

### MINLAND: Mineral resources in sustainable land-use planning

A H2020 Project

**Topic:** SC5-15d - Linking land use planning policies to national mineral policies

### D6.2: Final Manual for Good Practice Guidance

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#### Disclaimer

The content of this deliverable is based on case templates (Good Practice Template) containing MinLand Case Studies. The studies have been written and elaborated by 'case owners', which constitute respective experts and practitioners with insight, knowledge and in some instances a specific stake in the case. Hence, the material on which this report is based reflect the view of the individual authors.

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### Executive summary

Growing populations, socioeconomic stability, and the transition towards a low-carbon and zero-waste future all impact the growing worldwide demand for mineral raw materials. The access to minerals is, however, defined by their geographical location, and influenced by different stakeholder interests, competing land-use and institutional complexity of minerals and land use planning policy.

The purpose of this Manual is to diffuse knowledge on good practice and its transfer into other public or private sector organisations and EU Member States on the topic of mineral resources in sustainable land-use planning. The Manual derives Good Practice Aspects from a wide range of 14 case studies comprehensively elaborated by project experts and validated by external stakeholders. The Manual guides the reader through seven thematic chapters outlining specific challenges, Good Practice Aspects addressing them represented by a diverse set of case studies, and suggestions for their transferability. A wide range of good practice examples in this manual cover topics such as access to high-quality data for minerals and land-use planning, valorisation methods and criteria for assessing mineral resources that go beyond economic value, as well as instruments and practices which contribute to mineral safeguarding. The Manual further provides practical examples of policy integration, transparency in land-use planning and mining operations, increased transparency through civil society involvement as well as lessons learned from different permit regimes.

This Manual for Good Practice comprises seven thematic chapters: a summary of each chapter's specific challenges, target audience and common themes is outlined below as well as in a short box-text at the start of each chapter:

# 1 Data Management in Policy and Land-Use Planning

How do we overcome the challenge of access to high-quality data for minerals- and landuse planning?

- Strengthen the role of geological surveys in compiling data and increasing availability and accessibility of data.
- Focus on capacity and resources for relevant authorities and actors to ensure data compilation and management.
- Consider the benefits of standardisation and harmonisation of data.
- Address the willingness to share data among different public authorities and industry.

### **2** Equal Assessment of Mineral and Other Land Uses

#### How can minerals and other land uses be assessed on parity?

- Development and application of valorisation methods and criteria for assessing mineral resources that go beyond economic value;
- Design and implementation of mechanisms and processes that transfer the results of these assessments into land use planning;
- Design and implementation of methods that equally assess minerals and other land uses for a final designation of land use of a given area.

Mandates for geological surveys as well as willingness to exchange information between different public bodies and industry.



Collaboration between different

levels of government

on objective and

technical criteria

fosters uptake of

mineral resource

data in land use

planning.



### Instruments for Mineral Safeguarding

What crucial aspects and elements **contributed to safeguarding practices** in the MinLand cases?

- Processes and instruments related to information of existing and potential mineral data available for land use planning and policy making;
- Land use planning processes and instruments which allowed weighing of interest and changes to land-use and zoning plans;
- Transparency of interlinkages between data access, land-use assessment, policy integration, and permitting processes.

# Policy Integration of Minerals and Land-Use Planning

How can the **two public policy streams of minerals policy and land-use planning be better aligned and integrated**, given differing policy objectives, stakeholder interests and governance structures?

- Emphasise the importance of minerals on the national political agenda;
- Develop regulations and national frameworks for integration of minerals into landuse planning;
- Utilise 'soft-policy approaches' of informative and collaborative nature to foster inclusion of minerals in land-use planning;
- Ensure coordination channels between departments and levels of governments. Specific attention should be given to ensuring capacity of all actors to achieve policy integration.

# Transparency in Mineral Exploitation and Land-Use Planning

What can be done by public authorities and industry alike to **increase transparency in land-use planning and mining**?

- Provide a clear planning process description, based on the national planning system, and share this with all interested parties;
- Share information regarding companies' spatial and environmental plans with stakeholders;
- Include stakeholders' input in planning before submitting proposals to the authorities.

### 6 Social Aspects and Civil Society Involvement

Regardless of mineral potential, raw material production in Europe is facing **challenges of societal acceptance and conflicting interests** of stakeholders. How can these challenges be addressed? Safeguarding is receiving increased political attention but what does it entail in practice?

