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Foresight Study

Thematic Report II

Legislative and governmental challenges with regard to European mineral raw material deposits

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Preliminary note

This thematic report has been developed within the Minerals4EU project in the context of the first Foresight Study report (WP6) that comprises a central report and five thematic reports. These contributions were designed according to a well-defined structure to fit the purposes of the central Foresight Study report. The scope and targets of the first Foresight Study significantly determine the nature of the documents and may not be suited for unspecified or differing purposes.

The topics of the five thematic reports containing topic papers and case studies are:

I. **European raw material potential**

II. **Legislative and governmental controlled challenges with regard to European mineral raw materialdeposist**

III. **Societal challenges of mineral raw material deposits accessibility**

IV. **Secondary raw materials (including mine wastes)**

V. **Developments on the raw material markets**

The following institutions contributed to WP6 in the Minerals4EU project:

- GTK (Geologian Tutkimuskeskus, Finland)
- BGR (Bundesanstalt für Geowissenschaften und Rohstoffe, Germany)
- CGS (Ceska Geologicka Sluzba, Czech Republik)
- GEUS (The Geological Survey of Denmark and Greenland, Denmark)
- LNEG (Laboratorio Nacional de Energia e Geologia I.P., Portugal)
- MFGI (Magyar Foldtani és Geofizikai Intezet, Hungary)
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- SGU (Sveriges Geologiska Undersokning, Sweden)
- HGI (Hrvatski Geološki Institut, Croatia)
- WI (Wuppertal Institute for Climate, Environment andEnergy GmbH, Germany)
- FhG (Fraunhofer ISI, Germany)
- SNL (SNL, Sweden (former Raw Materials Group))

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1.1 Executive Summary

Over the last decades, the access to mineral raw materials (MRM) deposits has increasingly been limited by diverse constraints. Some of these constraints are related to state activities and others to societal activities. This topic report analyses the state-related activities, which can hinder the access to the MRM deposits, i.e., future mineral exploration and mining, and by doing so to limit the future potential for mineral raw materials. Societal constraints can fortify these limitations, by through a lack of societal acceptance for mining activities. In mid- to long-term, restricted accessibility to MRM will lead to shrinking amounts of mineable mineral resources. Ultimately, restricted accessibility can reduce the competiveness of the European minerals industry. For these reasons, active resolution and prevention of land use conflicts and other conflicts, and implementation of well-defined legislation are crucial elements to support the sustainability of the European minerals industry.

The stakeholders involved in the legislative issues this process are legal authorities, governments and regulators. A major potential matter of dispute lays in land-use issues. Diverse land-use types, for example, nature conservation, tourism and reindeer herding, can restrict the area available for exploration and/or mining, and thus the access to mineral deposits. The nature of the land-use competition seems to be similar in different countries and regions, and so do the land-use conflicts. However, the scale and the underlying reasons of the land-use conflicts differ, and so do the approaches to solve the problems.

The aim of this topic report is to identify the sources and types of legislative and governmental/executive constraints on mineral exploration and exploitation, and to determine the reasons behind them. Further, the current and potential future influence of these constraints for the development of mining activities in Europe will be explored.

The topic report analyses scientific and non-scientific articles and reports related to the topic with a focus on Europe. In addition, a survey among the project partners was conducted focussing on mining law and land-use planning in EU member states. The survey was based on a questionnaire which allows gathering orderly comprehensive information. A simple form of the questionnaire was designed to be easily filled by national Geological Surveys, and the mining authorities.

The scope of this topical report includes:

1. identify sources/factors of legal and governmental constraints
2. identify sources of resource-related conflicts in EU countries
3. evaluate tendencies/trends in their occurrence

The topic is exemplified by four selected case studies that explore country specific aspects of legislative and governmental/executive constraints on a national or regional level. The case studies allow to abstract general observations made according to the literature and the questionnaire.

1.2 Introduction

1.2.1 Relevance of the topic

Mineral deposits are anomalies in the earth crust, geographically fixed and not renewable. Furthermore, mineral deposits have a finite size. In the case of some minerals and in particular metal ores, the size of the exploitable deposit is often determined by economic factors such as metal prices and cost of production. Deposits which are not economic to work under current circumstances may become economic in future. EU is currently strongly dependent on the import of several important raw materials. Active mineral exploration, mine development and implementation of new, innovative technologies in recovery of useful minerals give the industry an opportunity to reduce this dependence. Necessary condition is to maintain access to the deposit area. Access to mineral deposits should, therefore, be protected, or not at least be accidentally blocked, to ensure the possibility for extraction when the need arises. These are necessary actions to ensure the further development of the mining industry in the EU.

Mining as an economic activity, with often large industrial scale, requires legal and financial regulations. Such regulation also requires determination of the relationship of ownership of mineral deposits in relation to ownership of land where mineral deposits occur. In addition, correlation of mining activities with other forms of land use planning, in particular with the progressive housing and environmental protection requirements are needed. Formal important factor that may limit the mine development is the need to maintain the standards of cleanliness of the environment and also in the post-mining land use.

Information obtained from the Minerals4EU project participants, based on the questionnaire, allows the description and comparison of legal regulations in relation to mining activities as well as the current state of the access to mineral deposits in member states. The data allows also the analysis over the most effective solutions to improve access to MRM deposits. It also announces the challenges creating obstacles in the sustainable development of mining in some countries that endangers the security of the raw material supply from the domestic sources both for the individual countries and the EU.

1.2.2 Illustration by case studies

Numerous formal and legal conditions related to mining activities are discussed in detail in the selected case studies CS. Their aim is to highlight how the legal and governmental aspects related to mineral exploration and mining are set in the dissected countries, but also highlight the challenges in this area of activities. Case studies also indicate the sources of conflicts of present and future mining activities with other forms of spatial planning. In particular, this applies to the accessibility of land on which mineral deposits are known to occur.

1.2.2.1 Case study "Legislative and governmental challenges - Finland"

In Finland, the Mining Act is the principle statute related to exploration and mining. It governs the procedures related to the granting of exploration and exploitation rights, protects public and private interests and public safety in regards of possible environmental impacts of mining activity harmonizing of the Environmental Protection and Nature Conservation Act. The last one is the principle statute related to nature conservation in Finland, governing, for example, the most common protected areas.

Exploration and mining activities in Finland are subject to permits issued under the Mining Act. Exploration which does not cause any damage or more than minor inconvenience (like in the phase of prospecting work) may be performed without a permit. In addition to a mining permit, mining operations are also subject to a mining safety permit and an environmental permit (issued under the Environmental Protection Act). Mining Act is always applied to measures and activities governed by it (prospecting, exploration and mining). Due to the fact that the Mining Act does not exclude other legislation from being applied to the said activities, but rather obliges it to be applied in compliance with other legislations, it follows that the provisions found in statutes governing the protected areas stipulate how authorities and operators should act in the said areas. This can vary depending on the area in question, and therefore it should be emphasized that the operator, prior the commencement of operations, should contact the competent authorities to ensure that the intended measures do not constitute a prohibited action in the site in question.

Exploration does not limit the property owner's right to use the area or to govern it nor does an exploration permit need to be based on a legally binding plan. Mining activity, on the other hand, must be based on a legally binding plan in accordance with the Land Use and Building Act, or the matter must be otherwise sufficiently explored in co-operation with relevant authorities.

1.2.2.2 Case study "Legislative and governmental challenges - Poland"

In Poland principles of using natural environment resources, including mineral deposits, are regulated by several legislative acts: *Law on Natural Environment Protection, Geological and Mining Law, Act of Preserving the National Character of Strategic Natural Resources of the Country, Water Rules, Act of Protection of Agricultural and Forest Land, Nature Protection Law, Spatial Planning Act, Law on Wastes, and some more detailed local law regulations.* Seemingly the volume of rules is sufficient, but they are inconsistent and incomplete. It seems to be main reason for several drawbacks, like conflicts and lengthy concessions procedures, that constraint the proper development of the Polish mining sector. Management of developed deposits, which are under current exploitation, and their protection are carried out following the *Geologic and Mining Rules* and in frames of concession policy and extracting supervision made by the State Mining Office. At this background, inadequacy of legal regulations in terms of spatial planning and environment is remarkable, especially with respect to protecting identified, yet still undeveloped deposits and the perspective areas. Presented case study shows several legislative

aspects related to the exploration and mining activity in the aspect of mineral deposit area. The most severe problems are: the inadequacy of legal regulations (both inconsistency and incompleteness) at the junctions between mining activities and other forms of land use hindering the access to mineral deposits. The given examples consider areas both with current active mines as well as mineral deposits where mining could be planned in the future.

1.2.2.3 Case study "Legislative and governmental challenges - Sweden"

The basis for the granting of exploration permits and mining concessions in Sweden is the Minerals Act, which is an exploitive law. The Minerals Act aims to protect public and private interests and public safety. It also aims to prevent negative environmental impacts in terms of activities performed in accordance with the Mineral Act. It does not replace other legislation but is rather applied in accordance with other applicable legislation. The environmental aspects of exploration and mining operations are governed by the environmental legislation which is gathered in the Environmental Code. The type of activities undertaken in accordance with the Minerals Act and its conventional position always requires a trial of the operations against the Environmental Code. Some laws applies to exploration and mining, by definition, but the laws are also to be assessed case by case, that the applicable law is determined depending on the nature and type of activities performed and the current location. Some statutes must be considered, regardless of the type of business and the area in question.

Exploration and mining activities in Sweden require permits and authorizations issued under the Minerals Act. The simple survey work that falls under the roam can be done without permission; all other work requires a permit. Mining Inspectorate is the authority granting exploration permits. Besides Bear staining concession, to start mining operations, an environmental permit issued under chapter 9 of the Environmental Code is required, and even a water permit issued under Chapter 11 of the Environmental Code is required. Prerequisite for other conditions can also occur. The need to acquire other condition is assessed from case to case.

Environmental Code replaces since 1998 15 different laws and is applicable so that human health and the environment are protected against damage and nuisance regardless of whether these are caused by pollution or other influences In addition it guarantees that valuable natural and cultural environments are protected and cared for, and biological diversity, land, water and natural environment are used so that from an ecological, social, cultural and economic perspective, sustainable management is secured.

Due to the fact that the Minerals Act not preclude other legislation from being applied to those activities without obligation to apply pursuant to other laws, it is clear that the provisions in the law for the protected areas specified how the authorities and actors should act in those areas. This can vary depending on the area in question, and therefore it should be underlined that the operator should contact the relevant authorities, prior to the commencement of operations, to ensure that the planned measures does not constitute an illegal operation in the area in

question. Exploration does not limit the property owner the right to use the area where the exploration is carried out, unlike the mining operation, based on a legally binding plan under the Land Use and Planning and Building Act.

1.2.2.4 Case study "Aggregates plants and their future - legislative and governmental challenges in SEE countries "

Securing reliable and undistorted access to raw materials is an increasingly important factor for the EU's economic competitiveness. One of the pillars of The Raw Materials Initiative (adopted by European Commission in Nov. of 2008) is setting the right framework conditions within the EU in order to foster a sustainable supply from European sources (EC Guidance 2010).

To maintain access to aggregates in South East Europe (SEE) several projects were launched (SARMa and SNAP-SEE) dealing with this important challenge for the SEE countries. Presented case study summarises some the most important issues related to aggregate access and shows the case of Croatia where mineral planning is obligatory both on National and regional level and access to minerals and aggregates is a part of national and regional spatial plans.

In order to have access to aggregates it is critical to adapt an Aggregates Planning Policy which required ensuring the sustainable supply of aggregates. In this planning policy the primary and secondary aggregates should be managed together in order to protect the primary resources and to reduce the volume of mining and C&D waste and industrial by-products. In order to ensure the access to aggregate resources, Aggregates Plans must look at least 20 years ahead and should be updated at least in every 5-10 years.

1.3 Influencing Factors

The accessibility of mineral deposits and development of mining activities in the EU are governed by relevant legislation at the national level. These legislations differ from each other, but sometimes show high similarity. To identify potential difficulties, presenting the existing legal requirements related to the mining activity in the EU countries area.

The review over national legislations, based on the questionnaire and literature, allows indicating some of the main determinants of access to resources and the best legal solutions. They are recommended to be used on the basis on determining the best practices.

In general, legal and governmental issues related to the accessibility of mineral deposits are controlled by:

Ownership of mineral deposits

One limiting factor in the accessibility on mineral deposits is the determination of their ownership. It should be considered in two aspects: in relation to land ownership, and as

a subject of permitting and variety of accompanying fees. Mineral deposits in most European countries are partially or fully state owned. In some countries the ownership of mineral deposits depends on the type of minerals (in Norway, United Kingdom, Slovakia), and sometimes on their position in relation to the earth's surface. In such cases division of surface (open-pit) or underground exploitable deposits is used. Near surface deposits belong to the landowner in: Austria, Netherlands, Poland (except the lignite deposits), United Kingdom (except the Crown Estate: gold, silver and offshore deposits), Slovakia (according a list). The deep located mineral deposits belong to the landowner only in United Kingdom (except the Crown Estate), Slovakia (according a list). Mineral deposits in Austria, Germany and Finland may be the property the one who documented them. In Finland both land-owner and finder of a deposit have ownership related rights and procedures do not differ in respect of the type of mining (open pit, underground).

Permitting

Exploration and mining activity require permits in almost all European countries. Permission is required already at the exploration stage in most of the countries. Additionally separate mining concession is required, too. There are only few exceptions related to the scale of extraction and/or the type of mineral. For instance in Albania small scale gem stone mining doesn't require a permit, in Poland the small scale (to 10m^3/y) natural aggregates extraction for the own needs doesn't require a permit and in United Kingdom the exploration license regulation differ depending on the regions with the special regard to the Crown Estate. In UK mining and mineral extraction activities require a Planning Permission which is issued by the different level of Planning Authorities.

There are various decision-making bodies related to licensing. In most countries they are the state level authorities and therefore national ministries or agencies like Ministry of the Environment, Economy, Industry or Science, Mining Authority, Council of Ministers or Crown Estate MMM (Table 1).

Table 1: Exploration and mining licenses decisions-making bodies in the member states

Country	State/governmental level authorities	Regional authorities	Local authorities
Albania	x		
Austria	x	x	
Belgium			
Croatia	x		
Cyprus	x		
Czech Republic		x	
Denmark/Greenland	x		
Finland	x		
France	x		
Germany		x	
Greece	x		
Hungary		x	
Ireland	x		
Italy	x		
Netherland	x		
Norway	x		
Poland	x	x	x
Portugal	x		
Romania	x		
Slovakia	x	x	
Slovenia	x		
Spain	x		
Sweden	x		
Switzerland		x	
Ukraine	x		
United Kingdom	x	x	x

Perhaps the most complicated situation exists in Poland, where there are three types of concession authorities. The scope of their responsibility is dependent on the ownership of minerals, scale of planned and operating system. Ministry of the Environment grants concessions for exploration and mining of minerals owned by the State Treasury, and all minerals from offshore territory of Poland. Marshal of the voivodeship (dictrict) grants concessions for basic and common minerals owing by landowners, extracted from area of 2 and more hectares. The lowest instance of permitting is Starost (local authority), who grants licenses for common minerals extracted from area less than 2 ha, mining output not greater than 20 000 m^3/y and without explosives. Additionally the small scale natural aggregates extraction for the own needs does not require a permit.

Generally, the permit is required for the mining activity related to metallic ores and some industrial minerals, and the licensing body is at the national level (Ministries, or Governmental Agencies). Often mining of the other common minerals requires the permit, but the licensing body is a regional authority. Sometimes such type of mining activity is only registered.

Fees and taxes

Formal solutions for the fees associated with the mining activity in the European countries are varied, but generally they are associated with two main domains: mineral deposits ownership and mining as commercial economic activity. In case of mining operator leasehold related to the use of land, the tenancy fee occurs.

So the popular solution used in most countries is the royalty (as a derivative of mineral deposits property) and additionally tax for industrial activity. Such regulations can be reported in: Denmark/Greenland, United Kingdom, Netherlands, Ireland, Spain, Greece, Albania (additionally mining usufruct) and Romania (sometime other payments). Several combination of payment types are shown in the table 2:

Table 2: Type of payment to authorities by country

Types of payment to governmental/regional/local authorities	Country
Royalty and tax	Denmark/Greenland, United Kingdom, Netherlands, Ireland, Spain, Greece, Germany, Albania (additionally mining usufruct), Romania (sometime other payments).
Royalty only	Austria, Portugal, Hungary (sometime other)
Tax only	Croatia, Cyprus, Ukraine, Slovenia, Norway
Mining usufruct	Switzerland
Royalty and mining usufruct	Czech Republic,
Tax and mining usufruct	Finland, Poland, Slovakia(sometime other),
other	Italy
Free (without payment)	France

Right of access to the land where mineral deposits are located

Access to the land where mineral deposits are located is one of the most important factors controlling the mining activity and sometimes also mineral exploration. Access to land is required at the stage of permitting procedure in almost all European countries, regardless the ownership of the mineral deposits. Access to land is dominated by two forms of ownerships: ownership of the mining operator (existing or purchase of land) or leasehold of the mining operator. The first one (mining operator ownership) exists in: Greece; France, Norway and Albania (state land property). The second one (mining operator leasehold) exists in: Croatia, Denmark/Greenland, Italy, Netherlands, Portugal, Switzerland and Ukraine. In several countries both of them are common: Austria, Cyprus, Czech Republic, Finland, Germany, Ireland, Hungary, Poland, Romania, Slovakia, Spain and United Kingdom.

Nature protection requirements

Nature protection is one of the most important competitors with the mining activities in the terms of land-use. Importance of nature protection have increased rapidly in recent years due to the greater social awareness in environmental issues, implementation of the principles of sustainability and the activity of environmental organizations.

The need to protect nature may restrict the scale and scope of mining in many cases, and often even preclude the operations. In addition to traditional forms of protecting the nature (e.g., national parks, natural monuments and nature reserves) a new forms of protection have been created lately (eg., Natura 2000 network). Dynamic growth of protected areas in almost all EU countries, and established environmental limits (Natura 2000 net) would maintain this trend. This significantly reduces possibility of mining development in many regions and causes accumulation of the land-use related conflicts.

Mining activity in the national parks and nature reserves is not allowed on in most European countries: Albania, Austria, Croatia, Cyprus, Czech Republic, Finland, Germany, Greece, Hungary, Italy, Ireland, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, and Ukraine. Exceptions are: Denmark/Greenland, France, United Kingdom, Netherlands and Portugal. The same restrictions (no mining activity) relate to the mineral deposits located inside Natura 2000 network are in force in: Cyprus, Denmark/Greenland, Hungary, Italy, Germany, Romania, Slovenia, Slovakia, Switzerland, and Ukraine. Exploration permits with special restrictions can be granted for Natura 2000 in Albania, Austria, Croatia, Czech Republic, Finland, France, United Kingdom, Greece, Netherlands, Ireland, Poland, Portugal, Spain. Mining activity in the Natura 2000 areas is formally possible in: Albania, Austria, Croatia, Czech Republic, France, Finland, United Kingdom, Greece, Netherlands, Ireland, Poland, Portugal, Spain but only in cases of no significant adverse environmental impact to the ecological values for with the area is protected (according to the EIA procedure). Environmental Impact Assessment is an important document in the permitting procedures in many European countries and its results often determine the possibility to develop/proceed mining operation. The scope of environmental report is large and includes all the elements of the nature environment and all possible factors of anthropopression associated with mining. Often however, it is inadequate and to wide compared to the scale of the planned mining (e.g., in Poland).

In many countries, there are other known legal forms of nature protection such as landscape parks or similar ones. These form also limitations for mining depending on the scale of the impact of operations to the environment. Usually, they do not exclusively exclude the mining activities, however in Croatia, Cyprus, Hungary, Ireland, Italy, Romania, Slovenia, Switzerland and Ukraine mining in these areas is not allowed. A specific case seems to be Finland, where the legislation does not recognize landscape parks.

