrupt a short time after mining operations started and where central government expenditure for post-treatment of these contaminated areas amounts to considerable sums.

### *Difficult to reach permanent solutions for post-treatment*

It is considered very difficult to achieve permanent solutions (called *walk-away solutions*) for post-treatment of sulphide mining waste, that is solutions that do not require further inspections or measures. This means that the need for inspections and measures after completed post-treatment of mines in many cases remains for all time. Coverings of water or other material should be dimensioned to hold for at least 1 000 years, but it has been shown that various coverings do not have such durability. There seems to be a need to evaluate previously implemented post-treatment of the mining industry's waste repositories. The Adak mine, which has been subjected to post treatment, is an example showing that the need for inspection and any further measures will probably never completely cease.

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## Recommendations

### *To the Government*

- Investigate the conditions and form for long-term industry financing of post-treatment, inspection and supervision of closed-down mines when pledged financial guarantees are not sufficient for such measures. This should be done to reduce the risk that the central government and thereby taxpayers will have to pay for such measures. This long-term industry financing could consist of a fund solution, for example.
- Instruct the Swedish Environmental Protection Agency and Geological Survey of Sweden, in collaboration with the County Administrative Boards, to draw up a long-term strategy for treatment of mining waste and assessment of measures for post-treatment, taking into account alternative use of mining waste. This should include a current survey of the costs of managing mining waste and post-treatment and an evaluation of the post-treatment of closed-down mining activities that has been carried out.
- In most cases where permits for mining activities have been granted, there has been no requirement for approval of financial guarantees before mining activities start. Thus it is possible that mining activities may be conducted without approved financial guarantees. The Government should therefore consider whether the provisions of the Swedish Environmental Code concerning pledging financial guarantees need to be made clearer.
- The Swedish NAO's premise is that profitable mining activities assume that the deposit can also bear the costs of waste treatment and post-treatment of the area. This is not currently reviewed at the same time as the Mining Inspectorate of Sweden's review of the application for an exploitation concession. To reduce the risk that central government and thereby taxpayers will be forced to bear the expenses for post-treatment, the Government should consider legislative amendments to clarify that the Mining Inspectorate of Sweden's review of the exploitation concession should also include the costs of waste treatment and post-treatment.

### *To the government agencies*

#### **Swedish Environmental Protection Agency**

The Swedish Environmental Protection Agency should investigate as soon as possible the exercise of the agency's right to issue regulations as regards enabling a classification of mining waste with hazardous properties as hazardous waste.

### **County Administrative Boards**

There are practical problems associated with terms and conditions for various financial guarantees. This may affect the ability of central government to promptly obtain coverage for necessary post-treatment costs. Since it seems that there are no general standardised terms and conditions texts for various types of guarantee, the County Administrative Boards should coordinate their view concerning the form and conditions for various financial guarantees in connection with granting permits for mining activities and other environmentally hazardous activities. This could be done for example by drawing up guidelines for County Administrative Boards' comments to the Land and Environment Courts concerning financial guarantees.

## **Description of the steps in the process of starting a mine and of supervision of mining activities and financial guarantees**

### **Steps in the process of starting a mine**

The Mining Inspectorate of Sweden decides on exploration permits; that is the sole right to explore a land area. To carry out trial mining a permit is required from the County Administrative Board's Environmental Permits Board.

The next step in the process is often a decision on an exploitation concession. Through this decision the Mining Inspectorate of Sweden determines who has the right to extract minerals in the land area in question and the probability of the deposit being possible to utilize on an economic basis.

The Land and Environment Court determines whether to grant a permit for mining activities and thus whether mining activities may start. The permit is conditional on the mining company pledging financial guarantees. Besides the mining company, the Swedish Environmental Protection Agency and the County Administrative Board are parties to the process and may therefore state their opinion in the case.

### **Supervision of mining activities and financial guarantees**

The Mining Inspectorate of Sweden conducts both supervision of active mines through annual mine inspections, and supervision that is self-initiated or initiated after complaints from individuals.

The County Administrative Board is responsible for environmental supervision of mining activities. The County Administrative Board is also to assess on a current basis whether conditions for the activities are sufficient. Monitoring of financial guarantees approved for environmentally hazardous activities is part of environmental supervision. Supervisory responsibility can be delegated to the municipality.