Policy integration is a specific task for the public sector; the process requires both national commitment (political agenda) as well as local capacity and coordination.

Achieving transparency in mineral exploitation requires sharing of information and involvement of stakeholders in early stages of operations.

Efforts by industry to engage stakeholders early and find



- Early stakeholder involvement, even outside of mandatory consultation procedures, show improved relationship between industry and stakeholders;
- Utilising different communication channels and allowing continuous information exchange throughout operations allowed for broader participation of stakeholders and increased transparency of mining practices;
- Statutory public consultation and public sector initiatives to foster sustainable practices facilitated trust and positive attitudes towards operations;
- Allowing co-existence of mining and other land uses, through e.g. compensation measures increased acceptance of mining operations and land-use conflict mitigation.

# 7 Permitting and Licensing

Permitting requires **resources and capacity**, from both **public sector** and **companies** alike. How can the permitting process, often encompassing numerous jurisdictions and public authorities, be made more **efficient and transparent**?

- Involvement of different authorities in an integrated manner ensures inclusion of relevant expertise in the permitting process;
- Parts of the permitting process handled on a regional level ensured inclusion of regional and local interest and knowledge;
- Development of national guidance tools, as well as support mechanisms involving national geological surveys ensured knowledge and information provision and improved efficiency of permitting processes;
- → Making documents related to permitting **publicly accessible** when possible, and conducting **public consultation** procedures increases transparency and participation;
- Internal capacity and voluntary actions (e.g. early stakeholder involvement) by companies enabled a more efficient and favourable outcome of the permitting process.

mitigating and compromising strategies have a positive impact on the social acceptance of mining.

In the public sector permitting often requires division of responsibilities; placing emphasis on capacity and coordination in ensuring timeefficiency and transparency.

From an industry perspective, the permitting process may also require internal capacity as well as stakeholder involvement.





### **Table of Contents**

Executive Summary	Error! Bookmark not defined.
Introduction	7
The MinLand Project	
How to use the Manual for Good Practice	9
Understanding Good Practice	14
1. Data Management in Policy and Land-Use Planning	16
2. Equal Assessment of Mineral and Other Land Uses	27
3. Instruments for Mineral Safeguarding	40
4. Policy Integration of Minerals and Land-Use Planning	51
5. Transparency in relation to Mineral Exploitation	60
6. Integration of Social Aspects and Civil Society Involvement	72
7. Permitting and Licensing	82
List of References	90
ANNEX I: Methodological Notes	93
ANNEX II: Minland Case Templates	97





### Introduction

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The stable and sustainable supply of mineral resource raw materials is paramount for future socioeconomic stability and innovation in the European Union. Mineral resources are however bound to their geographical location and mineral policies need to address various factors impacting supply; such as multiple stakeholder interests, competing land-use and institutional complexity such as competing policy objectives. This myriad of challenges often manifest in land-use conflicts, unnecessary sterilisation of mineral resources, and lack of societal trust and acceptance of the sector. Recognising the importance to achieve coherence and integration between policy objectives and land-use practices the European Raw Materials Initiative of 2008 (renewed in 2011) launched a series of actions aimed at the establishment of favourable framework conditions for the extraction of raw materials within Europe; to secure the needs of the European non-energy extractive industry and society as a whole (AHWG, 2014). The importance of a favourable minerals policy framework and the link between access to mineral potential in the EU and challenges of policy and legal framework, information framework, land-use planning and permitting is further exemplified in sub-goals II.1 and II.2 of the European Innovation Partnership on Raw Materials' (EIP) Strategic Implementation Plan (SIP) (European Commission, 2013).

As geology defines the occurrence of mineral deposits, mining is geographically constrained. However, the down-stream industrial use of the mineral products, particularly metals and certain industrial minerals, often occur in countries different from the location of the mine. Therefore, mining communities do not necessarily appreciate the importance of mineral production for the benefit of people living in other countries, particularly if there is no tangible sharing of those benefits. Mining cannot choose locations that are logistically, socially, environmentally or politically appropriate or 'friendly'. This means that mining companies may face circumstances that could pose challenges such as the relationship with local communities, position in the landscape/environment, relationship with local and national governments, weak governance and associated increased risk of corruption and bribery. In order to deal with these challenges in a responsible way it means that geoscientists and engineers will need to build their capacity and skills on how to deal with local communities and related social issues. The outcome should be the equitable distribution of the benefits, including also mineral land-use planning issues, and minimization of the negative impacts on people and the environment.