Spatial planning

Spatial planning requirements form a typical barrier for the development of mining activity, in particular – open-pit mines. In the core of the challenge is the need to ensure long-term access to the mineral deposits areas and prospective areas, which interferes with other forms of spatial development. These conflicts manifest themselves most strongly near the cities, with a high demand for land for housing and construction, as well as in areas of large investments, for example, highways. The nature of these conflicts seems to be similar in almost all countries, but the scale and the underlying reasons of the land-use conflicts may differ. To a large extent the conflicts depend on the legal and formal solutions applied, as well as the method and procedures for resolving such contentious issues. These challenges, however, remain not fully resolved in most countries.

The best solution seems to be to include some form of legal protection over mineral deposits areas by the relevant provisions in the legislation on spatial planning. This solution of guaranteeing priority of mining character in land use is, however, used in only a few EU countries: Albania, Czech Republic, Greece, Hungary and Romania.

In most European countries it is required to submit an outline of deposits on the maps, but this does not mean automatic reservation of the land for mining development. It is only an indication of the presence of the mineral deposits as one of the important elements in planning: the potential use which should be taken into account when determining over the use of land. The boundaries of mineral deposits are shown in the land-use planning maps of different scale (mainly on basic and regional scale) in: Albania, Cyprus, Czech Republic, Finland (only deposits with active mining or mine planning), Greece, Hungary, Poland, Portugal, Slovakia, Slovenia, Switzerland and Ukraine. Additionally they are shown in other land-use documents in UK, Germany, Austria, Denmark/Greenland and Ireland and protected.

The formal solutions related to the mineral deposits accessibility in the land use planning procedures are different in different countries. These include: preparation of detailed maps of the distribution of mineral deposits or management plans on a scale of municipalities, and inclusion as attachments to other planning documents. Decisions on the method, type and sequence of land-use are taken during the discussion of the administrative bodies with or without expert's participation and are formally recorded. Good practices in this area are applied in United Kingdom, Austria and Germany.

The permitting authorities are in the most European countries government or regional/ local administrative bodies. In some cases (UK and Ireland) they are land-use planning offices. Sometimes (in unresolved or cases) the court decides, as in Finland, UK, Netherland and Ireland.

Additionally, in quite a number of conflict cases related to land-use, decisions are made by the different instances: mainly by administrative bodies or court, sometimes with the help of expert and/or social dialogue. This is a case for example in Albania, Austria, Denmark/Greenland, Cyprus, Finland, UK, Greece, Netherland, Hungary, Italy, Slovakia and Switzerland).

The specific aspect of mineral deposits accessibility is associated with mineral aggregates. Natural aggregates are a common and apparently readily available mineral commodity. But in fact, their use is increasingly restricted by housing, infrastructure and developed land conservation. The problem was described in details in the case study concerning the SEE countries of Europe, in particular in Croatia. It was signalized in the Poland case study. Because of the crucial of economic importance aggregates for the infrastructure development and protection of the sea coast an Aggregates Management Plan at the national level is expected to be implemented. There are several obstacles. The most important of them seems to be lack of harmonization the legal solutions in mining, spatial planning and nature protection.

1.4 Regional Variation

There are no clear regional and political variations of legal and governmental issues concerning regulation of access to mineral deposits and prospective areas. However, it can be noted that in the countries of former central economy system the role of the state and government bodies is larger, despite adapting various regulations of EU legislation. The most important issue, protection of the accessibility of mineral deposits, is guaranteed by law in Albania, Czech Republic, Slovakia and Hungary, and directly through appropriate provisions on land-use planning or by the ownership of mineral deposits in Albania and Romania. In contrast to these countries, in Poland there are no good solutions in this area mainly due to inconsistencies in law regulations which is described in detail in the case study. Similar problem was pointed in SEE European countries due to limitations on the availability of natural aggregates deposits.

Access to the mineral deposits and the prospective areas are guaranteed also in Germany and UK, but using a slightly different regulations. In addition, several similar solutions are used in Scandinavian countries. In Finland the general rule is that land-use plans should be made on the municipality level before a mining permit can be issued. It requires cooperation between the mining operator and various authorities to determine the impact of mining activity to land use. Requirements for land-use plan may be set aside only in case of small scale of planned mining activity. Decision on mining permit ensure the access to the deposit and is shown in the Finnish Land Information System. These solutions don't guarantee free access to the mineral deposits, but minimise the scale of potential conflicts.

1.5 Temporal Variation

The scope of the study does not allow for time tendencies evaluation neither as statistics nor the descriptions, because it was concerned on the current state of law regulations. It only allows presenting some suggestions in this regard. There are two main reasons for the limitation of the access to deposits: 1) growth of the legal nature protected areas and 2) dynamically growing infrastructure development. The first one is driven by the EU directive related to the Natura 2000 areas and the required share of such areas in the total area of each country. In many countries it has introduced the prohibition of mineral exploration and mining companies to entry in the area and in many others increased the bureaucracy in obtaining the permits. Legislative requirements related to the land use and spatial planning are known for many years and seems to increase over time due to growing deficit of available land.

1.6 Knowledge Gaps

1.6.1 Important sources of information and data

Three pillars of information were used in preparing the presented topical report:

- **Questionnaire:** The topical report is based on the questionnaire which was elaborated during the preparation of foresight study. It was sent to the Minerals 4EU project participants with a request to fill. Almost all participants answered the questionnaire giving the current information about the: Mining Law, land-use planning and legal nature protection regulations.
- **Literature:** Additionally many publications have been used to improve the knowledge base and to obtain more data. The list of references is showed in the reference list.
- **Case studies:** Prepared case studies allow presenting the details of the legal and governmental regulations and solutions applied in the selected countries.

1.7 Conclusions and Outlook

1.7.1 Review

The challenge for sustainable management of mineral deposits related to the aspect of their accessibility is to find a balance between securing minerals supply, and protecting the environment and various forms of land-use. The point of balance depends very much on the range of policies adopted by governments. In the core seems to be implementation a long term and stable resource or minerals planning policy in each country.

Based on the review of practices in different Member States, the key elements of minerals planning policy appear to be a clearly defined and understood legal and administrative framework which regulates access to mineral deposits, defines mineral ownership rights,

establishes durable and non-restrictive system of mining fees/taxes and provides conflict resolution mechanisms. A successful minerals planning policy should create the political, legal and administrative environment, which is necessary to ensure the supply of minerals to society within the framework of sustainable development, in which all three components (environment, economy and socity) are considered to be equally important. Minerals planning policies which create an environment of conflict may in turn result in the unusability of mineral reserves, lead to an unsustainable minerals industry and result in a long-term shortage in minerals supply.

1.7.2 Next steps

Regarding the topical analyses, there are some suggestions and recommendations for the future legal and governmental activity related to improving the accessibility of mineral deposits. This issue affects not only big metallic ores or energy raw materials but also industrial minerals and common natural aggregates deposits.

1. Due to the deepening deficit of available land and increasing land-use conflicts, strengthening the efforts for the protection of economically valuable minerals in order to guarantee their use in the future is necessary. This applies, in particular, the limitations of such forms of land use which prevent access to mineral resources. For this purpose it seems necessary to better link the mining law with provisions on land-use planning.
2. To improve the situation in countries where existing legal solutions guaranteeing the accessibility of mineral resources are inadequate, it is desirable to exchange the good practices and attempts to implement solutions used, for example, in United Kingdom, Austria and Germany.
3. Due to the economic importance of the accessibility of mineral resources, the possibility of developing a specific EU directive containing guidelines in this regard should be considered.
4. To improve the attractiveness of the minerals sector in Europe to meet the growing domestic need for raw materials, active pro-investment policies in the mining sector should be implemented. Simplification of the licensing procedures and improved stability of the charges related to mining activity could also improving investment situation. Additional funds could be devoted to improving the technical solutions that minimize the effects of mining activities, contributing both to the improvement of the natural environment and a better image of the mining industry towards the society. As an example of a country leading an exploration and mining friendly policy in Europe is Finland, whose solutions are detailed in the case studies (CS)
5. For securing long-term supply of bulk exploited minerals eg. natural aggregates it is recommended to develop national and regional Aggregates Development Plans and their relation to planning documents. The other solution is to implement the harminized Mineral deposits Management Plans at the community level, as one of the spatial planning document.

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2 Legislative Challenges in Mining of Finland

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2.1 Executive Summary

Exploration and mining activities in Finland are subject to permits issued under the Mining Act. However, exploration which does not cause any damage or more than minor inconvenience or disturbance (prospecting work) may, in most cases, be performed without a permit. In addition to a mining permit, mining operations are also subject to a mining safety permit issued under the Mining Act and an environmental permit issued under the Environmental Protection Act. Usually a water permit issued under the Water Act is further needed. Prerequisite to obtain other permits may also be present. The necessity to acquire other permits is assessed on a case by case basis.

Lately, the overlapping of Natura 2000 areas with many claim areas especially in Northern Finland has created criticisms towards applied legislation. This is due to the lack of clarity in some cases where mineral exploration and mine development is planned and implemented in Natura 2000 areas. The existing and up-coming decisions about the mineral exploration and mining activities on the Natura 2000 regions may have an effect on the future activities on these areas in Finland but also on the other regions in the European Union. The suggestion to improve this situation is to develop a clear procedure for mineral exploration and mining activities in protected areas, especially in Natura 2000.

2.2 Introduction

In this case study, we describe the legislative framework controlling exploration and mining industry in Finland with a specific emphasis on 1) how are exploration and mining activities regulated in Finland's protected areas and 2) the legal relation between mining and land use in Finland: How is land use and planning in Finland taken into consideration in mining legislation and vice versa?

The analysis is based on effective national legislation (relevant acts, decrees and regulations), legal practice (decisions of Supreme Administrative Court), preparatory works, decisions issued by national authorities (e.g. exploration and mining permits issued by the Finnish Mining Authority) and other supplementary material (e.g., guides issued by national authorities, scientific reports, statistics and academic articles). The study includes several examples of how exploration and mining activities and other land use and the values of protected areas have been reconciled in practice.

Finland is situated in a Northern Europe with population more sparse than in a Central Europe. Most of the active mining sites are situated far from the largest cities although all of them have smaller towns near-by. Although the population is sparser, the nature conservation and nature tourism is common in the country and occur partly in the same areas with mineral potential. Lately the most intensive land-use related discrepancies in new exploration and mining projects have related to these two issues with overlapping or near-by nature tourism and nature

conservation areas. The idea of this case study is to reflect the current situation in land-use rights in exploration and mining from the viewpoint of legislation.

2.3 Analysis: Legislation governing exploration and mining activities in Finland

2.3.1 Mining Act

The principal statute governing mining activity in Finland is the Mining Act (621/2011), which came into force 1 July 2011, repealing the 1965 Mining Act (503/1965). The Mining Act contains provisions on, *inter alia*, the exploration and exploitation of mining minerals, proceedings establishing a mining area in Finland, supervision, mining safety and compensation for exploration and mining activity. The Finnish mining legislation is based on a claim system[1] where exploration is subject to a permit issued by the mining authority. Exploration permit may be applied and issued to an area owned by a private landowner or to state owned land. The exploration permit gives the permit holder the right to conduct exploration work within the exploration area and the priority to apply for a mining permit. Prior applying for an exploration permit the operator may conduct prospecting work on the site, which is not subject to any permit or license. The operator may also reserve the area in order to obtain priority for applying for an exploration permit regarding the site in question.

Mining acitvity in Finland is subject to *inter alia* a mining permit, issued under the mining act and in most cases by the mining authority. The mining permit, when issued, gives the permit holder the exclusive right to exploit the mining minerals found within the borders of the mining area. There is no distinction made between state owned land or privately owned land in regards of mining permit, making it possible for the permit holder to exploit minerals found on private land owner as well as on state owned land. The said applies also to prospecting work, exploration and the reservation of the area. The competent authority regarding decisions related to exploration and mining permits is usually the Finnish mining authority, which according to Section 4 of the Mining Act is the Finnish Safety and Chemicals Agency (Tukes).

The Mining Act recognizes the land owners right to the land and to the bedrock, which is realized through an excavation fee scheme, where, according to Section 100 of the Mining Act the mining permit holder is obliged to pay an annual compensation to the land owners included in the mining area. The annual amount of the excavation fee per property is 50 EUR per hectare and an exacavation fee calculated based on the value of the mining minerals exploited during

[1] The current Mining Act uses the term "exploration permit" as a synonym to the term "claim right" found in the repealed Mining Act. Both terms are nonetheless used today since the the repealed Mining Act is still applied on matters brought up before 1 July 2011. There are still matters (e.g. claim applications) pending which are to be processed in accordance with the repealed Mining Act and the mining auhtority estimates that the last decisions regarding claim applications will be made in 2015. According to the repealed Mining Act a claim right may be valid for a maximimum period of five years. Taking this into account, the term "claim right" will be in use untill 2020.

the year. The excavation fee scheme applies also when acting on state owned land and same calculation method of excavation fee applies both to private land owners and to the state as a land owner.

The excavation fee payable to the state, if applicable, is the only fee payble to the state regarding mining activity. No mining tax has been introduced. Normal corporate tax is applied to mining companies. State owned land in Finland is mostly administered by Metsähallitus, a state enterprise administering more than 12 million hectares of state-owned land and water areas. Metsähallitus is to be considered as the land owner referred in the Mining Act when acticity takes place on state-owned land.

Reservation notification may be applied to reserve an area by submitting a reservation notification to the mining authority. Reservation is a tool by which the applicant reserves an area in order to prepare an exploration permit application to the said area. According to Section 32 of the Mining Act for the purpose of preparing an application for an exploration permit an applicant may reserve an area for himself by submitting notification to the mining authority about the matter (reservation notification). Areal restrictions regarding a reservation are laid down in Section 44 of the Mining Act. Accordingly the reservation notification may not concern

- an area that forms part of an exploration area, mining area, or gold panning area belonging to a party other than the applicant on the basis of a permit referred to in this Act
- an area located at a distance of less than one kilometre from an area mentioned above
- an area that has previously been a reservation area until one year has passed since the expiry or cancellation of the reservation decision.

According to Section 46 of the Mining Act an exploration permit may not be granted to an area which reservation notification has been made by another applicant. According to Section 32 of the Mining Act the party first applying for a permit in accordance with the provisions laid down in the Mining Act has the priority for an exploration permit. If a mining permit is applied for with respect to a deposit located within an exploration area, the exploration permit holder has the priority to the mining permit if the permit holder submits an application for a mining permit in accordance with the provisions laid down in the Mining Act prior of the expiry of the exploration permit.

It should be noted that a resevation decision does not entitle its holder to commece exploration work in the area nor does it give the decision holder the right to exploit mining minerals found within the reservation area. Assessment of the possibility of issuing an exploration permit or a mining permit to the area in question is not made by the mining authority when decision regarding reservation is made. Reservation under the Mining Act is intented only to give privilege for submitting an exploration permit application to the mining authority. The reservation remains valid for a maximum of 24 months after issuing of the reservation

notification.[2] Provisions regarding prospecting work apply on reservation area. Exploration work with the land owners consent is allowed, if not restricted by any other statute.

Prospecting work. Everyone has the right, even on another's land, to conduct geological measurements and make observations and to take minor samples, provided that this does not cause any damage or more than minor inconvenience or disturbance.[3] This activity is defined as prospecting work and it is not subject to any license. There are no areal exceptions regarding the applicability of the provisions governing prospecting work. The provisions regarding prospecting work are therefore applicable also when prospecting work is to be carried out in e.g. protected areas. As a general rule, the operator is not obliged to obtain any permission from the landowner or authority when conducting prospecting work as referred in Section 7 of the Mining Act. Certain exceptions regarding the general rule laid down above do exists; according to Section 7 of the Mining Act prospecting work is strictly forbidden in a cemetery referred to in the funerary services act (hautaustoimilaki 457/2003) or in an area belonging to a private grave, or within 50 metres of these.

Further, prospecting work is subject to a permission licensed by an authority or institution competent in the matter, or that of the relevant holder of rights in the following areas:

- an area used by the defence forces, or any area controlled by the Border Guard where movement is restricted or prohibited, or within 100 metres of such an area
- an area where movement is restricted or access denied to outsiders;
- on a traffic route or passage in public use;
- within 150 metres of a building intended for residential or work use, or comparable space, and any adjoining private yard, or the site for such a building, if a permit required for building referred to in the Land Use and Building Act has been granted for it and construction has begun;
- an area in horticultural use;
- within 50 metres of a public building or utility, or either a power line with a voltage of over 35,000 volts or a transformer station;
- in any other area designated for special use.[4]

In addition to the restriction mentioned above, activities in accordance with the Mining Act must comply with other applicable legistlation.Therefore, provisions governing *inter alia* certain protected areas may restrict prospecting work, e.g. by restricting the entry in the area. The provisions presented in this chapter should however be borne in mind through out this study. The party in charge of prospecting work shall, prior to commencement of prospecting work notify the owner and holder of real estate regarding the upcoming prospecting work.[5] Prospecting work does not entitle the operator to use motorized vehicles in the area without

[2] Section 76 of the Mining Act
[3] Ibid. Section 7
[4] Ibid.
[5] Ibid. Section 8

the landowners consent. Measurements and other activities performed on foot, complying with the requirements laid down in Sections 7 and 8 of the Mining Act do not require landowners consent in order to be performed.

Exploration permit. Exploration is subject to an exploration permit. However, the operator may conduct exploration without an exploration permit if consent of the landowner regarding the exploration work is obtained. In certain cases the consent of the landowner does not give the operator the right to commence exploration work; an exploration permit is always required according to Section 9 of the Mining Act if e.g. exploration could cause any harm to people's health or general safety, damage to other industrial and commercial activity, or any deterioration in value related to the landscape or nature protection values.

If prospecting work cannot be carried out due to the restrictions laid down in Section 8 of the Mining Act, or the property owner has not given consent to exploration work, exploration is, as stated above, subject to an exploration permit granted by the mining authority.[6]

There are no areal exceptions regarding the applicability of the provisions governing exploration. Therefore these provisions are applicable also when exploration is to be carried out in e.g. protected areas. The Mining Act however contains provisions regarding areal restrictions where exploration may be carried out. In addition, activities in accordance with the Mining Act must comply with other applicable legistlation. Therefore, provisions governing *inter alia* protected areas may restrict exploration in a specific area. The provisions presented in this chapter should however be borne in mind through out this study, since exploration is always subject to exploration permit issued by the mining authority. According to Section 7 of the Mining Act exploration is strictly forbidden in a cemetery referred to in the funerary services act, nor in an area belonging to a private grave, or within 50 metres of these.

Further, exploration is subject to a permission issued by the authority or institution competent in the matter, or that of the relevant holder of rights in the following circumstances:

- an area used by the defence forces, or any area controlled by the Border Guard where movement is restricted or prohibited, or within 100 metres of such an area
- an area where movement is restricted or access denied to outsiders;
- on a traffic route or passage in public use;
- within 150 metres of a building intended for residential or work use, or comparable space, and any adjoining private yard, or the site for such a building, if a permit required for building referred to in the Land Use and Building Act has been granted for it and construction has begun;
- an area in horticultural use;
- within 50 metres of a public building or utility, or either a power line with a voltage of over 35,000 volts or a transformer station;
- in any other area designated for special use.[7]

[6] Section 9 of the Mining Act

An exploration permit does not authorize exploitation of the possible deposit found within the exploration area. [8] However the exploration permit holder has the priority to the mining permit if the permit holder submits an application for a mining permit. Otherwise, the party first applying for a mining permit shall have priority.[9]

According to Section 10 of the Mining Act the permit holder has the right, on the permit holder's own land and that owned by another landowner, in the area referred to in the permit (exploration area):

- to explore the structures and composition of geological formations
- to conduct other exploration in order to prepare for mining activity and other exploration in order to locate a deposit and to investigate its quality, extent, and degree of exploitation
- to build, or transfer to the exploration area, temporary constructions and equipment necessary for exploration activity

An exploration permit gives the permit holder the right to drive a motorized vehicle even on another's land without the need to consult the landowner.[10] However, in certain areas (e.g. some nature reserves) the use of motorized vehicle is prohibited according to the rules and regulations of the area, making the use of the vehicle subject to a permit issued by the institution in charge of the area. The exploration permit's holder shall limit exploration and other use of the exploration area to measures necessary for the purposes of exploration activity. The measures shall be planned so as not to cause an infringement of public or private interests that is avoidable by reasonable means. Exploration pursuant to an exploration permit, and other use of the exploration area, shall not cause:

- harm to people's health or a danger to public safety
- essential damage to other industrial and commercial activity
- significant changes in natural conditions
- essential damage to rare or valuable natural occurrences
- significant damage to the landscape.[11]

The exploration permit holder is required to notify the land owners in the exploration area, and other holders of rights, in advance of all field work that could cause any damage or harm, and of any temporary constructions to be erected. The holder of the exploration permit is also obliged to inform authorities overseeing public interests about the fieldwork, as provided in more detail in said permit.[12] An exploration permit remains valid for a maximum of four years. [13] When

[7] Ibid. Section 7
[8] Ibid. Section 10
[9] Ibid. Section 32
[10] Section 4 of the Off-road traffic act
[11] Section 11 of the Mining Act
[12] Ibid. Section 12
[13] Ibid. Section 60

considering the period of validity of an exploration permit, the mining authority shall pay special attention to *inter alia* the time necessary for implementing the relevant exploration plan.

The validity of an exploration permit may be extended for a maximum of three years at a time. In total, the permit may remain valid for a maximum of 15 years.[14] The prerequisite for extension of the validity of an exploration permit is *inter alia* that exploration has been effective and systematic. According to Section 67 of the Mining Act the mining authority can decide that an exploration permit shall expire if operations have been interrupted for a reason dependent on the permit holder continuously for a minimum of one year. Once exploration work is carried out, the permit expired or cancelled the exploration permit's holder is required to *inter alia* immediately restore the exploration area to the condition required by public safety, remove temporary constructions and equipment, attend to rehabilitation and tidying of the area, and restore the area to its natural status as far as possible.[15]

Prior commencing exploration work the operator is obliged to deposit collateral for the purpose of offsetting potential damage and inconvenience and performing after-care measures, unless this can be deemed unnecessary in view of the quality and extent of operations, the special characteristics of the operating area, permit regulations issued for the operations, and the applicant's solvency.[16] The exploration permit holder shall pay an annual compensation (*exploration fee*) to the owners of land included in the exploration area. The annual amount of the exploration fee per property is:

- 20 euros per hectare for each of the first four years of validity of the exploration permit
- 30 euros per hectare per year for the fifth, sixth, and seventh year of validity of the exploration permit
- 40 euros per hectare per year for the eighth, ninth, and tenth year of validity of the exploration permit
- 50 euros per hectare for the eleventh and for further years of validity of the exploration permit[17]

Mining permit. A mining permit is required for the establishment of a mine and the undertaking of mining activity.[18] There are no areal exceptions regarding the applicability of the provisions governing mining activity. Therefore these provisions are applicable also when mining acitivity is to be carried out in e.g. protected areas. The Mining Act however contains provisions regarding areal restrictions regarding mining activity. In addition, activities in accordance with the Mining Act must comply with other applicable legistlation. Therefore, provisions governing *inter alia* certain protected areas may restrict mining activity, e.g. by restricting the entry in the area or by a prohibition reagarding the activity itself. The provisions presented in this chapter should

[14] Ibid. Section 61
[15] Ibid. Section 15
[16] Ibid. Section 107
[17] Section 99 of the Mining Act
[18] Ibid. Section 16

however be borne in mind through out this study. The mining permit issues are in most cases decided by the mining authority[19], which according to Section 4 of the Mining Act is the Finnish Safety and Chemicals Agency (Tukes).

A mining permit entitles its holder to exploit mining minerals found in the mining area.[20] The obligations of a mining permit holder are laid down in Section 18 of the Mining Act. Accordingly the mining permit holder is obliged to ensure that:

- mining activities do not cause damage to people's health or danger to public safety;
- mining activities do not cause significant harm to public or private interests, nor, in relation to the overall costs of the mining operations, reasonably avoidable infringement of public or private interests;
- excavation and exploitation do not entail obvious wasting of mining minerals;
- potential future use and excavation work at the mine and deposit are not endangered or encumbered.

Mining in Finland is also subject to several other permits, such as the mining safety permit issued under the Mining Act and by the mining authority and the environmental permit issued under the Environmental Protection Act (86/2000) and by the Regional State Administrative Agencies. Prior the commencement of mining activities, the mining operator is obligated to deposit collateral, for the purpose of termination and after-care measures of mining operations, that is sufficient in view of the nature and extent of mining activity, the permit regulations issued for the activity, and collateral demanded by virtue of other legislation.[21] A mining permit remains valid until further notice. A mining permit can also be granted for a fixed term. A fixed-term mining permit may remain valid for a maximum of 10 years.[22] The validity of a fixed-term mining permit can be extended insofar as necessary in order to exploit the deposit.[23]

2.3.2 Other applicable legislation

Mining Act and other relevant statutes are applied simultaneously and independetly (however in compliance with the other applicable statutes), unless otherwise enacted. Mining activities and sometimes even exploration is subject to several permits issued by differed authorities under various statutes. Usually it is required, that the operator is obligated to obtain all the relevant permits prior the commencement of the operations.

This is reaffirmed in Section 3 of the Mining Act. Accordingly the provisions laid down in the Mining Act, decisions on permit issues or other matters hereunder and other activities in accordance with this Act shall comply with, *inter alia*, the provisions of the Nature Conservation

[19] Ibid. Section 33
[20] Ibid. Section 17
[21] Ibid. Section 108
[22] Ibid. Section 62
[23] Ibid. Section 63

Act (1096/1996), the Environmental Protection Act (86/2000), the Act on the Protection of Wilderness Reserves (62/1991), the Land Use and Building Act (132/1999), the Water Act (264/1961), the Reindeer Husbandry Act (848/1990), the Radiation Act (592/1991), the Nuclear Energy Act (990/1987), the Antiquities Act (295/1963), the Off-Road Traffic Act (1710/1995) and the Dam Safety Act (494/2009).

In this section certain acts applicable to actitivies performed in accordance with the mining act are examined. Certain applicable acts will also be presented in latter sections of this study.

The Environmental Protection Act

In addition to the mining permit (and mining safery permit, which will not be examined in this study), the mining operator must obtain among other relevant permits an environmental permit prior commencing mining operations.

Activities that pose a threat of environmental pollution require an environmental permit in order to commence operations.[24] Such activities are listed in the Government Decree on Environmental Protection. Accordingingly, mining activity and waste site for extract waste are listed as activities which require an environmental permit.[25]

Provisions regarding the orders to be included in an environmental permit are laid down in Section 43 of the Environmental Protection Act. Accordingly the environmental permit must contain orders regarding *inter alia*:

- emissions
- wastes and reduction of their quantity and harmfulness;
- action to be taken in case of a disturbance or in other exceptional situations;
- measures to be taken after cessation of operations
- other measures to prevent, reduce or assess pollution, the risk thereof and adverse effects caused by it.

In addition to the collateral introduced in the Mining Act, the mining operator is subject to collateral ordered in the environmental permit. Operators engaged in waste treatment must deposit collateral under the Environmental Protection Act in order to secure the appropriate waste management, supervision, and measures required for terminating operations or thereafter.[26] The collateral must be deposited prior commencing operations and before extractive waste can be dumped on the waste site.[27]

[24] Section 28 of the Environmental Protection Act
[25] Section 1 of the Government Decree on Environmental Protection
[26] Section 43 a of the Environmental Protection Act
[27] Ibid. Section 43 c

The collateral must be sufficient to secure the appropriate waste management, supervision, and measures required for terminating operations or thereafter. The financial guarantee for a waste area for extractive waste shall also cover the costs of restoring a land area, located within the area of impact of the waste area, to a satisfactory state, these restoration measures being defined in more detail in the waste management plan. [28]

When the mining activities are terminated, the operator is still under an obligation to take any action required to prevent pollution and to establish and monitor the effects of the activities.[29]

Act on Environmental Impact Assessment Procedure

The aim of the Act on Environmental Impact Assessment Procedure is to further the assessment of environmental impact and consistent consideration of this impact in planning and decision-making, and, at the same time, to increase the information available to citizens and their opportunities to participate.[30] The assessment procedure is applied to projects where the extraction, dressing and processing of metal ores and other mined minerals when the total amount of the extracted material is at least 550,000 tonnes per year, or quarries and opencast mines with a surface area larger than 25 hectares.[31]

The environmental impact of a project must be studied in an assessment procedure in accordance with this Act before any action relevant in terms of environmental impact is taken to implement the project.[32] The coordinating authority gives its own statement on the assessment report and its adequacy. The assessment procedure is concluded when the coordinating authority delivers its statement and other statements and opinions to the developer. The statement shall likewise be given for information purposes to authorities dealing with the project, to the municipalities within the area of impact of the project and, as necessary, to regional councils and other appropriate authorities.[33]

An authority may not grant a permit for implementation of a project before it has obtained an assessment report and the coordinating authority's statement on it. Fruther, a permit decision on a project shall state in what way the assessment report and the coordinating authority's statement on it have been taken into account.[34]

Water Act

[28] Ibid. Section 43
[29] Section 90 of the Environmental Protection Act
[30] Section 1 of the Act on Environmental Impact Assessment Procedure
[31] Section 6 of the Decree on Environmental Impact Assessment Procedure
[32] Secion 7 of the Act on Environmental Impact Assessment Procedure
[33] Ibid. Section 12
[34] Ibid. Section 13

Water resources management projects are subject to a permit by the permit authority if they may cause changes in the state, depth, water level or flow, shore, or aquatic environment of a water body or the quality or quantity of groundwater. [35] Typical activities falling within the scope of the water act during the course of a mining project are water abstraction and regulation of watercourse. The water permit issue is decided together with the environmental permit, if the same project requires both a water permit and an environmental permit. The water permit includes orders and regulations *inter alia* on

- avoiding any nuisance resulting from the project
- landscaping and other elimination of traces of work
- measures and devices necessary to preserving the state of the water body and groundwater body.[36]

Nature conservation Act

The principal legislation regarding nature conservation in Finland is the Nature Conservation Act (1096/1996) which *inter alia* governs the conservation, establishment and management of nature reserves. This study focuses on three types of nature reserves governed by the Nature Conservation Act; national parks, strict nature reserves and other nature reserves. Other nature reserves will be examined by focusing on mire conservation areas and herb-rich forest conservation areas. Natura 2000 network areas and nature reserves established on private land will be examined. Attention to wilderness reserves will also be given.

National parks are protected areas, with the primary purpose to ensure the diversity of Finnish nature. Currently there are 37 national parks in Finland, with the combined area approximately 10 km^2. The mininum size of a national park and its general functions are laid down in Section 11 of the Nature Conservation Act. Accordingly a national park shall be no smaller than 1,000 hectares in size and the national parks should hold general interest as a natural attraction, or with respect to raising general awareness of or interest in nature. According to the same section a national park may only be established on a State-owned land. Consequently all national parks are managed by Metsähallitus.

More information regarding national parks:
http://www.metsa.fi/sivustot/metsa/en/NaturalHeritage/ProtectedAreas/NationalParks/Sivut/NationalParksareFinlandsNaturalTreasures.aspx

Strict nature reserves are protected areas, which should hold significance as a means of safeguarding undisturbed natural development, or for scientific research or education. According to Section 12 of the Nature Conservation Act a strict nature reserve can only be established on State-owned land. No requirements regarding the areal size of a strict nature

[35] Chapter 3 Section 2 of the Water Act
[36] Chapter 3 Section 10 of the Water Act

reserve are laid down. There are currently 19 stric nature reserves in Finland, all managed by Metsähallitus. "Strict nature reserves are conserved in their natural state so that researchers would be able to compare these with other areas and determine how many of nature's changes are natural instead of having been caused directly by man. For the most part, strict nature reserves are closed to the public. The conservation regulations in strict nature reserves are stricter than in national parks."[37]

Prospecting and Exploration in national parks and strict nature reserves . As stated above, activities in accordance with the Mining Act must comply *inter alia* with the provisions of the Nature Conservation Act (1096/1996). This is further clarified in the Government Proposal to the Parliament for a Mining Act (HE 273/2009 vp), where it is stated that "restrictions imposed on geological surveys, exploration and access applicable to nature reserves must be complied with in prospecting work. Under section 13 of the Nature Conservation Act, any action that damages the soil or the bedrock in a national park or a strict nature reserve is prohibited."[38]

The prohibtion to damage the soil or the bedrock in a national park or a strict nature reserve does not automatically rule out the possibility to conduct prospecting work or exploration activities in national parks and strict nature reserves. Geological surveys and prospecting are permitted in these areas by permission from the authority or agency in charge of the site (depending on the rules and regulations governing the area: Metsähallitus, Centre for Economic Development, Transport and the Environment or the Ministry of Environment), provided that the conservation objectives of the site are not jeopardized. [39]

In order to ensure, that prospecting work or exploration does not consitute a prohibited action, "[i]t is important for the actor to contact the nature conservation unit of the regional centre for economic development, transport and the environment (ELY Centre) or the authority managing the nature reserve (Metsähallitus Natural Heritage Services, the Ministry of the Environment) about the grounds on which the nature reserve is protected and the potential methods used in the exploration."[40]

Passage. Prospecting work and exploration usually require passage to the area either by foot or by a motorized vehicle. A landowner's permit must always be obtained in advance when

37 http://www.metsa.fi/sivustot/metsa/en/NaturalHeritage/ProtectedAreas/StrictNatureReserves/Sivut/StrictNatureReservesareforStudyingNature.aspx

38 Ministry of Employment and the Economy: Guide: Exploration in protected areas, the Sámi homeland and the reindeer managing area, 2014, (https://www.tem.fi/en/current_issues/publications/guide_exploration_in_protected_areas_the_sami_homeland_and_the_reindeer_managing_area.98158.xhtml), p. ("Guide: Exploration in protected areas")

39 Section 15 of the Nature Conservation Act

40 Guide: Exploration in protected areas p. 13

operating a motorized vehicle off the road. In order to commence prospecting work which requires operating an off-road vehicle, a landowner's permit must be obtained.[41]

As mentioned earlier, permission of the landowner is not required if the exploration work is conducted under an exploration permit.[42]The provisions regarding passage in national parks and strict nature reserves however do apply even if an exploration permit is obtained. Therefore, provisions governing the passage in these areas need to be examined: according to Section 18 of the Nature Conservation Act "passage off marked trails, paths and other designated areas in a strict nature reserve is allowed only with special permission from the authority or agency in charge of the site.

The decision on establishing a national park or other nature reserve, or the regulations for use of the said national park or nature reserve, can prohibit or restrict passage in the area. A prohibition or restriction on free passage applies only if the adopted prohibition is deemed necessary for the conservation of flora and fauna in the area. If passage to these areas is not restricted, prospecting work, which would not constitute a prohibited action mentioned in Section 13 of the Nature Conservation Act or in Acts or Decrees establishing these areas or in rules and regulations regarding these areas, is allowed to be carried out. The allowed type of prospecting work could be for example geological measurements made on site by foot. A notification to the land owner in accordance with Section 8 of the Mining Act is required in any case.

Mining in national parks and strict nature reserves. As a general rule, mining is not possible in nature reserves and the mining authority cannot grant derogations to this rule. A precondition for granting a mining permit always is repealing or amending the acts, decrees or decisions establishing the nature reserve. Amendments and permits required for a mining project that causes significant adverse effects are only possible if the Government decides that the project must be carried out for imperative reasons of overriding public interest.

Other reserve areas

Other nature reserves can be established both on State-owned land or private land [43] and are established by government decrees (size of the area above 100 hectares) or, if the established nature reserve is no larger than 100 hectares, by a decree of the Ministry of the Environment. Objectives regarding these areas can be found from the decrees establishing these areas. [44] The

[41] Section 4 of the Off-road traffic act (maastoliikennelaki, 1710/1995)
[42] Ibid. Section 4
[43]Sections 17 and 24 of the Nature Conservation Act
[44] Ibid. Section 17

general prerequisites stuplated in the Nature Conservation Act for establishing a nature reserve are that:

- the site hosts an endangered or rare species, population or ecosystem, or one that is becoming scarce;
- there are breeding sites or resting places of specimens of the species referred to in Annex IV(a) of the Directive on the conservation of natural habitats and of wild fauna and flora;
- it is the site of a special or rare natural formation;
- it is a site of outstanding natural beauty;
- there is a natural heritage type which is becoming scarce within the area;
- it is necessary for attaining or maintaining the favourable conservation status of a natural habitat or species; or
- the site is otherwise so representative, typical or valuable that its conservation may be deemed necessary for the preservation of biological diversity or natural beauty.[45]

Prospecting, Exploration and Mining in other reserve areas. The restrictions regarding prospecting and exploration in other reserve areas are similar to those regarding national parks and strict nature reserves; according to Section 17 a of the Nature Conservation Act Sections 13–15 and paragraph 1 of Section 16 applies also to other nature reserves.

The decree on establishing a nature reserve, or the regulations for use of the said nature reserve, can prohibit or restrict passage in the area. A prohibition or restriction on free passage applies only if the adopted prohibition is deemed necessary for the conservation of flora and fauna in the area.[46]

Herb-rich forest conservation areas. According to Section 5 of the Government decree on herb-rich forest conservation areas (Asetus lehtojensuojelualueista 503/1992), with permission from the authority or agency in charge of the site geological surveys and prospecting can be conducted in the said area provided that the conservation objectives of the site are not jeopardised. Accordingly, both prospecting work and exploration are subject to the permission issued by Metsähallitus in order to conduct the said activities in herb-rich forest conservation areas.

Mire conservation areas. According to Section 1 of the Government decree on the establishement of mire conservation areas (Asetus eräistä valtion omistamille alueille perustetuista soidensuojelualueista, 852/1988) the extraction of sand and stone materials and minerals, and any action that damages the soil or bedrock is prohibited in these areas. According to Section 3 of the the Government decree on the establishement of mire conservation areas geological surveys and exploration is subject to the permission issued by the Ministry of Environment.

[45] Ibid. Section 10
[46] Ibid. Section 18

As a general rule, mining is not possible in nature reserves and the mining authority cannot grant derogations to this rule. A precondition for granting a mining permit always is repealing or amending the acts, decrees or decisions establishing the nature reserve. Amendments and permits required for a mining project that causes significant adverse effects are only possible if the Government decides that the project must be carried out for imperative reasons of overriding public interest.

Nature reserves established on private land. According to Section 24 of the Nature Conservation Act the centre for economic development, transport and the environment may, on application or with the consent of the landowner, establish a nature reserve on private land. The centre for economic development, transport and the environment may establish a nature reserve on private land also without the landowner having applied for it or given consent to it, if the land in question falls within the bounds of a nature conservation programme adopted by the Government.

The decision on establishing the nature reserve includes the necessary provisions on the protection of the reserve and, as necessary, on its management. The decision may also include provisions prohibiting or restricting free passage in the reserve or part thereof. In order to ensure, that prospecting work or exploration does not consitute a prohibited action the operator must contact the nature conservation unit of the regional centre for economic development, transport and the environment about the grounds on which the nature reserve is protected and the potential methods used in the exploration.

In order to commence mining operations in a nature reserce established on private land, it may be necessary to lif the protection order regarding the nature reserve in question. According to Section 27 of the Nature Conservation Act on application of the landowner or any other interested party, or by proposal of the Ministry of the Environment, the centre for economic development, transport and the environment is authorised to fully or partly lift a protection order on private land, or to grant derogations from it, provided that the ecological value of the site has declined substantially or its protection prevents the implementation of a project or plan of overriding public interest.

Wilderness reserves

A total of 12 vast, uninhabited wildereness areas wilderness reserves are located in the northernmost parts of Finland and governed by the Act on the protection of wilderness reserves (erämaalaki, 62/1991). These areas were established in 1991 with the aim to conserve their rugged wild nature, to preserve Sámi culture and livelihoods, and to develop the diverse use of

nature and its potential.[47] The wilderness reserves are located within state-owned land and are managed by Metsähallitus.