A sustainable and integrated view on minerals value chains requires looking even further upstream into the pre-exploration that includes planning process for mineral land use and development at the earliest stage.

Currently, worldwide demand for mineral raw materials is growing due to the emerging digital revolution, the innovation of e-mobility and artificial intelligence technologies, and the transition towards a low-carbon and zero-waste future. Consequently, the intensity on the economy and society, in securing the increasing mineral raw materials supply, will continue to remain notably high, particularly in the case of critical raw materials; which by almost 60% are related to high-growth enterprising. This trend is triggering and enabling altered or new value chains of mineral raw materials industries from the upstream to the downstream, e.g. from exploration, mining, processing and products along the value chain to end-use manufacturing. In particular, the new EU Industrial Strategy





highlights the importance to maintain full operational capacity of strategic industrial value chains, such as the ones addressing renewable energy, grids, lithium batteries, electric vehicles, robotics and defence applications. In this regard, however, a more holistic view on mineral development and, respectively, integrated minerals value chains also need to look further upstream into the preexploration stage to guarantee and secure sustainable supply. To achieve this access to land for extractive activities, responsible and innovative land stewardship throughout the mining life cycle are fundamental. Thus, in order to effectively connect the pre-exploration stage in a holistic and integrated view on sustainable mineral value chains, certain challenges need to be addressed:

- Comprehensive data and assessment of mineral resources, current and potential land use available for public decision-making in the land use planning process
- Mechanisms for a transparent and equitable assessment of minerals resource development next to other land use options
- Higher integration of minerals and land use planning policy resorts on a strategic level to connect two distinct but overlapping policy resorts
- Mineral and land use planning processes and instruments taking into consideration the safeguarding of mineral resource deposits

If accounted for the abovementioned challenges holistic and integrated sustainable mineral value chains integrate and maximise the multiple benefits related to economic, social, environmental and cultural values. Consequently, the identification of possible synergies or conflicts at an early stage enhances the steering capacity for the preparation and implementation of sustainable land-use plans that include minerals development. Taking the example of a holistic and integrated Lithium Battery value chain it is equally important that land-use planning takes into consideration both the construction of battery-manufacturing plants as well as the upstream mineral resources supply.

The integrated value chain approach applies to all land use designations that could alter access to mineral resources. Nature protection areas indicate a particularly important land use designation, since they cover almost 18% of land in the EU and still offer possibility for mineral extraction under certain conditions. In particular, for Natura 2000 regulated areas it is important to consider that mineral extraction invariably has an impact on the land. Therefore, a sustainable approach requires addressing the complete mining value chain until the end of the mining life cycle including rehabilitation efforts.

Taking a European or global perspective, however, differing EU MS mining legislation and permit procedures, land use planning processes, and nature conservation are potentially a barrier to mining activities. Consequently, this may cause vulnerabilities in an integrated mineral value chain. Therefore, effective land-use planning for mineral resources in the pre-exploration stage requires the use of mineral resource maps and assessment methods, safeguarding mechanisms for mineral deposits, and integrated mineral and land use planning policy.

### The MinLand Project

As occurrences of mineral deposits are spatially confined, access to land is a prerequisite for any kind of activity related to exploration, extraction and exploitation of such resources. Access to land, however, is becoming increasingly complicated with growing urban areas, increased industrial needs and infrastructure development, as well as importance of preservation of nature and biodiversity. As such, land use planning concerns the management of scare land, according to politically and societally





defined goals, objectives and their spatial appropriation (Gugerell, 2019). Addressing the challenges of a sustainable mineral supply on the one hand, and access to land on the other, the MinLand project has

- created an online knowledge repository on mineral and land use planning policy,
- facilitated evidence-based policy making for minerals- and land-use policy and practice
- strengthened transparent land-use practices, and;
- fostered networking between relevant stakeholders (e.g. between land-use planners and mining authorities).