Prospecting and Exploration in wilderness reserves. No specific permit under the Act on the protection of wilderness reserves is required for if exploration is to be conducted on an area described in the Act. It should however be noted that a large part of the wilderness reserves are located in Natura 2000 network, therefore provisions regarding the protection of the Natura 2000 network might apply in these areas.

Mining in wilderness reserves. A mining permit cannot be granted to areas governed by the Act on the protection of wilderness reserves without the permission from the Government. According to the decision 2004:23 by the Supreme Administrative Court, the competent authority to process a permit referred in the Act on the protection of wilderness reserves is the Ministry of the Environment.[48]

2.3.2.1 Natura 2000 network areas

According to Section 64 of the Nature Conservation Act Natura 2000 network in Finland consists of:

- bird sanctuaries of which the European Commission has been notified pursuant to the provisions of the Birds Directive; and
- sites deemed by the Commission or Council to hold Community interest pursuant to the provisions of the Habitats Directive.

Natura 2000 network consists of SPA areas (Birds Directive) and SCI areas (Habitats Directive). At the moment there are 1,713 SCI areas, pursuant to the Habitats Directive, covering an area of 4.8 million hectares and 468 SPA areas, pursuant to the Bird Directive, covering an area of 3.1 million hectares. These areas may overlap.

The following applies to all activities performed within or in close proximity of a site included in the Natura 2000 network:

According to Section 65 of the Nature Conservation Act if a project is likely to have significant adverse effect on the ecological value of a site included in the Natura 2000 network, the planner or implementer of the project is required to conduct an appropriate assessment of its impact. This also applies to any project carried outside Natura 2000 area which may have a significantly harmful impact on the site.

[47] Section 1 of the Act on the protection of wilderness reserves
[48] Ibid. Section 6

Prior commecing a full-scale Natura assessment, the project goes through a screening stage, where it is examined objectively whether or not the effects of the project will be significant as referred in Section 65 of the Nature Conservation Act. Should this test prove that that there are not likely to be significant effects on the Natura 2000 site, a full scale Natura assessment is not needed. Otherwise, the next step is to commence an appropriate assessment of the project and its effects to the site.[49] When conducting the screening test, "the operator should liaise with the centre for economic development, transport and the environment and the authority managing the area to establish the boundaries of the protected area and its ecological values and to obtain other relevant advice from the authorities."[50]

In case C-127/02 the European Court of Justice (ECJ) held that "any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects."

In the light of the above ECJ ruling, it is clear that the implementation of the assessment is to be carried out by default and the assessment procedure can only be bypassed if it is evident the need for an assessment is unnecessary. A reverse burden of proof therefore exists regarding the necessity of a Natura assessment.

According to a decision[51] by the Supereme Administrative Court of Finland, if the operator fails to carry out the assesment referred in Section 65 of the Nature Conservation Act the conservation authorities may prohibit the operations in question. This right to seize the operations is also present in cases where the permit authority has failed to oversee that the assessment has been properly carried out.

2.3.3 Land use versus prospecting, exploration and mining in Finland

The principal legislation regarding land use in Finland is the Land Use and Building Act (132/1999). The objective of the Land Use and Building Act is to ensure that the use of land and water areas and building activities on them create preconditions for a favourable living environment and promote ecologically, economically, socially and culturally sustainable development.[52]

[49] European Commission, Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf)
[50] Guide: Exploration in protected areas p.37
[51] KHO 27.4.2005 T 986
[52] Section 1 of the Land Use and Building Act

The Land Use and Building Act recognizes three types of of plans: a regional land use plan, which is prepared by the Regional Council, and a local master plan and a local detailed plan, which are prepared by the municipality. "The objective of the regional land use plan is to determine the principles of land use and urban structure in the areas concerned, and to allocate area reservations to the extent that this is necessary for national or regional objectives or for the coordination of needs to use areas located in several municipalities. From the perspective of land use planning, the impacts of mining projects usually are at least regional and often national. For this reason, the land reservations and infrastructure required for a mining project are, as a rule, examined and clarified at the regional land use plan level."[53]

Land use in municipalities is organized and steered by local master plans and local detailed plans. The local master plan indicates the general principles of land use in the municipality. The local detailed plan indicates how land-areas within a municipality are used and built. Regional land use plans contain a general plan for land use for the entire region or for a specific sub-area therein.[54] Provisions concerning the legal impact of a land use plan are laid down in the Land Use and Building Act.

Prospecting and Land-use

Prospecting work does not have an impact on land use. Areal restrictions for prospecting work have been listed in Section 7 of the Mining Act.

Exploration and Land-use

Exploration permit does not limit the property owner's right to use the area or to govern it.[55]It merely gives the exploration permit holder the right to conduct exploration within the area described in the exploration permit. Decisions on permit issues or other matters and other activities in accordance with the Mining Act must comply with, *inter alia*, the provisions of the Land Use and Building Act.[56] The Land Use and Building Act does not itself prohibit exploration, even when the exploration is intended to be conducted on an area included in a legally binding plan.

However the Mining Act lays down a provisions regarding the consolidation of land use and exploration. Accordingly, an exploration permit shall no be granted e.g. "to an area where exploration activities would impede the implementation of a legally binding plan or to an area concerning which the local authority opposes the granting of a permit, for a reason concerning land planning or other good cause related to land use, unless there is a specific reason for

[53] Guide: Exploration in protected areas p. 22-23
[54] Section 4 of the Land Use and Building Act
[55] Section 10 of the Mining Act
[56] Ibid. Section 3

granting the permit. However, according to the the Government proposal to the Parliament for a Mining Act the nature of exploration work in most cases does not impede the implementation of a legally binding plan". Nonetheless, should the exploration work include exploratory excavation or similar measures having equivalent impact, it might be possible that the exploration work in itself impedes the implementation of a legally binding plan.[57]

The consent of the authority or institution competent in the matter, or that of the holder of the rights, is required for exploration whenever the area in question is a street area or market place referred to in the Land Use and Building Act, a road area of a highway referred to in the Highways Act (503/2005), an airport or another area in aviation use referred to in the Aviation Act (1194/2009), a railway area referred to in the railways act (ratalaki 110/2007), a canal used for public traffic or another such traffic area, or an area within 30 metres of any of the above-mentioned traffic areas, unless provisions concerning a larger exclusion area are laid down in, or pursuant to, the relevant Act.[58]

In any case, exploration permit consideration regarding an exploration permit shall not include the assessment of the legal suitability of the area as a mining area. Therefore the possible Impediments to granting of a mining permit shall not be taken into consideration when deciding on a matter regarding an exploration permit.

- Claim decision (Tukes 2.6.2014, KaivNro 8694)[59]. Claim area situated in close proximity of a Natura 2000 site and fully within a legally binding local master plan.
- The claim application was rejected based on the municipalitys objection. Reason for the objection was that the claim and exploration activities would impede the implementation of the legally binding local master plan.
- The mining authority furhter stated that even if the areas sought in the application are marked in the local master plan as areas designated for agricultural use, the issuing of claim rights (exploration permit) in the said area is not possible if objected by the municipality.
- Economic impacts effecting the region and the easily exploitable deposit on the site cannot be seen as specific reasons to bypass the objection by the municipality.
- Claim decision (Tukes 28.2.2012, KaivNro 8726)[60]. Claim area situated in close proximity of a mining site owned by another operator and on an area marked as an area designated for mining activity in a legally binding master plan. Claim sought for five

[57] Ibid. Section 46
[58] Ibid. Section 9
[59] http://www.tukes.fi/Tiedostot/Malminetsint%C3%A4p%C3%A4%C3%A4t%C3%B6kset/ML2013_0125_kuulutus%20p%C3%A4%C3%A4t%C3%B6ksest%C3%A4_HammaslahtiC_nettiin.pdf (in Finnish)
[60] http://www.tukes.fi/Tiedostot/kaivokset/Valtauspaatokset/8726_paatos.pdf (in Finnish)

years.

- The claim right was issued for three years. According to the reasoning, the issuing of a claim in close proximity of another operators mining area and on the other hand departing from the five year claim application can be jusitfied by land use objectives: according to Section 24 of the Land Use and Building Act government authorities must take national land use objectives into account, promote their implementation and assess the impact of their actions on local structure and land use. Taking into account the legally binding master plan and the objectivies laid down therein, it is reasonable to obligate the applicant to establish the ore potential of the area in question within the timelimits laid down in the claim decision.

Mining and land-use

Mining operations have an impact on the land use within the mining area on different levels; mining will restrict the land owners right to use the land and have a impact on land use on a more general level, e.g. planning.

Land owners right to land

Mining operations require that the mining operator has the right to use the land within the mining area. This right may be acquired in several ways:

- by acquiring the ownership of the land by agreement
- by acquiring the right to use the land by agreement
- by applying for a redemption premit in accordance with Section 20 of the Mining Act.[61]

2.3.3.1 Planning

Decisions on permit issues or other matters and other activities in accordance with the Mining Act must comply with, *inter alia*, the provisions of the Land Use and Building Act.[62] Mining activity must be based on a legally binding plan in accordance with the Land Use and Building Act, or the matter must be otherwise sufficiently explored in co-operation with the local authority, Regional Council, and Centre for Economic Development, Transport and the Environment.[63]

[61] According to Section 20 of the Mining Act the Government can grant the right to utilise an area in the possession of another party as a mining area. According to Section 149 of the Mining Act once a decision to terminate mining activity has become legally valid the areas in question will be returned to the possession of the landowner, free of charge.
[62] Section 3 of the Mining Act
[63] Ibid. Section 47

According to the *Guide: Exploration in protected areas* "the land reservations and infrastructure required for a mining project are, as a rule, examined and clarified at the regional land use plan level." However "the required plan is determined separately in individual situations. In practice, a regional land use plan and a local master plan can be prepared on quite a rapid schedule as a stage plan."[64] The regional plan steers other land use planning and sets out the principles of land use and community structure, and designates areas as necessary for regional development.[65]

In terms of mining, the location of the mine and the fact that actual large-scale building is not always necessary in a mining project make it possible to rely on, instead of a local detailed plan, some other plan with legal consequences and exceptions to the plan requirements. In case of mining, the situation is thus different from major industrial and commercial projects, for which a local detailed plan is required as a basic assumption."[66]

2.3.3.2 Termination of mining activities

According to Sections 143 and 144 of the Mining Act the mining operator shall restore the mining area and the auxiliary area to the mine to a condition complying with public safety; ensure their restoration, cleaning, and landscaping; and perform the measures specified in the mining permit and remove the mining minerals excavated from the mine, and the buildings and other constructions on the ground within two years unless otherwise stipulated by the mining authority.

Upon the completion of the measures referred in Section 143 and 144 of the Mining Act, the mining operator must submit a notification thereof to the mining authority in accordance with Section 145 of the Mining Act, who shall, according to Sections 146 and 147 of the Mining Act arrange an inspection of the area and make a decision to terminate the mining activity.

Among other provisions, the decision shall specify the impact area of the mine in which, for reasons of public safety or prevention of detrimental environmental impact, restrictions on land use may be necessary. The mining authority shall ensure that an entry is made in the Land Information System of Finland about this impact area. When permit applications concerning construction or other projects within the impact area of the mine are handled, the competent permit authority shall, whenever necessary, request a statement from the mining authority.

2.3.4 Nature conservation versus mining activity: Natura 2000 example

2.3.4.1 Prospecting in Natura 2000 network areas

According to Section 7 of the Mining Act prospecting is not subject to any license, however,when conducting the prospecting work in a "area designated for a special use the

[64] Guide: Exploration in protected areas p.23
[65] Section 25 of the Land Use and Building Act
[66] Guide: Exploration in protected areas

consent of the authority or institution competent in the matter is needed". It remains unclear whether Natura 2000 network constitutes an area "designated for a special use". Therefor it is unclear whether prospecting work carried out in Natura 2000 network area requires the consent of an auhtority competent in the matter.

Since Section 65 of the Nature Conservation Act requires that the authority in charge of granting the permit or approving the plan shall see that the Natura assessment is carried out, the auhtority competent in the matter may stipulate, that the Natura assessment must be carried out prior commencing prospecting work in the said area. However, prospecting work is defined in the Mining Act as action limited only to "geological measurements" and "observations "and taking of "minor samples, provided that this does not cause any damage or more than minor inconvenience or disturbance", it may be possbile, that prospecting work does not require a Natura assessment in order to be conducted.

2.3.4.2 Exploration in Natura 2000 network areas

According to Section 9 of the Mining Act an exploration permit is required if exploration could cause any deterioration in value related to the landscape or nature protection values. Furhter, according to the the Government proposal to the Parliament for a Mining Act exploration permit is required if rare or valuable natural occurrences, breeding sites and resting places used by endangered or rare species or other nature protection values exist in the area where the planned exploration activity is to take place. Therefore, as a presumption, exploration activity in Natura 2000 network areas require always an exploration permit. The results of the screening stage (see section 3.4.1. of this study) should be attached to the exploration permit application.

Should an approriate assessment be made according to the results of the screening stage, the assessment procedure laid down in Section 65 of the Environmental Procetion Act will follow. Accordingly, the mining authority, after receiving the assessment from the operator, shall request an opinion from the centre for economic development, transport and the environment and the authority in charge of the site in question (usually Metsähallitus). The opinion shall be given without delay, within six months at the latest.

The mining authority shall make sure that exploration activities are not commenced priot the assessment and the opinions have been submitted. The mining authority must also notify the centre for economic development, transport and the environment of the matter at a sufficiently early stage for the centre for economic development, transport and the environment to take any necessary action.

According to Section 66 of the Nature Conservartion Act the mining authority may not grant an exploration permit, if the assessment procedure indicates that exploration work would have a significant adverse impact on the particular ecological value for the protection of the site. However, an exploration permit can be granted if the Government decides that said project, in

the absence of alternative solutions, can be carried out for imperative reasons of overriding public interest.

- Claim decision (Tukes 1.3.2012, KaivNro 9154)[67]. Claim area situated in close proximity of a site included in the Natura 2000 network.
- According to the opinion of the regional Centre for Economic Development, Transport and the Environment boring cannot be viewd as a measure resulting in significant adverse effects on the ecological values of the site.
- Claim decision (Tukes 28.2.2012, KaivNro 8933)[68]. Claim area situated partly within a Natura 2000 network area.
- According to the applicants own assessment the claim would not have significant adverse effects on the ecological values of the site. Further, according to the application the claimant would operate in close cooperation with the Centre for Economic Development, Transport and the Environment and Metsähallitus to ensure that no significant adverse effects on the ecological values of the site would occure.
- The mining authority requested an opinion from the Centre for Economic Development, Transport and the Environment. According to the delivered opinion the operator must ensure that opertions within or outside the Natura 2000 area will not have significant adverse effect on the ecological value of the site. Further, the Centre for Economic Development, Transport and the Environment noted that the operator had not *de facto* conducted a Natura assessment. A claim may not be granted if the assessment is not conducted properly or if actions regarding the exploration work are not restricted to ensure that exploration work will not have significant adverse effects on the ecological values of the site.
- It was further stated that past or upcoming cooperation between the claimant, the Centre for Economic Development, Transport and the Environment and Metsähallitus will not remove the obligation laid down to the applicant to conduct a proper Natura assessment in accordance with Section 65 of the Nature Conservation Act. This view is confirmed by the Supreme Administrative Court in its ruling KHO 26.1.2009 t. 175 (LRS).
- According to the decison assessment conducted by the mining authority, it was decided that in the light of the response by the applicant and the restrictions imposed by the mining authority regarding nature and scale of the operations, the exploration work would not have significant adverse effects on the ecological values of the site.
- The restrictions regarding exploration work in the Natura 2000 network area:
- Operations are to be performed in a manner that no significant adverse effects on the ecological values of the site are caused.
- Exploration work is to be conducted on foot by portable measuring equipments

[67] http://www.tukes.fi/Tiedostot/kaivokset/Valtauspaatokset/9154_paatos.pdf (in Finnish)
[68] http://www.tukes.fi/Tiedostot/kaivokset/Valtauspaatokset/8933_paatos.pdf (in Finnish)

- Motorized machinery is only to be used in winter time.

2.3.4.3 Mining in Natura 2000 network areas

When applying for an mining permit, an appropriate assessment of the impacts the operations will have on ecological values in a Natura 2000 area referred to in Section 65 of the Nature Conservation Act should be attached to the mining permit application. The mining authority may issue an mining permit to an area located in the Natura 2000 network only if the assessment made according to Section 65 of the Nature Conservation Act show that the mining activity would not have a significant adverse impact on the particular ecological value for the protection of the site. If such significant adverse impacts do occur, a mining permit can be granted only if the Government decides that the mining project in question, in the absence of alternative solutions, can be carried out for imperative reasons of overriding public interest.

2.4 Concluding remarks and discussion

In Finland, the Mining Act is the principle statute related to exploration and mining. It governs *inter alia* the procedures related to the granting of exploration and exploitation rights. The Mining Act aims to protect public and private interests and public safety. It also aims to prevent detrimental environmental impacts in regards of activities performed in accordance with the Mining Act.

As specifically expressed in the Mining Act, the Mining Act itself does not supersede other legislation but is rather applied in compliance with other applicable legislation. Therefore, the environmental aspects of exploration and mining activities are also governed by the environmental legislation (e.g. Environmental Protection Act, Nature Conservation Act). Due to the nature of the activities performed in accordance with the Mining Act and the conventional location of such activities, a need of an evaluation of the activities in the light of environmental legislation is usually present.

Certain statutes apply to exploration and mining activity by definition, however the applicable statutes are also to be assessed on a case by case basis, as the applicable legislation is determined according to the nature and type of measures performed and the site in question. Certain statutes must be taken into consideration irrespective of the nature of the activities and site in question (e.g., the prohibition on littering found in the Waste Act).

Exploration and mining activities in Finland are subject to permits issued under the Mining Act. Exploration which does not cause any damage or more than minor inconvenience or disturbance (prospecting work) may, in most cases, be performed without a permit. In addition to a mining permit, mining operations are also subject to a mining safety permit issued under the Mining Act and an environmental permit issued under the Environmental Protection Act. Usually a water

permit issued under the Water Act is further needed. Prerequisite to obtain other permits may also be present. The necessity to acquire other permits is assessed on a case by case basis.

Nature Conservation Act is the principle statute related to nature conservation in Finland, governing, for example, the most common protected areas. Other statutes establishing protected areas can also be found. Mining Act is always applied to measures and activities governed by it (prospecting, exploration and mining). Due to the fact that Mining Act does not exclude other legislation from being applied to the said activities but rather obliges it to be applied in compliance with other legislations, it follows that the provisions found in statutes governing the protected areas stipulate how authorities and operators should act in the said areas. This can vary depending on the area in question, and therefore it should be emphasized that the operator, prior the commencement of operations, should contact the competent authorities to ensure that the intended measures do not constitute a prohibited action in the site in question.

Exploration does not limit the property owner's right to use the area or to govern it nor does an exploration permit need to be based on a legally binding plan. Mining activity, on the other hand, must be based on a legally binding plan in accordance with the Land Use and Building Act, or the matter must be otherwise sufficiently explored in co-operation with relevant authorities.

2.5 Appendix

2.5.1 Relevant auhtorities regarding this study

Authority	**Responsibilities**
The Ministry of the Environment	- In charge of steering nature conservation and land use - Competent authority for issuing a permit in order to operate in a nature reserve - Permit authority in mire conservation areas and certain national parks - Permit authority regarding mining in wilderness reserves - Nature reserves established on state-owned land by a decree of the Ministry of the Environment (no more than 100 hectares)
The Ministry of Employment and the Economy	- Responsible for the general guidance, monitoring, and development of activities under the Mining Act - Competent authority on matters concerning redemption permits and on mining permits related to the production of uranium or thorium
The Finnish Safety and Chemicals Agency (Tukes)	- Mining authority according to the Mining Act - Enforces compliance with the Mining Act and manages other duties laiddown in the Act.

	- Competent authority on matters concerning reservation notifications, exploration permits, gold panning permits and mining permits if not related to the production of uranium or thorium (see above)
Regional State Administrative Agencies	- Competent auhtority on matters concerning environmental permit issued under the Environmental Protection Act (required to be obtained prior commencing mining operations)
Local Centre for Economic Development, Transport and the Environment	- Nature reserves on private land can be established by a decision of a centre for economic development, transport and the environment - Competent authority for issuing a permit in order to operate in a nature reserve - Statement regarding Natura assessment
Metsähallitus	- Administers state-owned land (e.g. relevant authority to issue landowners consent, when exploration is carried out on state-owned land without an exploration permit, permit auhtority regarding off-road traffic permits) - Competent authority for issuing a permit in order to operate in a nature reserve - Statement regarding Natura assessment
Regional Councils	- Planning
Local Communities	- Planning

2.5.2 Fees and charges

According to the Ministry of of Employment and the Economy decree on fees collected by The Finnish Safety and Chemicals Agency (työ- ja elinkeinoministeriön asetus Turvallisuus- ja kemikaaliviraston maksullisista suoritteista 636/2013) the applicant of a permit issued under the Mining Act is charged a permit fee.

Also any costs caused by public notice procedure and advertising whenever applicable are charged.

MINES	Basic fee, €	Surcharge, €/hour
Reservation decisions		
Reservation decision, area <100 km2	1,200	95
Reservation decision, area ≥ 100 km2	2,200	95
Expiration of reservation decision	500	
Exploration		
Exploration permit, < 1,000 hectares	3,000	95
Exploration permit, 1,001–2,000 hectares	6,000	95
Exploration permit, 2,001–4,000 hectares	8,000	95
Exploration permit, > 4,000 hectares	10,000	95
Exploration permit, extension of validity	3,000	95
Exploration permit, expiration	1,500	
Exploration permit, change		
Minor change	750	
Major change	2,000	
Decision on enforcement of decision	1,000	95
Mining activities		
Mining permit	5,000	95
Review of mining permit requirements	2,000	95
Mining permit, extension of validity	2,500	95
Mining permit, expiration	1,500	95
Mining permit, change	1,500	95
Termination of mining activities	5,000	95
Confirmation of excavation fee, metallic min.	1,000	95
Confirmation of excavation fee, other	2,000	95
Decision on enforcement of decision	1,000	95
Deposition of collateral and issue of orders to mining concession for securing private and public interests	475	95
Assignment or pledge of permit, other decisions		
Assignment of permit (excl. gold panning)	1,500	95
Pledge of permit/permits	500	95
Rectification of violation or neglect	500	95
Other decisions	495	95

3 Legislative and Governmental Challenges in Sweden

Mugdim Islamovic (SGU)

3.1 Executive Summary

The basis for the granting of exploration permits and mining concessions in Sweden is the Minerals Act, which is an exploitive law. The Minerals Act aims to protect public and private interests and public safety. It also aims to prevent negative environmental impacts in terms of activities performed in accordance with the Mineral Act.

The Minerals Act does not replace other legislation but is rather applied in accordance with other applicable legislation. The environmental aspects of exploration and mining operations are governed by the environmental legislation which is gathered in the Environmental Code. The type of activities undertaken in accordance with the Minerals Act and its conventional position always requires a trial of the operations against the Environmental Code. Some laws applies to exploration and mining, by definition, but the laws are also to be assessed case by case, that the applicable law is determined depending on the nature and type of activities performed and the current location. Some statutes must be considered, regardless of the type of business and the area in question.

Exploration and mining activities in Sweden require permits and authorizations issued under the Minerals Act. The simple survey work that falls under the roam can be done without permission; all other work requires a permit.

Mining Inspectorate is the authority granting exploration permits. Besides Bear staining concession, to start mining operations, an environmental permit issued under chapter 9 of the Environmental Code is required, and even a water permit issued under Chapter 11 of the Environmental Code is required. Prerequisite for other conditions can also occur. The need to acquire other condition is assessed from case to case.

Environmental Code replaces since 1998 15 different laws and is applicable so that human health and the environment are protected against damage and nuisance regardless of whether these are caused by pollution or other influences In addition it guarantees that valuable natural and cultural environments are protected and cared for, and biological diversity, land, water and natural environment are used so that from an ecological, social, cultural and economic perspective, sustainable management is secured. Minerals Act applies to actions and activities covered by the (exploration, mining). Due to the fact that the Minerals Act not preclude other legislation from being applied to those activities without obligation to apply pursuant to other laws, it is clear that the provisions in the law for the protected areas specified how the authorities and actors should act in those areas. This can vary depending on the area in question, and therefore it should be underlined that the operator should contact the relevant authorities, prior to the commencement of operations, to ensure that the planned measures does not constitute an illegal operation in the area in question.

Exploration does not limit the property owner the right to use the area where the exploration is carried out, unlike the mining operation, based on a legally binding plan under the Land Use and Planning and Building Act.

3.2 Introduction

In this case study, we describe how the legal framework for the exploration and mining business is built in Sweden. The analysis shows which laws govern the activities and how you apply for the exploration and exploitation concession.

There are huge differences in application processes from exploration and mining.

Mineral exploration is defined in the mining waste directive 2006/21 / EC: "The search for mineral deposits of economic, including sampling, bulk sampling, drilling and trenching, but excluding any works required for preparing deposits, and any activities that are directly associated with existing extraction. " Mineral exploration under the Minerals Act is searching for economic mineral deposits and can occur in both the private and / or government land.

Mining is a commercial extraction of minerals under special permit, both under the Minerals Act and the Environmental Code, and involves processing and treatment of the ore.

The impact that exploration directs towards environment is generally smaller than in mining operations. Exploration permits, and exploration covering even large areas, causes normally minor damage and intrusion, and the licensing is only tied to the Minerals Act. Mining activity, however, always needs a comprehensive environmental impact assessment under the Environmental Code.

The Minerals Act governs the licensing, and together with examination under the Environmental Code, provides the basis for conducting either exploration or mining operations in Sweden.

How a permit application works in practice and who is responsible for what is shown schematically below:

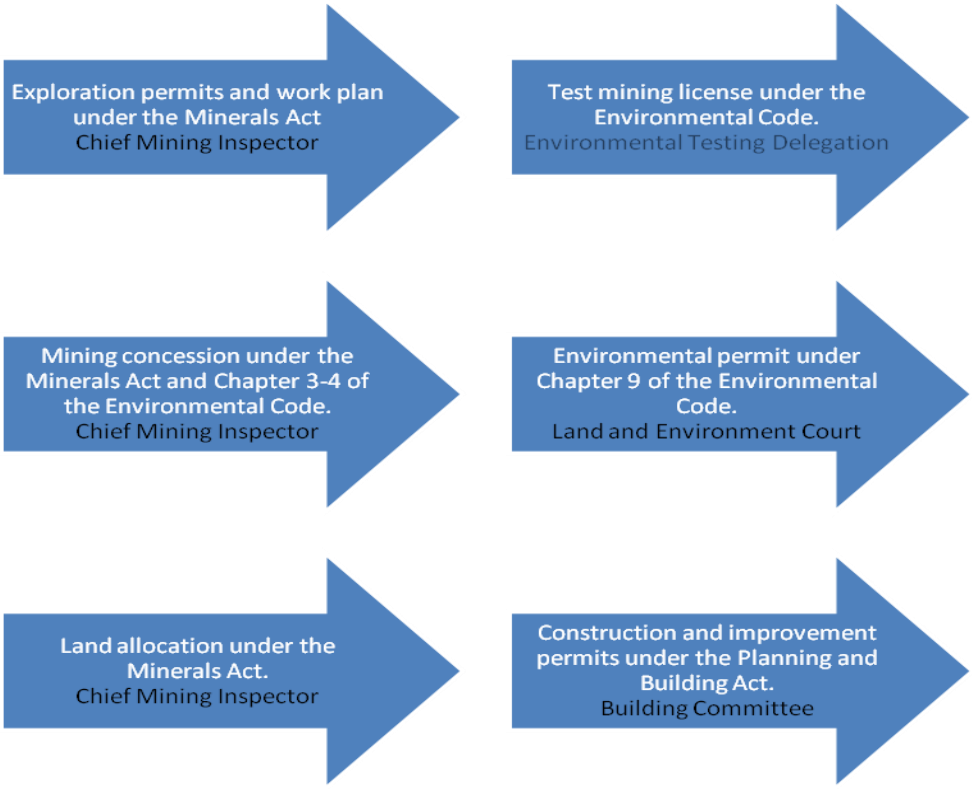

Figure 1: Mining permit procedure and responsibilities in Sweden

3.3 Analysis: Legislation governing exploration and mining activities

3.3.1 Exploration and test mining

To be able to search for minerals, a permit is a must, except for the simplest actions that can be brought under the right of the public access.

What is the right of public access?

In Chapter 2 18 § Government policy states that regardless of the protection that the constitution gives, regarding ownership of an individual's property, the public access supports that everyone will be given access to the nature.

Public access allows everyone to practice so-called boulder searching in its simplest form, without the landowners or special permission. Going over the land to measure with different instruments does typically not require a permit. Usage of public access assumes that any damage or infringement is not to be done.

For a more detailed study, an exploration permit is required. An exploration permit gives exclusive rights (also in relation to the land owner) to map the bedrock in the area concerned in order to find out if there is a prospect, how that in this case is constituted, its size and its

potential mining value. An exploration permit also provides priority access to a mining concession of any deposit.

It is not necessary to be engaged in professional exploration activities to be granted exploration permits. Even amateur geologists may seek permission for the security of finding further ways to make more costly exploration in interesting findings. For those who do not engage in professional activity, the area size is limited.

Applications for exploration licenses under the Minerals Act are made at the Mining Inspectorate. What an application for an exploration permit shall contain is extensively regulated in mineral regulation[69]. Before the decision is made by the Chief Inspector, the County Administrative Board is always given the opportunity to comment, and interested parties in the area get informed. If the application relates to shale oil, gaseous hydrocarbons, or diamond, the application shall be announced and the municipality is given the opportunity to comment.

The Mining Inspectorate decision on exploration permits contains reminders of the most common requirements for survey work, and it follows:

1. Exploration work may be carried out only in accordance with a work plan that is drawn up by the licensee, and landowners together with holders of special rights needs to be notified.

2. Exploration may not take place in contravention of the regulations for nature or culture reserves. Permission is also required for jobs that significantly affect the environment in so-called Natura 2000 areas.

3. Explorations requires permit when an area of special protection are concerned by the rules in Chapter 3. 6 and 7 § Minerals Act. As examples of such protected areas are:

   - Areas within 200 meters of residential building, church, another hall, hotel, industrial facility or protected under the Protection Act,

   - Areas within 30 meters from a public road, railway or airport,

   - Areas with detailed planning or area, and

   - Areas referred to in Chapter 4. 5 § Environmental Code (so-called unbroken mountain).

4. Driving in terrain by motorized vehicles are prohibited, inter alia solid ground and - if there is risk of injury - even on snow-covered farmland and woodland to plant or young

[69] Mineral Regulation (1992:285)

forest. The County Administrative Board may grant exemptions. The legislations is to be found in Off Road Act[70] and Off Road Driving Regulation[71].

A specific guidance on exploration in protected areas has been developed and is available on the SGU website[72].

Minerals Act is all about exploration and production of certain mineral deposits in the country regardless of who owns the land. The Act defines exactly which mineral substances that the rules apply to, the so-called concession minerals (1 Ch. 1 §). These include traditional metals, certain industrial minerals and oil, gas and diamonds. All other minerals and rocks are located outside the Minerals Act. They are therefore called landowner minerals.

An exploration permit gives the exclusive right to explore and the access to the land in the state of the area, also the preferential rights to a mining concession. Permits are valid for 3 years and may be extended.

Laws and Regulations that are affecting the exploration work are e.g.:

• Minerals Act (1991: 45)[73] and Mineral Regulation (1992: 285) • The Environmental Code (1998: 808) and Work Environment Authority, AFS• Off Road Act (1975: 1313) and Off Road Ordinance (1978: 594)

• Forestry Act (1979: 429) and Forestry Ordinance (1993: 1096)• The law on cultural heritage (1988: 950)

• Decree on cultural heritage (1988: 1188)

[70] Off Road Act (1975:1313)
[71] Off Road Driving Regulation (1978:594)
[72] www.sgu.se Exploration in protected Area Dnr 04-2138/2005
[73] The following commodities are covered by the Minerals Act:

1. antimony, arsenic, beryllium, lead, cesium, gold, iridium, iron ore, cobalt, copper, chromium, mercury, lanthanum and lanthanides, lithium, manganese, molybdenum, nickel, niobium, osmium, palladium, platinum, rhodium, rubidium, ruthenium, silver, scandium, strontium, tantalum, tin, titanium, thorium, uranium, vanadium, bismuth, tungsten, yttrium, zinc and zirconium,

2. shale andalusite, apatite, brucite, fluorspar, graphite, kyanite, clays that are refractory or clinker generating, magnesite, pyrrhotite, syenite, sillimanite, coal, rock salt or other salt present will similarly, pyrite, barite, wollastonite,

3. Oil, gaseous hydrocarbons and diamond.

2. shale andalusite, apatite, brucite, fluorspar, graphite, kyanite, clays that are refractory or clinker generating, magnesite, pyrrhotite, syenite, sillimanite, coal, rock salt or other salt present will similarly, pyrite, barite, wollastonite,

3. Oil, gaseous hydrocarbons and diamond.

- Welfare Act (2010: 305)

To carry out exploration work in a national park or an area that has been requested to be reserved to the national park by a state agency is not allowed. However, exploration for licensing approval in all other types of protected areas is allowed. Examples of protected areas with different types of restrictions are:

- National park, Natura 2000 areas, Nature reserve, Cultur reserve,

Natural monument

- Habitat protection areas
- Animal- and plant protection area
- Shore protection area
- Environmental protection area
- Environmental risk area
- Water protection
- Restricted area for wild birds
- Restricted area of natural habitats and of wild fauna and flora
- Large unaffected areas
- Ecologically sensitive areas
- National interest for reindeer
- National interest for nature conservation
- National interest for cultural heritage conservation
- National interest for outdoor recreation
- National interest for mineral exploration
- National interest for water supply
- National interest for national defense
- National interest for wind power
- Area for tourism and recreation
- Coasts prohibiting environmentally harmful plants

- Unbroken mountain areas
- Ancient monuments
- Fastening Areas
- Cemetery, a public road, church, power station, industrial
- Detailed plans and area regulation

Exploration must be done with the least damage and intrusion caused.

An exploration permit is subject to the condition that the licensee, before exploration work commences, provides financial security regarding remuneration to the ground and injured parties for loss or intrusion which may nevertheless occur. If the license holder and the landowner, after completing exploration work, do not agree on the amount of compensation for damage or intrusion, those who are unhappy turns to the Mining Inspectorate to test the case.

Before exploration work begins, there should be a plan of work. Changes in the Minerals Act which came into force on 1 August 2014 allows different rules for different work plans.

For those who had their study permit before August 1, 2014 apply them to establish the work plan and circulate it to the concerned landowners and usufructuaries (parties). These have three weeks in which to submit any objections. If an interested party objects to the work plan, the licensee must try to reach agreement with the interested party. In the event an agreement cannot be reached, the license holder may request that the Chief Mining Inspector examines the question, after all stakeholders have their say. Mining Inspector may then decide to define the work plan. The decisions will then be combined with the conditions needed.

For those who had their exploration permit after 1.augusti 2014, rules tightened and got clarified. One of the main conditions is that the work plan established by the licensee needs to be written in Swedish. Another is the introduction of the right to translation of work plans to certain minority languages (Finnish, Sami and Meänkieli).

The current work plan shall be sent to Chief Mining Inspector, the County Administrative Board and the municipality. If the exploration is performed within an area used for reindeer herding, a current work plan should also be sent to the Sami Parliament.

The notification shall be written in Swedish and sent at least one week before any work on the property will begin. Interested parties have the right to request a notification when the survey work will commence, while the licensees are obligated to inform interested parties about when survey work has been completed. Additional information is available in the Minerals Act.

3.3.1.1 Test mining

As a partial step towards a mine it may sometimes be necessary to practice a test mining on some of the mineralization to see how the material will behave in an enrichment process.

In the Minerals Act, test mining is a part of the exploration. This follows from the definitions in Chapter 1. 3 § Minerals Act. Test mining can take place in the context of an exploration permit and it is required that there is a current work plan. A consent from the Mining Inspector in the vicinity of dwellings, certain other buildings and facilities, and in areas with zoning applicable to exploration. Because of the provisions of the Minerals Act applicable to exploration, there is also a possibility for the holder of an exploration permit to access the land required for the work, even if the landowner opposes it occurs.

Test environmental impact of test mining can basically be compared to a quarry, under Chapter 9. Environmental Code. The license requirement is prescribed[74] as a B operation, which means that it is the county administrative environmental impact assessment committee that is examining the application. Although the subsequent processing of the mined material is subject for review.

Permit applications under the Environmental Code is an independent assessment in relation to the Minerals Act. For the business to be allowed the Environmental code requires that the provisions of chapter 2, 3 and 4 are met.

Before applying for a permit for exploration, an environmental impact study needs to be prepared in accordance to Chapter 6 of the Environmental Code.

What determines whether the activity constitutes an exploration or mining - which requires a mining concession - is not the amount but the purpose of mining. Regarding the concession minerals recovered during the exploration work, the permit holder must be pursuant to Chapter 3. 4 § Minerals Act to use it only to examine their condition and suitability for the technical processing. For the same provision appears, however, that the product produced or extracted at the same time gets assimilated. The implication of this is thus that as long as the purpose of the test mining is to study, the permit holder is allowed to sell what is coming out of the enrichment experiments.

3.3.2 Mining concession

An application for a mining concession needs to be done in order to conduct mining activities. The application made to the Mining Inspectorate should contain details for granting a mining concession. The decision of the concession is determined by who has the right to extract the minerals that is in the area. Unlike an exploration permit, a mining concession is not an automatic right to start any business.

[74] Ordinance (1998: 899) on environmentally hazardous activities and health protection.

Mining Inspectorate examines the applicant's ability to financially benefit from a given deposit in a way that is not inappropriate in relation to other interests, such as; protecting nature, communication routes or reindeer industry.

The 17 and 18 § mineral regulation contains provisions on what an application for a mining concession must contain. The majority of applications are, therefore, ore evidence and an environmental impact assessment.

Anyone who has applied may, for example, automatically get a protection zone of 1,000 meters around the area applied for. The protection prohibits applications for exploration permits in the area concerned.

Mining Inspectorate consults with the provincial government the place in the county where the concession area lies in the application of chapter 3, 4 and 6 of the Environmental Code, i.e., the provisions on the management of land and water areas and environmental impact assessment[75].

Mining Inspectorate sends messages regarding the applications and environmental impact assessments to the property owners, usufructuary, easements owners, industries, and holders of mineral rights with preferential rights. Mining operations is a comprehensive process that involves numerous actors.

Minerals Act has the ability, if there are multiple stakeholders, to determine who should be given priority access to the deposit and the right to extract it.

However, it is important to point out that the Minerals Act does not entail any exemption from the Swedish environmental rules. When considering mining the rules in the Environmental Code as for other environmentally hazardous activities. The rules of consideration[76] apply in determining the precautions, restrictions and other conditions that will apply for the business.

When the permit is happening in the Land and Environment Court is what distinguishes mining from other activities only to the basic examination of land use issues under 3-4 Chap. Environmental Code, i.e. management provisions, should not be re-examined on the issue of the exploitation concession is settled.

3.3.3 Ore Evidence

An important part of the examination of the application for a mining concession is a ore evidence. According to Chapter 4. 2 § 1 of the Minerals Act is a criterion for a mining concession to announce "a discovery likely to accrue to economically have been encountered". One of the main requirements of the ore evidence is to prevent abuse of the rules of the Minerals Act. There is no explicit requirement regarding the applicant's competence and seriousness in cases other than concession application relates to oil and gas, but they mean that the demands on the

[75] Chapter 8. 1 § third paragraph, of the Minerals Act
[76] Cchapter 2 Enviromental Code

performance of ore evidence is such that no one who lacks resources and knowledge are able to perform an adequate such[77] .

The guidelines are expressly general in nature when it is not possible to make them detailed because of various ores varying design, nature and location. Instead of leaving it to the "officiating" (i.e. mine inspector) to in each case make the detailed assessments required to meet the objectives of ore evidence.

It is the mineral deposit's economic value that is to be assessed. To be considered to be economically recoverable, i.e. that the deposit should be considered as an ore, it is required under the guidelines that it is economically viable to start a mine with any enrichment activities within 25 years from the time a decision on the concession granted.

Furthermore, in the case of a mining concession 3 and 4 of the chapter Environmental Code, ie, provisions on the conservation of natural resources on land use, apply. An application for a mining concession must also be examined in relation to the existing local plans and area regulations under the Planning and Building Act. If the purpose of the plan or the measures are not counteracted get minor deviations made[78].

All areas of national interest which have been identified by various sectoral agencies[79], should thus be taken into account in municipal comprehensive planning and the work it is the County Administrative Board which represents the state interests in dialogue with the municipality. If an area is of national interest for several incompatible purposes[80] should be given to "the purpose or purposes as the most appropriate way to promote long-term management of land, water and the physical environment in general".

National interest for national defense is always given priority over other national interests.

Mining Inspectorate is typically decision-making body for matters concerning mining concession[81]. Mining Inspector shall, however, refer the matter to the government in the following cases:

- The issue of licenses deemed particularly significant from a general standpoint.
- If the mine inspector finds reason to deviate from what the County administrative board proposed the application of 3 and Chapter 4 of the Environmental Code.

If a case is referred to the government will Chief Mining Inspector investigating the case and attach their own opinion[82].

[77] Proposition 1992/93: 238 page 6
[78] Chapter 4 2§ Minerals Act
[79] Regulation (SFS 1998: 896) on the usingt of land and water areas
[80] Chapter3 10§ Minerals Act
[81] Chapter 8 1 § Minerals Act

3.4 Determination of mining activities under the Environmental Code

Before operations can start a permit under Chapter 9., and often also to Chapter 11. Environmental Code, is required. Permit under Chapter 9. is required e.g. for the mining and enrichmentplant. Permit under Chapter 11. is required for order of groundwater. Permissions are sought from the Land and Environment Court.

One of the fundamental principles of the Environmental Code is the principle of an integrated environmental assessment. The examination under the Environmental Code, pursuant to this principle, includes the entire operation[83].

As the main rule at a trial under the Environment Act is an activity to be considered in its entirety on a single occasion and regulated in the same state, the operator must clarify the extent to which the activities it intends to pursue is.

3.4.1 3.1 Natura 2000

According to Chapter 7. 28 a § MB permit is required for operations or measurements that have significant impact on the environment in a Natura 2000 area. The provision corresponds to Article 6.3 of the Habitats Directive. For a permit to take place is not that it is established that the activity or measure has a significant impact on the area. It is enough that it is likely that the activity or measure has such an effect. The precautionary principle should be applied. A permit under Chapter 7. 28 a § MB should therefore take place if it is likely or there is a risk that the activity will have a significant impact on the area concerned. Taking into account the precautionary principle, such a risk exists if, on the basis of objective criteria, potential for a significant impact on the area[84] cannot be excluded

3.4.2 3.2 Environmental quality standards for water permit

In an application for authorization to the mining activities should be a description of how the business as a whole affect the recipient and the impact the business has on the recipient based on the current provisions on environmental quality standards for water. The description needs to be done for all parts of the planned activities including any older landfills that are in the business area .The water authorities have carried out statusdescription and / or the status classification of the water bodies. It may be helpful to compare the existing data on emissions from operations with the status classification and to the evidence it is based on. Such a comparison must be based on relevant regulations and guidelines.

[82] Chapter 8 4 § Minerals Act
[83] Proposition 1997/98:45part 1 page 169
[84] See e.g. The EU Court of Justice in Case C-127/02, paragraphs 39-45, and Commission guidance 'Managing Natura 2000 areas, Article 6 of the Habitats Directive 92/43 / EEC

3.4.3 Financial security

Under Chapter 15, 34 § Environmental Code, shall permit for an activity involving the deposit of waste be issued only if the operator sets the security under Chapter 16. 3 § Environmental Code. The financial security shall be calculated so that there are funds available to post-treat the area in accordance with what is described in the waste management plan. Collateral may be deposited gradually according to a plan following the current need for security.[85].

3.4.4 Land allocation

Before mining begins, a land allocation be made. It is Mining Inspectorate that designates land for mining operations. Right to extract minerals is tied in to the right to use the land or the space required for the operation by the land manual. Prior to the current mineral law assigned land by the mining holder's needs but nowadays this step mandatory. A decision on land allocation is required even if the holder of the concession itself owns the land needed for mining.

3.4.5 Construction and improvement permits

As a last step the licensing process also needs a permit to build a new, build on, extend or change the use of an existing building or facility. Such permission is known as building permits and regulated by the Planning and Building Act (2010: 900). To apply for a building permit is compulsory even outside the areas covered by detailed plans or area.

Construction and improvement permits applied for at the municipal building. Detailed guidance on the planning permission process are the respective Building Department and the National Housing Board[86].

3.5 Mineral taxes and fees in Sweden

Fees and taxes are regulated by the Minerals Act (1991: 45), and Minerals Ordinance (1992: 285)

3.5.1 Exploration fees

Application fee

2 § The applicant must pay an application fee of 500 crowns per commenced area of 2,000 hectares.

Fee for exploration permits

[85] Chapter 16 3 § Enviromental Code
[86] www.boverket.se

10 § In order granting new exploration licenses (relating to years 1-3) will charge paid by the following amounts per commenced hectares of exploration permit:

a) If the condition refers to diamond, oil and gas, 2 of which SEK 40 cents refers to the first year, 60 cents the second year and 1 crown the third year.

b) if the authorization relates to any other concession minerals, 20 crowns of which 4 crowns refers to the first year, 6 crowns in the second year and 10 crowns in the third year.

10 a § A decision on the extension (refers to years 4-6) of survey validity of the license pursuant to Chapter 2. Section 6 of the Minerals Act (1991: 45), the fee is paid in the following amounts per commenced hectare per year.

a) If the condition refers to diamond, oil and gas, 2 crowns.

b) If the authorization relates to any other concession minerals, 21 crowns.

10 b § When deciding on further extensions (relating to years 7-10) of survey validity of the license pursuant to Chapter 2. § 7 first paragraph of the Minerals Act (1991: 45), the fee is paid in the following amounts per commenced hectare per year.

a) If the condition refers to diamond, oil and gas, 5 crowns.

b) if the authorization relates to any other concession minerals, 50 crowns.

10 c § When deciding on further extensions (refers to 11-15 years) of study validity of the license pursuant to Chapter 2. § 7 second paragraph, of the Minerals Act (1991: 45), the fee is paid in the following amounts per commenced hectare per year.

a) If the condition refers to diamond, oil and gas, 10 crowns.

b) if the authorization relates to any other concession minerals, 100.

Summary of fees for exploration: Year 1-3, 20 SEK / ha Year 4-6, 21 SEK / ha Year 7-10 50 SEK / ha Year 11-15, $ 100 / ha.

3.5.2 Mining concession taxes and fees

Mineral taxes and fees are regulated in chapter 7 of 7 § Minerals Act and applies to all mining concessions decided after 1 may in 2005. Under the law, all concessionaires are required to pay 0.02 percent of the estimated value of the minerals covered by the concession and that has been mined within the concession area during the year. The value of the ore is calculated on the amount of mined ore, the ore content of concession minerals and the average price of the mineral during the year.

From remuneration shall ¾ accrue to property owners within the concession area and ¼ shall accrue to the state. If there are multiple properties within the concession area, the remuneration of the property determined by each property part of the area. The compensation shall be determined by the situation on 31 December of the year the payment is related. The concessionaire shall, in a case on adoption of the remuneration report the data needed for the compensation to be determined. (SFS 2005: 161).

Application for a mining concession

- 19 § The applicant must pay an application fee of 80 000 crowns for each concession area.
- Land allocation: 43 § The applicant shall pay
    - Land assignment fee of 80 000 crowns if the meeting is held at the execution and otherwise 40 000 crowns.
- The fees to obtain an exploitation concession:
    - To Mining Inspectorate: 80 000 crowns
    - application fee + 80 000 crowns
    - land allocation fee + 1.5 ‰ of the total value of the mined ore / year to the landowner and 0.5 ‰ of the total value of the mined ore / year to the State

3.6 Validity of the exploration permits and mining concession

An exploration permit is valid for three years. An extension may be granted under certain conditions:

- If appropriate investigations have been carried out during the first three years, an extension of three additional years granted. The same applies if there are justifiable reasons for work not performed and it is likely that investigations will be carried out during the period requested.
- another four years extensions is granted if there are special reasons
- If there are exceptional reasons, 5 years to be granted
- If an application for a mining concession submitted continues the exploration permit is valid until the franchise is tested final.

An exploitation concession is valid for 25 years and is extended by 10 years each.

3.7 Consultation

A permit application must begin with a consultation as specified under Chapter 6. 4 § Environmental Code. The aim of the consultations is to clarify problems at an early stage and to consider alternative solutions, give interested parties the opportunity to influence and to make an appropriate delimitation of the issues.

It is primarily consultation with the provincial government, the regulator and individuals who are likely to be affected by the planned activity. It is always required that the municipality concerned is involved[87] as well as individuals who may be particularly affected such as property owners, local residents, fishing rights holders and Sami villages.

Consultations should be carried out before the operator draws up an environmental impact assessment This is to guarantee the consultations have a possibility to influence the content of the environmental impact assessment and design of the project.

3.8 Environmental impact assessment EIA

For mining operations required an environmental impact assessment and for the examination of a mining concession under the Minerals Act and partly because the tests required under the Environment Act.

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[87] Proposition 1997/98:45 part2 page 59

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4 Legislative and Governmental Challenges in Poland

Barbara Radwanek-Bąk (PGI)

4.1 Executive Summary

Among EU countries, Poland is perceived as a country of a high mineral resource potential. This viewpoint is backed by rich and diverse resources of mineral deposits as well as by large scale of mining activities. So the role of the mining &processing sector is significant for the national economy. After a tentative slow down at the beginning of the 1990s, which was associated with a transformation of the economic and political system, mining began to re-develop dynamically. Constitutionally accepted rules (1997) for sustainable development and access to EU (2004), forced improvement in environmental regulations as well as adjustment in this respect to the standards approved by EC. Acceptance of requirements and respecting rights to property as well as progressing urbanization stood behind intensification of conflicts associated with access to the deposits and their management.

At present the access and utilization of numerous mineral deposit is limited by: actual and planned land use, which may exclude the possibility of their exploitation, or restrict the area and/or scale of mining; land ownership rights and landscape and environment protection restraints (real and imaginary). In Poland principles of using natural resources, including mineral deposits, are regulated by several legislative acts: *Law on Natural Environment Protection, Geological and Mining Law, Act of Preserving the National Character of Strategic Natural Resources of the Country, Water Rules, Act of Protection of Agricultural and Forest Land, Nature Protection Law, Spatial Planning Act, Law on Wastes, and some more detailed regulations.* Seemingly the number of rules is sufficient, but they are inconsistent and incomplete. It seems to be the main reason of several constrains, like conflicts and lengthy concessions procedures. Management of developed deposits, which are under current exploitation, and their protection are regulated by the *Geologic and Mining Rules* and in frames of concession policy and extracting supervision. At this background, inadequacy of legal regulations is remarkable, especially with respect to protecting identified, yet still undeveloped deposits and the prospective areas.

This study also provides an insight and discussion on currently ongoing conflicts between various forms of land-use. It points to a need for a permanent seeking of effective problem-solving due to these constrains, especially by improvement of legal regulations and using the best practices in compromising, which could help to prevent escalation of future conflicts.

4.2 Introduction

The purpose of the analysis given in the presented case study is to elucidate:

1. the inadequacy of legal regulations at the meeting of mining activities and other forms of land use hindering the access to mineral deposits

2. the complexity of these problems in a context of sustainable management of natural resources and-spatial planning organization.

These issues will be shown, when discussing the scope of the case study, with particular focus on the impact of the management of a deposit during its whole life cycle - from documentation to the closure of mine and rehabilitation of post-mining areas.

4.2.1 Scope

4.2.1.1 Object of the study:

Poland is a country with a considerable and diversified base of mineral resources and with long mining traditions dating back to prehistoric times. At present, Polish Mineral Resources Register includes more than 12,500 identified deposits of 51 different minerals. There are: significant copper ore deposits, lead and zinc deposits, native sulphur and salt deposits, yet the largest group comprises various types of rocks like: gypsum and anhydrite, dimension and crushed stones, ceramic clays, glass, foundry and backfilling sands, natural aggregates, industrial dolomites, limestone for lime and cement industry, and several others. Additionally several deposits of energetic raw materials are known (hard and brown coal, natural gas, and small crude oil deposits). Deposits listed in the register are of different sizes and economic importance as well as their mining areas vary from a few to several hundred hectars. A large number of deposits are currently under exploitation. Metallic ores, salt and native sulfur are mined by underground methods, while industrial minerals – by open-pit methods.

The principles and procedures concerning mining activity are regulated by the Geological and Mining Law. Each mining activity requires a licence. There are independent licensing bodies: Ministry of the Environment (with regards to metal ores deposits, salt, sulfur); regional authorities i.e. Marshal of the Voivodship (for other deposits — mainly industrial minerals and individual lots over 2 ha), and local authorities (for small, less than 2 ha, local deposits). One of the most important documents named an “environmental decision” is issued by the local authority or Environmental Agency, after preparing a comprehensive Environmental Impact Assessment. Such assessments are issued by the State or Regional Environmental Agencies.

Poland has a great biodiversity as a result of active measures intended for protection of the environment. There are several forms of legal nature protection designated under the Nature Conservation Law: National and Landscape Parks, National Reserves, Areas of Protected Landscape, Natura 2000 net, Nature and Landcape Complexes as well as monuments of nature, documentary sites and ecologic farmlands. There are also some protected areas designated under other legal regulations, including; protected forests and promoted forest complexes, protected high-class soil areas, cultural parks, areas of health resorts, public investments, protected zones of water intakes and water reservoirs.

One of the aspects of the state spatial policy is an increase of protected areas and forests, and the establishment of the Polish ecologic system, which is included in the European system of NATURA 2000. In 2010 about 32% of the country were subdued to different forms of nature conservation. It is also noteworthy that about 30% of the country is covered by forests, which

are found only partially within the protected areas. It is impossible not to mention the Naturae 2000 areas, which currently cover about 20% of the land-area of Poland and only partially overlap with forests and other forms of legal protection. In some regions, in particular in the southern part of the country, significant number of exploited deposits are located inside the protected areas (22% in Lower Silesia, which is the most valuable area regarding mineral resources).

Poland is a country with a high degree of urbanization. The average population density is 123 pers/km^2 (2013). The largest density — about 374 pers/km^2 — is in the Upper and Lower Silesia, then in Malopolska Voivodships (southern part of Poland). These voivodships are also the most industrialized and rich in mineral resources. The lowest population density (less than 100 pers/km^2) occurs in the eastern (Podlaskie, Lubelskie) and northern parts of Poland (Warmińsko-Mazurskie, Lubuskie, Zachodniopomorskie Voivodships). They are rather poor in mineral resources, except a few limited sub-areas (Lublin Coal Basin, sand and gravel deposits in Podlaskie). Close to the large cities, there is a strong pressure on land to be designed to housing and accompanying transportation infrastructure.

4.2.1.2 Description of the problem

One of the most important attribute of mineral deposits is their specific spatial setting, dependent on geologic structures. This should be a significant factor in discussions on their economic use, in a context of a comprehensive process of land management. Open access to the deposits is limited by: present and planned land-use (e.g. residential, road construction etc.), water reservoirs, farmland and environment protection rules, bewildering property rights (the ownership of many common mineral deposits is connected with real estate (lots) ownership). In Poland, specific conditions related to mineral deposits are also related to legacy of the former central planned economy. In those days PGI-NRI and other Geologic Offices conducted a large scale geological research to estimate the mineral reserve base for mining industry development. In effect not only prospective areas, but also numerous mineral deposits have been recognized and documented. Some of them are still not mined but provide the reserve base of mineral raw materials. However, there are no detailed regulations related to protection of such mineral deposits. The existing legislative acts: Law on Natural Environment Protection, Geological and Mining Law, Act of Preserving the National Character of Strategic Natural Resources of the Country are of general nature and inconsistent with other legal regulations. The most worrying aspects are the inconsistencies with:

- land-use planning and

- nature protection requirements related to identified, yet still undeveloped deposits and the prospective areas.

The lack of mineral deposit protection principles, here understood as ensuring an access to land where deposits are located, may endanger a future supply of raw materials also even if it concerns the common industrial minerals.

Additional problems related to the access to the mineral deposits are problems of granting mining licences – protracted licence procedures and sometimes speculative exploration licences. They are consequences of unclear rules in the domain of Geological and Mining Law. These problems will be shown in the case study and illustrated by some detail examples. Reference to the EU regulations will also be given as a part of discussion and the search for solutions.

4.2.2 Relevance of the case

The case study was selected for illustrating some typical conflicts of access to the mineral deposits areas and possibility of mining activity development. Such conflicts occur with varying scale and intensity almost in all other countries and still need improvement. The consequences of the constraints related to the access to the deposits may hinder a future development of mining, threaten the raw material supply and could reduce a competiveness of the mineral industry. The legal constrains of the problem of access to the deposits is linked to the societal acceptance of mining industry.

4.3 Analysis - Legal regulations related to the access to the mineral deposits in Poland.

Geolgical and Mining Law dated to 9.06.2011 is the principal statue governing mining activity in Poland. This act contains several issues related to: exploration and exploitation of mineral deposits, proceedings establishing a mining area, supervision, mining safety, qualifications in the field of geology and mining, use of geological information, mineral resources registry, the ownership of minerals, and the system of charges and penalties.

The most important issues related to the access to the mineral deposits concern on:

The ownership of minerals – according the section II (Artickle10), metalliferous ores, salt (Na and K-Mg), native sulphur gypsum and anhydrite, precious stones - are owned by the State Treasury regardless of a method of extractionAll other minerals belong to the landowner and are a part of land lot (real estate)Ownership of the land property – regulated by the Civil Code. Land is mostly private, but also may belong to the State or community.

Exploration and mining licences – both exploration and mining activity are the subject to a permit (licence) issued by mining authorityTypes of licences:

There are 3 types of licences concerning the mining sector: prospecting and exploration licence, mining licence and mixed exploration-mining licence (for small common deposits).

Licensing bodies – According the Geological and Mining Law (Section III, Artickle 22, 23) there are 3 level of licensing bodies (Table 3):

Table 3: Licence bodies for mining activity in Poland

Licence body	Scope of the licence	Approving body[1]	Consulting body[2]
Minister of the Environment	minerals owned by the State Treasury, and all minerals from marine territory of Poland.	Minister responsible for Marine Affairs	Voit (local authority) , Environmental Agency
Marshal of the voivodeship	basic raw materials and common minerals extracted from area of 2 and more hectars		Voit (local authority) , Environmental Agency
Starost (district authority)	common minerals extracted from area less than 2 ha, mining output not greater than 20 000 m^3/y and without explosives	Mining Supervisory Authority	Voit (local authority) , Environmental Agency

[1] – statement of approving body is binding for the decision maker

[2] – statement of consulting body is not binding for the decision maker

Prospecting and geological research work

Geological measurements, observations and taking minor samples but without any damage and disturbance is defined as geological research and prospecting work. It does not any licence but the permission from the landowner or authority is obligated according the Civil Code.

Exploration

According Geological and Mining Law (Section III Artickle 21), exploration is subject to a exploration licence. Exploration licence may be applied and issued to the private landowner area or to state owned land. In each case the right for entry into the area is required. It concerns the area needed to build or transfer the exploration area temporary constructions, equipment and vehicles necessary for exploration activity. There are various forms of the right: ownership, leasehold or the agreement with the landowner (Sec. III, Artickle 24). The exploration licence holder who has a priority to apply for a mining licence. It is of particular importance by applying the mining licence for the minerals which are s State Treasury property.

Extraction (mining licence)

Extraction of minerals and mining activity requires a mining licence (Geological and Mining Law (Section III Artickle 21) issued by. the licence bodies (Table1). By mining licences granted by Ministry on the Environment, related to the deposits that are a State Treasury property, an auction should precede a mining usufruct that covers prospecting, exploration of minerals. An individual who first explores and prepares geological documentation (geological study) for such group of mineral deposits in frame of an exploration licence, may demand that mining usufruct be instituted for its own benefit, with a priority over other parties. By licence procedures granting by regional and local authorities, the future mining operator have to acquire the right to the area where extraction is planned.

4.3.1 Other applicable legislation

Law on Natural Environment Protection

General regulations related to the natural environment protection are included in the Law on Natural Environment Protection dated to 27.04.2001. The act is in line with EU legislation. It defines the conditions for entering substances into the environment, the principle of environmental monitoring, environmental information environmental assessments. It defines also the relationships between the mining activity and protection of the natural environment, as well as a duty a rational use of mineral resources

Act on the availability of information on the environment and its protection

Act on the availability of information on the environment and its protection dated on 3.10.2008 was established to to harmonize the Polish legislation with EU one.

From the point of view of the mineral deposits access it includes the issue related to the Environmental Impact Assessment and its procedure.

The aim of the Act on Environmental Impact Assessment Procedure is to further the assessment of environmental impact and consistent consideration of this impact in planning and decision-making, and, at the same time, to increase the information available to citizens and their opportunities to participate.The coordinating authority gives its own statement on the assessment report and its adequacy. The assessment procedure is concluded when the coordinating authority delivers its statement and other statements and opinions to the developer. The statement shall likewise be given for information purposes to authorities dealing

with the project, to the municipalities within the area of impact of the project and, as necessary, to regional councils and other appropriate authorities.[88]

An authority may not grant a permit for implementation of a project before it has obtained an assessment report and the coordinating authority's statement on it. Fruther, a permit decision on a project shall state in what way the assessment report and the coordinating authority's statement on it have been taken into account.[89]

Nature Protection Act

Nature Protection Act dated to 16.04.2004 establishes the rules for the nature use and conservation. According to it, in Poland there are the following forms of nature protection: national parks, national reserves, landscape parks, areas of protected landscape, monuments of nature, ecological farmlands, documentation sites (geosites), Natura 2000 areas and Nature and Landscape complexes.

In relation to the mining activity and mineral deposits accessibility nature protection requirements in the licence procedures are most important.

The extraction of minerals from the national parks and natural reserves is strongly prohibited, but is possible after EIA procesure shows that there are not a significant adverse impact on the environment quality on particular eenvironmental and ecological value for protection of the area. In landscape parks and protected mining areas mining activity may be prohibited. In general extraction from mineral deposits located in areas subdued to Natura 2000 is possible, but authorization should be granted by the Regional Environmental Agencies. Extraction in forested area and farmland is possible but requires additional documents, opinions and fees.

One of the most important documents in the licence procedure is the "environmental decision", issued by the local authority, after preparing a comprehensive Environmental Impact Assessment. Opinion of the Environmental Agency is required.

Spatial Planning Act

The principal regulation is Spatial Planning Act, established at 27.03.2003. It and lays down rules spatial policy in Poland, urban planning and architecture public interest related to the space, as well as relationships with environment and landscape protection.

Mineral deposit in land-use planning is regulated by Geological and Mining Law.The new Geological and Mining Law of 9 June 2011 introduced regulation mandating obligatory

[88] Ibid. Section 12

disclosure of recognized mineral deposits in spatial development plans, in addition to providing the voivodes the legal instruments to discipline municipalities in this area. The general rule seems to be clear, but in fact there are several constraints to realize it in practice.

Spatial development plans are documents of local law and shall be adopted at the level of municipalities (according the Act on Land Use Planning and Spatial Management from 2003 which determines the system of spatial planning). Devising of the plan of spatial development for the whole territory of the municipality is not mandatory, and usually it is elaborated only for some small sub-areas. With regards to the mineral deposits, it concerns only areas of current mining activity. There is a duty to elaborate the study on the preconditions and directions for the spatial development of the municipality, as a base for spatial development plan. Mineral deposits have to be disclosed in the study too.

There are regional (voivodeship) land-use plans, but their goal is to provide general strategies of spatial development. Even if they take into account the development of mining they do not protect the access to the deposits.

4.3.2 Land use versus - prospecting, exploration and mining

Identification of the sources of constraints - inconsistency of legal provisions

In accordance with legal provisions (Law on Natural Environment Protection, Article 3) mineral deposits in Poland are considered a part of natural environment, and should be protected (Art. 125 and 126). This implies rational economy and full usage of all minerals, provided environmental awareness (minimization of environmental impact of mining activity).

Access to mineral deposit areas should be provided by disclosure of the recognized mineral deposits in spatial development plans (Art. 72). As this was not enforced in the past, only a small number of mineral deposits was included in spatial planning documents. The new Geological and Mining Law established in 2011 tightened these requirements (Art.95 and 96), additionally providing the voivodes with the legal instruments to discipline municipalities in this area.

In fact, the spatial development plan which is a document of the local law is rarely prepared for the whole municipality area, while the Study on preconditions and directions for spatial development of the municipality (referring to the whole territory) is only a base for the spatial development plan. However, disclosure of the recognized mineral deposits by itself does not denote taking into account mining activities in the exploitation developments of the municipality. More precise regulations defining priorities in allocating particular mineral deposit areas for exploitation are lacking. This generates conflicts of interests in the field of spatial management. On the other hand, “in advance setting the area for future mining aside”, in many cases for undefined time-span, may prevent the other usage in the given area. In the case of mineral deposits, being a part of real estate (land lot), the land ownership rights impose also extra constrains. The solution of a potential conflict requires a compromise which should be

enrooted in well-grounded assessment and valorization of mineral deposits as well as in reliable evaluation of future demands for particular minerals. Such an approach substantiates statements needed for discussions with partners presenting alternative land-use options.

The main constrains for the access to land of mineral deposits occurrence, which are consequences of inconsistent legislation are due to:

- existing and planned land-use (e.g. residential, road construction etc.) that take no notice of quarrying or mining,
- environment protection rules (NATURE 2000, Landscape Parks and Landscape Protection Areas).

Some other constrains are related to the bewildering property rights (the rights of ownership of many common mineral deposits is connected with the real estate (lots) ownership rights) and sometimes ballooned prices of land parcels over the deposits. All these aspects affect the level of social acceptance for mining activity and are sources of protests against mining activity or the NIMBY effect often supported by the local authorities.

Current or planned residential or industrial land-use holds back, often completely and irreversibly, an access to known mineral deposits and makes impossible opening new mines or quarries. Very often it also denotes a need for shrinking boundaries of accessible portion of known deposits and their resources.

4.3.2.1 Example – Native sulphur deposit Baranów Sandomierski-Skopanie

Native sulphur deposits in Tarnobrzeg and Staszów region are among the largest world-class deposits. 14 native sulphur deposits were discovered in the 1950s. The native sulphur deposits occur along the northern border of the Carpathian Foredeep. Their primary resources were around 763 Million tonnes. About 120 Million tonnes were extracted in effect of intensive mining between 1955-2005. Currently, only one mine — "Osiek" is active, with mining output about 600-800 thousand tonnes/y. Sulphur was mined first by open-pit methods, and next after depletion of near-the-surface (less than 100 m deep) by an underground melting method ("Machów"). The access to several sulphur deposits is limited by housing, for example "Baranów Sandomierski-Skopanie" deposit. It is a reserve deposit suitable for underground melting extraction. The deposit is located east of Vistula River (Fig. 1). Indicated mineral resources were 169,5 Million tonnes, but about 40% of them are within the protected Vistula river pillars and below residential areas of Baranów Sandomierski town. Thus about 102 Million tonnes of sulphur were suitable for extraction. Although the deposit was included to and depicted in the spatial development plan, but without its eastern part.

Already after documenting the deposit and designation of protective pillars, the residential areas of the town were growing without compliance with the delimited borders. The same was

the case of some other residential areas of minor villages. In the eastern part of the deposit, which was not disclosed in the land-use plan, two significant villages Skopanie and Wola Baranowska exists. The estimates of mineral resources were corrected and reduced to 99,2 Million tonnes in the 1990s. Unfortunately, the housing progressed further, and now by adopting the 250 meter wide protection zone around the mentioned built-up areas, the deposit breaks down into several small fields. Only two of them seem to be suitable for economic extraction, with resources about 29 Million tonnes – which is only 32% of current indicated resources of the deposit. A similar situation, although on a different scale, occurs in other sulphur deposits, significantly depleting the huge-in-the-past resources. The compulsory assessment of environmental relevance due to the mining impact imposes additional restrictions and, therefore, reduces the economic mineable sulphur resources.

4.3.2.2 Other selected mineral deposits

There are several other examples across the country (Table 2). Road construction (e.g. of a planned highway) limits mostly access to natural, sandy-gravel aggregate deposits which are sources of construction material for town agglomerations. One of the most spectacular examples is the case of the huge lignite deposit near Legnica (Lower Silesia), where housing, road and railway networks seriously limited the access to the deposit. Discussion of this case is beyond the scope of the present study because the lignite belongs to energetic raw materials.

Land-use conflicts related to the access to the deposit intensify in peripheries of large cities, where the demand for land suitable for housing and construction is the biggest. The prices of land for building are much higher than minerals which could be mined, so the market laws dominate.

Table 4: Changes in reported resources of selected deposits as result of land-use planning

Deposits		Causes of change	Resources (mln t)		
			original	corrected	difference
Native sulfur	Baranów Sandomierski-Skopanie	residential areas and roads construction	169,5	29,0	140,5
	Rudniki	railway construction	50,0	34,0	16,0
	Jeziórko-Wydrza	housing, water intake, planned nature reserve,	119,9*	87,1	32, 8
Natural aggregate, sandy-gravel	Sobel	road construction, Rom's settlement building	28,84	7,24	21,60
	Bogumiłowice near Tarnow	cemetery foundation	28,91	20,93	7,98
	Węgrzce Wielkie near Krakow	residential building	35,94	28,45	7,49
Brick clays	Biegonice-Dąbrówka	residential building	6,58	0,55	6,03

*-after closure of the mine and end of extraction

4.4 Nature protection versus prospecting, exploration and mining

Mining in the NATURA 2000 areas - Malopolska district example

The environmental constrains are next important factors limiting mining and quarrying. These constrains result mainly from protection under the rules of "Landscape Parks" and "Areas of Protected Landscape" and, recently, from an independently introduced act of NATURE 2000 (which protects habitat and bird sites). Unlimited, not disputable, delineation of NATURE 2000 sites and misunderstanding of reasonable management of such sites, which might compromise between the nature conservation and economic exigencies, limits the access to known deposits and force closing of some active mines and quarries. Planned mining activity in the nature protected areas or in their vicinity (but without defined coverage) requires a complex Environmental Impact Assessment. The requirement for this assessment is well-substantiated and are not challenged by anyone. However, the thematic and spatial scope of the assessment is often too extensive and disproportionate to a scale of the planned activity and its environmental effects. Moreover, it also often happens that the environmental impact is not backed sufficiently

by nature inventories that should have been made for protected areas or the assessment scope is not concordant with the protected subject (especially in areas delimited under Nature 2000). If the nature inventories are lacking, the mining investor becomes in charge of making an appropriate register of protected items in frames of providing the required environmental impact report. Administrative procedures associated with obtaining the environmental decisions are costly and time-consuming. Decision making bodies often do not accept interesting yet non-standardized pro-environmental solutions that are put forward by the investors with the aim of compensation of the nature or reclamation of post-exploitation terrains. All these difficulties result from lack of clear-cut rules and a large latitude in interpreting the law.

By the end of 2010, just 644 of Polish documented mineral deposits, where open-pit exploitation progresses (Ptak 2010), were under the range of Nature 2000 network. It refers to 20 different minerals.

A good example of such conflicts is Małopolska Voivodship - a specific region of Poland, with high population density, and characterized by significant nature and landscape values, but which is also rich in mineral deposits and where 98 mineral deposits (mainly natural aggregates, and dimension and crushed stones in the deposits of different size) are located inside protected areas. This could be demonstrated by extensive areas of habitat protection (PLH) but also several birds refuges (PLB) which are designated along almost all of the Carpathian river valleys, the latter being the sites where almost all natural aggregate deposits occur. Some of the Nature 2000 areas were established in the terrains which had been already under different protection status, especially in the National Parks, their lagging zones, or Landscape Parks.

Majority of the mineral deposits have been documented prior to introducing the Nature 2000 network. The deposits are valuable mineral resource reserves, which, depending on demands, should be managed. Moreover, 16 deposits are located in the direct vicinity of the Nature 2000 sites. The detailed analysis of the Nature 2000 areas, taking into account the EU Guideliness, showed that in any case the mining activity was not shown as a source of the threat to the ecological equilibrium and cohesion of habitats. Therefore, they need compromise solutions, combining a potential future exploitation with nature protection obligations. The designated Nature 2000 sites are, in fact, spatially extensive areas of habitat protection where mineral deposits are usually small and isolated enclaves. It allows to believe that the future economic usage of the deposits should not have a deteriorative impact on a state of habitats and species as well as on integrity of their ecologic structures, provided appropriate mitigation measures and proper reclamation of post-exploitation terrains are undertaken.

In the case of the deposits that had been exploited prior to the Nature 2000 setting, the mining managing entities had, by law, to submit for approval the environmental reports. Due to long-lasting procedures, exploitation used to be stopped there. At present, the mining operators put into practice all the commitments resulting from the obtained environmental decisions despite their inadequate or too-extensive framing. Systematic environmental monitoring carried out on such deposits did not reveal the negative influence of exploitation on protected elements of the

environment. Unfortunately, accessing new deposits is associated with facing ever-growing formal restrictions, despite the positive experience from the present co-existence of mining and nature protection.

4.5 Discussion

The presented case study on legal constraints related to the access to the mineral deposits in Poland show the inconsistency of legal regulations, which adversely affects the future management of many mineral deposits. The overview of the legal rules relating to the mining activity, land-use planning, nature protection, as well the general provisions of Law on Natural Environment Protection, separately seem to be sufficient, but not fully harmonized to each other. This results in a number of practical problems.

Two detail illustrative examples were described in the case study -one example related to the core conflict between different options of the land-use on the mineral deposit area. It shows how difficult is to find a compromise in some crucial cases. The difficulty and the importance of the problem is multiplied by some political aspects and interests of a local, regional and governmental authorities.

Recommendations

1. There is a need to better link the Mining Law and Spatial Planning legal rules. Recommended solution should be implementation (and duty) of “Mineral deposits management plans” to the spatial planning documents on the all levels of such planning (local, regional and country-scale). It should be a tool to the negotiation with the authorities to find a compromise solution in the space policy.

2. Implementation of mineral resources protection rules on yet undeveloped mineral deposits and the prospective areas, according to elaborated concepts or by implementation the best practices –like in United Kingdom (buffer zones).

The second example is focused on nature protection and mining activity conflicts. The nature of the second one results more from the wrong interpretation of the law made by the clerks, than the law itself. It also shows, that a too fast introduction of the new legal regulations like a Nature 2000 network areas (to fulfilment the EU limits) may have a negative influence onthe future management of many mineral deposits. By the creation of Nature 2000 in Poland it should try to get around the active mines. For the designed areas the complex nature inventory have to be elaborated, to know the real natural potential and value (in many areas it was not done), and is now required to be included by the Environmental Assessment Report made by the investors - often too much and at a unreasonable range.

It does not take into account, that the pits could become a place of growth the biodiversity (birds, small animals, plants) . It is important by EIA elaboration to show the way of reclamation or revitalization of open-pits to use them in the ecological way. In several cases by elaboration of Nature net area management plans, a verification of Natura 2000 net borders should be made.

Recommendations

1. To solve the problem of the conflict between nature protection and mining activity firstly -a real identification of nature conditions, based on a complex research and prudent description of environmental requirements of mining activity are necessary. Secondly – only reasonable scope of EIA should be required by the environmental agencies, but the proper way of future reclamation of post-mining areas, and promotion of pro-ecological effects have to be made.

2. It is recommended to initiate a more intensive information activity as well as educate the public and local authorities in the field of the role and needs of minerals in the common life, creation a new image of mining – the sustainable mining, showing several best practices cases in Poland and abroad.

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5 Aggregates Plans and their Future: a View from South East Europe Countries

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5.1 Executive Summary

Securing reliable and undistorted access to raw materials is an increasingly important factor for the EU's economic competitiveness. One of the pillars of The Raw Materials Initiative (adopted by European Commission in Nov. of 2008) is setting the right framework conditions within the EU in order to foster a sustainable supply from European sources (EC Guidance 2010).

In order to have access to aggregates it is critical to adapt an Aggregates Planning Policy which required ensuring the sustainable supply of aggregates. In this planning policy the primary and secondary aggregates should be managed together in order to protect the primary resources and to reduce the volume of mining and C&D waste and industrial by-products. In order to ensure the access to aggregate resources, Aggregates Plans must look at least 20 years ahead and should be updated at least in every 5-10 years.

To maintain access to aggregates in South East Europe (SEE) several projects were launched (SARMa and SNAP-SEE) dealing with this important challenge for the SEE countries. This report summarises some the most important issues related to aggregate access and shows the case of Croatia where mineral planning is obligatory both on National and regional level and access to minerals and aggregates is a part of national and regional spatial plans.

5.2 Introduction

Securing reliable and undistorted access to raw materials is an increasingly important factor for the EU's economic competitiveness. One of the pillars of The Raw Materials Initiative (adopted by European Commission in Nov. of 2008) is setting the right framework conditions within the EU in order to foster a sustainable supply from European sources (EC Guidance 2010).

Based on the SARMa and SNAP-SEE project outputs and stakeholder consultations with both governmental authorities, industry, environmental NGOs and academia from SEE can be summarized that mineral plans are the optimal direction in which all parties can contribute and protect the issues they pursue (industry vs NGO, Natura2000 vs industry).

• Mineral plans, especially when they are integrated into spatial land use plans, help the industry and relevant authorities to establish a stable planning framework for mineral extraction over the long term.

• They are also very effective at creating a more integrated sustainable development strategy that takes account of wider societal concerns, such as nature conservation, at a very early stage in the decision making process.

Most of the SEE countries have some procedure and criteria for identification of exploitations fields. Some countries have very well defined conditions. The land use planning framework in Austria is very complex and complicated; while in the Autonomous Province of Trento (IT) there

are two instruments for assessing: interdisciplinary committee and EIA. An EIA is obligatory for all mining activities and all other intervention with regard to the environment in most of the countries. In some countries there is not enough cooperation between authorities in determining the environmental criteria, buffer zone and transport.

The principal issues that related to aggregate planning authorities should address in planning documents, bearing in mind that not all issues will be relevant at every site to the same degree, include:

- noise associated with the operation
- dust;
- air quality;
- lighting;
- visual impact on the local and wider landscape;
- landscape character;
- archaeological and heritage features
- traffic;
- risk of contamination to land;
- soil resources;
- geological structure;
- impact on best and most versatile agricultural land;
- blast vibration;
- flood risk;
- land stability/subsidence;
- internationally, nationally or locally designated wildlife sites, protected
- habitats and species, and ecological networks;
- impacts on nationally protected landscapes (National Parks)
- nationally protected geological and geo-morphological sites and features;
- site restoration and aftercare;
- surface and, in some cases, ground water issues;
- water abstraction.

5.2.1 Scope

Aggregates are used in the construction of housing, commercial buildings, industrial developments and a variety of public infrastructure projects. Almost 65% of the aggregates consumed in Europe annually are used for building construction purposes. Based on European Aggregates Association (2010) data, some 3.000 tonnes of aggregates are required for every new typical school, while a new sports stadium may require up to 300.000 tonnes of aggregates. For this specific application (i.e., building construction purposes), aggregates are used either indirectly in the form of cement and lime or directly as in concrete and mortars. In addition to the uses mentioned above, crushed calcite rock aggregates are used in granulated or powdered

form in various applications: animal feed, sugar industry, glass industry, chemical industry (paints, plastics) etc.

Primary aggregates are mainly sand, gravel, crushed stone; ***secondary aggregates*** can be recycled construction and demolition waste, manufactured aggregates, excavated materials from civil works, etc. (SARMa Glossary). Based on UEPG data (Tiess 2010) on economic growth, more aggregates will be required in South East Europe in the future. Aggregates have essential importance to the economic growth. Although the aggregates resources seem to be unlimited (most deposits are known), the access to those is becoming increasingly difficult. Not only protected areas (e.g. biodiversity conservation and cultural heritage sites) and social attitudes, but also the development of buildings and roads obstruct access to aggregate resources by occupying and sterilising areas with resource extraction potential. Therefore, planning of aggregate supply is essential.

In SEE countries responsible authorities for aggregate planning in the true sense of the word doesn`t exist. However, we could consider some of them as responsible authorities for aggregate planning because they contain information about mineral raw materials. In the most countries for aggregate planning are responsible authorities at national and regional level through the mining law and strategy as well as from different act related and involved in mineral planning. The authorities responsible for aggregates planning **are mining; land use planning and other authorities** at national and regional level various in countries. The planning of aggregates in the all countries or province (except Autonomous Province of Trento) include only the primary aggregates.

In the most countries main responsible authority (coordinator) for the development and making of plan is a Ministry (department of mineral policy) - in close cooperation with national geological survey and the land use planning authorities, other ministries in charge with mineral resources (Ministry of Physical Planning and Spatial plan). In the case of Croatia the planning process is defined within the Mining Law and an ordinance that describes the content of the planning document.

5.2.2 Relevance of the case

Demand for aggregates is also closely related to the level of maintenance and repair of existing buildings and the scale of civil engineering projects in progress (UEPG, http://www.uepg.eu/).

South East Europe (SEE) countries are rich in aggregates, but neither management nor supply, are coordinated within or across the whole area. At the local level, the issues are the environmental impacts, limited recycling, need for stakeholder consultation and capacity building, and lack of social license to operate. To meet challenges of making these shifts in previous EU project are defined by two goal:

- To develop a common approach to Sustainable Aggregates Resources Management (SARM) across SEE, namely to move towards efficient and low socio-environmental impact quarrying considering also waste management, and
- To ensure a Sustainable Supply Mix (SSM) policy in SEE, that is to use multiple sources, including recycled wastes and industrial by-products (slag) that together maximize net benefits of aggregate supply across generations.

The **support of SARM** (*Sustainable Aggregates Resource Management*) **and SSM** (*Sustainable Supply Mix*) is variable: in some countries they are supported at least in theory (Slovenia, Croatia, Serbia, and Montenegro), in other countries they are not known and not supported (Hungary, Herzegbosnian Canton).

Aggregates planning policy framework (based on land use planning) exists few countries (*Austria, the Autonomous Province of Trento (IT), and Slovenia*). **In other south-eastern European (SEE**) countries the **most important documents related to aggregates planning policy** are the **Mining/Quarrying Act or Plan, Law on Concession, Environmental Act, Sustainable Development Strategy, Waste Act or Strategy, and Land Use Planning Act**. Few countries have minerals plans (quarrying and mineral resources plan, mining strategy); while in other SEE countries the mining law (*Hungary, Bosnia-Herzegovina, Croatia, Montenegro*), and the law on concession (*Bosnia-Herzegovina, Montenegro*) deals with aggregates.

In most SEE countries **primary and secondary aggregates** are managed separately e.g. the responsible authority is different; or the aggregates management has not even started yet (*Bosnia-Herzegovina, Hungary, Montenegro, Romania, Serbia, Slovakia and Turkey).* Secondary aggregates are considered mainly by the **Waste Management Policy** of the country or region. The waste management is in progress (on different levels) and separated from resource management. Not all types of secondary aggregates are treated; mostly the construction & demolition waste (C&D) and the mining waste are treated by the regulatory framework.

5.3 Analysis

In SEE countries different legal and regulatory barriers related to aggregates planning development exist. Lack of uniform terms harmonizing with EU project suggestions (e.g. SARMa glossary) is a problem in Hungary and Romania. In the Autonomous Province of Trento (IT) the legal definition of the material (natural, waste or products) differs largely in the production process; in this way there are different types of procedures for the same material in function of the legal form. Thus the aggregates, excavated in a quarry, differ, from a legal point of view, from the aggregates of a civil work, al-though both aggregates are geologically identical. This involves bureaucratic procedures, which are very different; despite the aggregates have the same technical and geological features.

Extracting aggregates from below the water table is a sensitive issue in Austria; in Croatia only active quarries are considered by the spatial plan and are designated as mining areas; in Montenegro there are mismatches of spatial plans of local municipalities with the National Spatial Plan. The NATURA 2000 areas limit partly the quarrying in several SEE countries for instance in Austria, Hungary and Slovenia. In Emilia-Romagna Region (IT) the main problem is the strong hierarchy of the planning and authorizing system that creates long wait times. In Herzegbosnian Canton and Serbia there is a lack of regulations on aggregates planning. The ownership of the land causes problems in Albania and Slovakia. Lack of coordination between involved and responsible institutions, and small or no investment in underground and undersea researches of possible resources is the problem of Slovenia.

The potential conflicts of quarrying and nature protected areas are not treated adequately during in all partner countries. This results in designation of absolute 'no-go' areas for aggregates extraction in almost every partner country (except Romania and Turkey), although according to the Guidance Document of Non-energy Mineral Extraction and Natura 2000 'There is no automatic exclusion of NEEI (Non-Energy Extractive Industry) activities in and around Natura 2000. Instead, extractive activities shall follow the provisions outlined in Article 6 of the Habitats Directive to ensure that these activities do not adversely affect the integrity of Natura2000 sites' (EC 2010a, p. 7,). The designated 'no-go' areas cause serious problems in many SEE countries, which could be solved or eased by the consultation of the most important stakeholders (e.g. decision makers, environmental authorities, extracting industry).

The potential conflicts of quarrying and other land uses are not treated equally in all SEE countries. As a consequence of different policy large shares of the areas have been designated '**inaccessable**' for aggregates extraction in almost every SEE country. Although according to the G**uidance Document of Non-energy Mineral Extraction** and **Natura 2000**, there is no automatic exclusion of NEEI (Non-Energy Extractive Industry) activities in and around Natura 2000. Instead, extractive activities shall (solely) follow the provisions outlined in Article 6 of the Habitats Directive to ensure that these activities do not adversely affect the integrity of Natura 2000 sites (EC, 2010a, p. 7).

The designated '*inaccessable*' areas cause serious **economic** problems in many SEE countries, which could be solved or eased by the consultation of the most important stakeholders (e.g. decision makers, environmental authorities, extracting industry).

In several SEE countries the **Land Use Planning Policy Framework** contains important information for Aggregates Planning: e.g. **protected areas of nature or culture** – however regarding the designated mining areas there is a lack of information for aggregates.

The goal of the aggregates planning policy is to determine how to make planning better in SEE countries. SEE countries should also identify planning aspects that are applicable and relevant in all SEE countries because their inclusion in the Aggregates Planning Scheme would increase cohesion and harmonization.

The **minerals planning policy** is part of the national minerals policy framework (Tiess, 2011; EC, 2010b). A national aggregate policy can be defined as the entirety of operations of a state for influencing supply of and demand for mineral resources on its territory (Tiess, 2011). It involves protection of aggregates deposits through land use planning (i.e., securing raw materials supply).

In the context of this framework, at the national level an aggregates planning policy must be developed considering strategic issues which are then interrelated to the regional/local (operative) planning level. This is also an important hierarchical planning principle: generally, a planning process starts at (for instance) 1:100 000 and evolves to the detailed scale (regional: 1:25 000; local 1:5 000).

The step of regional planning is especially important for the regulation of raw materials issues. With the help of well-established statements, regional plans (based on broader development programs, like national and super-regional ones) determine the regional goals of land use planning for the development of single districts.

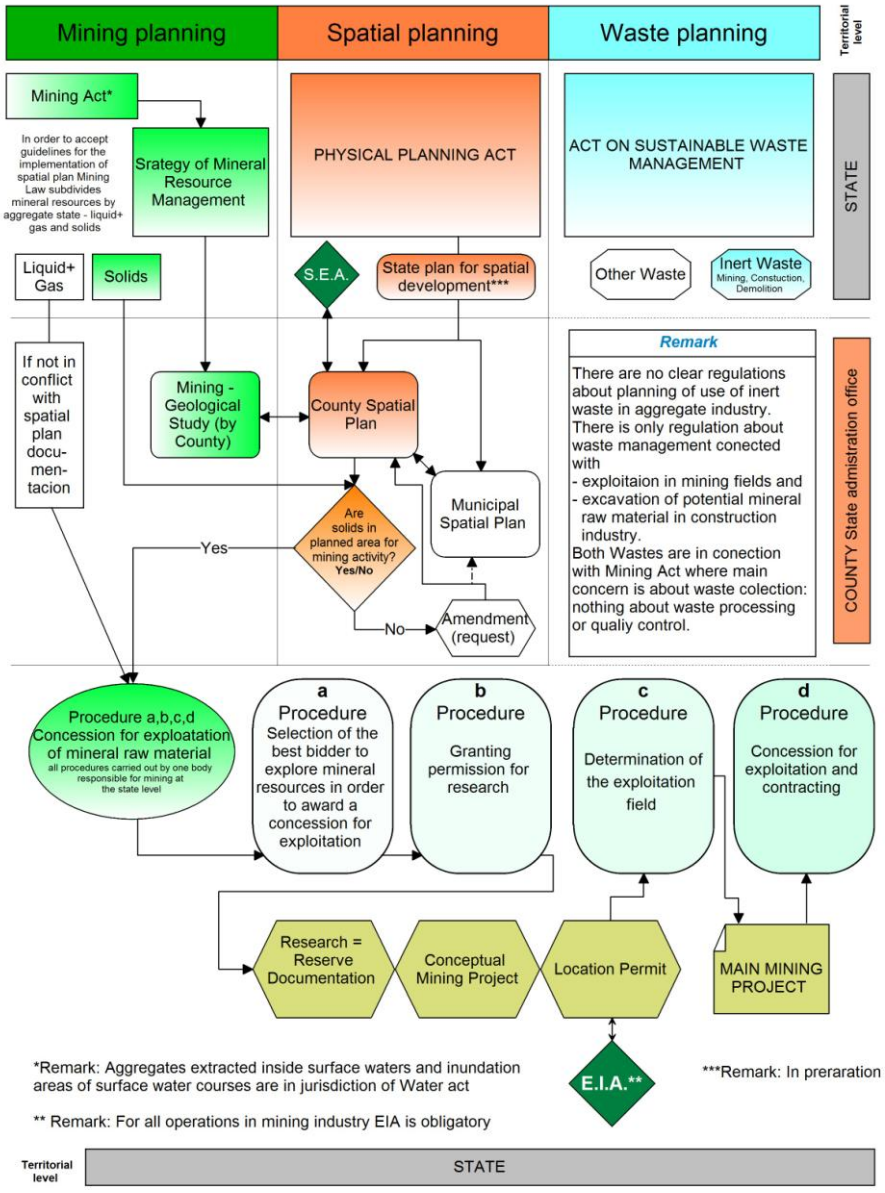

Figure 2: Regional planning related to aggregate supply: the example in Croatia.

A regional land use plan designed for the extraction and protection of mineral resources must contain a precise planning flow chart and a textual statement (Figure 1.). The textual statement included in the plan must define '**aggregates priority zones'** that should be safeguarded, while carefully considering the medium and long-term mineral resources demands, and the limited availability of mineral resources deposits.

The determination of **'aggregates priority zones'** encroaches on basic property rights and thus requires a settlement with the concerned landowner. It shall be justified if there is the need of public interest, which is relevant and valid in the case of aggregates supply/extraction, since aggregates are required for economic development. However, the quantity, quality, and the applications for which the resources will be needed in the mid- and long-term should be clear. To justify the designation of an area as '**aggregates resource priority zone**' requires an analysis of the aggregates market structure and a material flow analysis.

From a methodological viewpoint, two different approaches can be used in land planning. The first approach is to limit the planning by excluding certain usages for a specific area. This method has the disadvantage that a sustainable aggregates supply, i.e. the systematic securing of aggregates resource areas with priority, is not possible. In the second, alternative approach the fields of other usage priorities reduce deposits that are worth extracting while the remaining fields become priority aggregates resource areas. The advantage of this approach is that the authorities can develop a concrete aggregates resource policy, despite the fact that land speculation may occur. It is necessary to develop long-term plans that account for aggregates demand, aggregates availability, and that forecast impacts during the whole life cycle of the products (sustainability). The final goal is to achieve supply security and re-sources efficiency. (Horvath et al., 2014)

The aggregates planning should be implemented on national, regional and local levels. The national planning is a general approach, while the regional and local plans are detailed. Aggregate plans, integrated into land use plans, support the industry and relevant authorities to establish a stable aggregates planning framework over the long term. By overlaying mineral resource maps with areas reserved for other land-use purposes can help to identify potential areas of conflict so that future developments can be zoned away from these areas wherever feasible.

During the development of the Aggregates Planning Policy, the relevant stakeholders should be involved; this way the policy goes through a public consultation procedure, which is supported through regulatory elements in SEE countries.

In the Croatia does not rely on any aggregate imports, but border Croatian counties are exporting part of their aggregates production to a neighboring country (Italy). Also, although the production of aggregates is stagnating in the past several years (2009-2014), a slight increase in demand for aggregates in Croatia is expected. The future climate change induced increase in sea level and the resulting need to build coastal defenses (fortifications of cities, settlements, infrastructure and industrial sites at sea level) is recognized in Croatia, and the new mining strategy in Republic of Croatia, currently in draft stage, is planning to designate the reserve zones (landbanks) and to ensure the sustainable supply of aggregates. The Croatian coastline is long compared with the total national surface area. The coastal zone is mainly karstic and steep, with only one large alluvial plain, and contains approximately one-quarter of the total Croatian population. It is an important area for the national economy, particularly tourism and

Mediterranean-type agriculture. Sea-level measurements at four points on the east Adriatic coast over the last 40 years indicate differential sea-level trends: from a rise between +0.53 and +0.96 mm/y to a decrease between -0.50 and -0.82 mm/y, a range mainly due to local tectonic activity. Croatia, scenarios of sea-level rise for 2030, 2050, and 2100 have been reported of +18 ±12 cm, +38 ±14 cm, and +65 ±35 cm, respectively (2).Coastal areas appear to have, in general, a low vulnerability to changes in sea level. However, some important sites, such as historical town centres, the alluvial plain of the Neretva River, and Vrana Lake on the island of Cres would be seriously endangered. Because of its great length, the entire Croatian coastline cannot be fully protected. Therefore, long-term national adaptation strategies to sea-level rise and plans of actions are prepared taking into account that aggregates should be available for extraction within the vicinities of vulnerable areas such as coastal cites and arable land. This will be achieved through the national '**aggregates resource priority zones**' designated through the National Spatial Plan of Croatia.

5.4 Discussion

Generally, National Minerals Policy first has to provide a "*Mineral Statement*". Regarding aggregates two crucial issues have to be included: A National Minerals Policy **firstly** has to create the awareness of society's needs for minerals, and specifically for aggregates, and in the case of aggregates of the need for access to local resources. The **second** really crucial issue is that it sets the supply of minerals, and specifically of aggregates, as a resource for the benefit of society, and that it sets a balanced approach in the assessment of exploration and development of extractive activities. The National Minerals Policy should take into account the predicted medium to long-term demand for aggregates, ensuring that there is a sufficient stock of local reserves with access that is an inherent part of local spatial planning (Tiess, p. 15, 2010).

Aggregates Planning Policy is required to ensure the sustainable supply of aggregates. In this planning policy the primary and secondary aggregates should be managed together in order to protect the primary resources and to reduce the volume of mining and C&D waste and industrial by-products in order to ensure the access to aggregate resources. Aggregates plans must look at least 20 years ahead and should be updated at least every 5-10 years.

The permitting process for quarrying of primary aggregates should be simple, fast and effective, led by a major regulatory body. The 'One-stop-shop' model seems to be the most client-friendly solution and can be very efficient in a bureaucratic administration. Because of the major investment involved, extraction permits must be typically 10–20 years for sand and gravel pits, and typically 20–50 years for hard rock quarries.

An enhanced and sophisticated involvement of local society should be ensured in the SEE countries by the state or by the aggregates companies on a voluntary basis. The conflicts of different land uses should be in the future (in some countries are solved) eased by consultations of the relevant stakeholders (e.g. decision makers, environmental authorities, extracting industry, NGOs).

In the SEE countries the most comprehensive is minerals plan achieved at the national level is the Austrian Mineral Resources Plan (AMRP) was developed (and published in 2010) – in close cooperation with the regional governments. The mineral plans of countries such a Croatia (County Minerals Plans), Slovenia (National Programme for Mineral Resources Management - NPMRM) and the Autonomous Province of Trento, follow the principles outlined by (Cibin et al, 2011; Furin et al., 2011):

1. Aggregates demand and supply sources (Geology and economics)
2. Aggregates availability (Spatial planning restrictions)
3. Potential impacts (Environmental impacts, social impacts)
4. Life Cycle Analysis (usually not applied)
5. Scenarios (supply/demand)

The Austrian Mineral Resources Plan (AMRP) indicates aggregates zones which are/could be relevant for regional planning process: each land use planning law is considering so called aggregates priority zones which should be kept free from other development/utilization claims. Such zones are based on the AMRP and shall be included in the regional land use plans (ongoing process). As regional planning has to accepted from the local government, those aggregates priority zones – covered by regional plans – also have to accepted from the local government (planning hierarchy). If a operator want to extract aggregates he can refer to those zones. Basically, an operator also can extract in zones other than aggregates priority zones if possible.

The suitability zone maps drawn up using geoscientific methods were digitally overlaid on the digital regional planning data made available by the provincial governments. The respective regional planning specifications were broken down into so called prohibition and conflict zones. Prohibition zones are those areas in which the extraction of mineral raw materials is forbidden by federal or provincial law. Conflict zones are defined as those areas in which there are obstacles to extraction. These areas include, for example, Nature 2000 areas, where raw materials can only be extracted if there has been a positive nature compatibility analysis. The individual provinces define the conflict zones very differently, both in terms of their content and scope.

The results of the overlay of the suitability zone maps with the prohibition zones were referred to as Scenario 1. Subsequently, the conflict zones were cut out and the remaining areas (residual representation) depicted as Scenario 1.

These residual areas are basically raw material areas where conflicts have been eliminated, but which still required detailed revision, particularly as a number of residual areas are either too small to allow economically viable extraction or there are other reasons which militate against future extraction (e.g. wind parks, electric power lines, gas pipes etc.).

Separation distances/buffer zones may be appropriate in specific circumstances where it is clear that, based on site specific assessments and other forms of mitigation measures (such as working scheme design and landscaping) a certain distance is required between the boundary of the minerals extraction area and occupied residential property.

Any proposed separation distance should be established on a site-specific basis and should be effective, properly justified, and reasonable. It should take into account:

- the nature of the mineral extraction activity;

- the need to avoid undue sterilisation of mineral resources,
- location and topography;
- the characteristics of the various environmental effects likely to arise; and
- the various mitigation measures that can be applied.

Once the residual areas from both scenarios had been consolidated in this fine tuning process, a volumetric analysis was carried out.

AMRP – as mentioned above – is interrelated with the regional land use plans. Regional plans are based on land use planning laws and development programs (regional level) and have to be reflected by local land use plans. A regional land use plan designed for the extraction and protection of mineral resources has to contain a precise planning depiction and a textual statement. The textual statement included in the plan has to define the term "raw material priority zones" so that these areas serve the purpose of extraction in the parts of the planning area, in which the extraction of minerals should be guaranteed, while carefully considering the medium and long term mineral resource demands, and the limited availability of mineral resource deposits (respectively matters of restoration).

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