Through several work packages addressing topics such as land-use planning policies & practices (WP2), case studies of land use planning in exploration and mining (WP3), land use practices, valorisation and valuation of geological and societal data and civil society impacts (WP4), common framework for natural resource planning (WP5), peer learning and good practice guidance documents for practitioners (WP6), and finally, the land use planning network and its associated workshops (WP7)<sup>1</sup>, the MinLand project addresses the following challenges:

- 1) Challenges of competing land uses, e.g. densely populate areas, Natura 2000 areas, competing economic interests (agriculture, tourism, etc.).
- 2) Complex diversity of policies, legislations and practice regarding mineral resource development, compared to other land-uses.
- 3) Lack of flexibility between land-use and sub-surface management, for example, zoning and land-use planning not considering co-existence of land.
- 4) Difficulties in integrating 'hypothetical' or unknown deposits in land-use planning, and incorporating temporal perspectives; e.g. possibility remediation and after-use of land.
- 5) The increase of demand for mineral resources, e.g. aggregates for construction material (feasible to source in proximity of construction to minimise emissions and transportation), but also Critical Raw Materials (CRM) for technology and innovation.
- 6) Need for high quality data, harmonisation of the geological/geophysical information and related documentation (e.g. INSPIRE compliance), as well as access and availability of such data for industry and authorities alike.

### How to use the Manual for Good Practice

In the scope of the MinLand project, this deliverable (*6.2 Final Manual for Good Practice Guidance, referred to as "the Manual"*) focuses on good practice examples from the MinLand cases that address the above mentioned challenges. The MinLand cases synthesise a wide range of good practice examples, and, thus, provide **comprehensive guidance and learning opportunities for practitioners** in public policy, industry, land-use planning, geological surveys or other interested stakeholder groups. The purpose of focusing on **practical cases and their success-factors and challenges** addressing a specific topic is to contribute to a solution-oriented 'case-learning' approach (Shapiro, 1984).

The Manual structures good practice information originating from 14 MinLand cases into seven thematic chapters:

- 1. Data Management in Policy and Land-Use Planning
- 2. Equal Assessment of Mineral and Other Land Uses



<sup>&</sup>lt;sup>1</sup> Activities advertised through the project web page: <u>www.minalnd.eu</u>



- 3. Instruments for Mineral Safeguarding
- 4. Policy Integration of Minerals and Land-Use Planning
- 5. Transparency in Mineral Exploitation and Land-Use Planning
- 6. Social Aspects and Civil Society Involvement
- 7. Permitting and Licensing

The purpose of these chapters is to describe individual MinLand case *Good Practice Aspects* that respond to MinLand project challenges and that are relevant for practitioners. Against this backdrop, **each chapter is divided into three separate parts**:

- (1) an introduction describing the main challenges of the specific topic;
- (2) a **table describing** *Good Practice Aspects* and offering **suggestions for transferability** of good practice to practitioners, and;
- (3) a **synthesis section** highlighting and synthesising the **common themes and trends** of MinLand case *Good Practice Aspects*.

### Synthesised Good Practice Aspects and in-depth information in Good Practice Templates:

The MinLand experts together with practitioners elaborated **Good Practice Aspects providing practical insights and examples** from their selected cases. The Good Practice Aspects are derived from comprehensively elaborated case studies (see <u>Deliverable 3.3 Synthesis of case studies</u> (Raaness et al., 2019)) that are summarised and presented in a Good Practice Template in the annex of this document. Readers of the manual are invited to click the titles of the Good Practice Aspects as this is directly linked to the relevant information found in <u>Annex II</u>. The Good Practice Template provides a complete overview of the case at hand, including contextual factors, background information and impacts achieved. In contrast, the Manual chapters extracts and synthesis only Good Practice Aspects from the Good Practice Template in order to give the reader an overview of practices and trends. Hence, the Manual points readers towards highly condensed good practice information, but for a **more in-depth understanding of cases advises the reader to consult the Good Practice Template** in the annex.



Figure 1 Relation between cases and the chapters of this report

In order to bring further guidance and clarity to practitioners interested in the cases presented in manual, the case authors have indicated which particular **mineral resource group** their case relates to.





The mineral resource group (sometimes more than one) is listed under the related Good Practice Aspect. The different mineral resources are classified according to type of mineral raw material (metal, aggregates, industrial minerals):

- Metals
- Industrial Minerals
- Aggregates and construction minerals (will be called aggregates)

In addition, MinLand adds the material group of **critical raw materials** following the EU Criticality List (CRMs), as these are materials considered strategically important for the socioeconomic development of Europe. Important to consider for understanding the different contexts of the cases is that mineral resource types fall under different legislation (which often varies from country to country); e.g. the difference between state-owned and land-user owned resources. The type of resource also relate to different challenges and opportunities, for example, aggregate production mostly relates to local and regional spatial scales (due to proximity from extraction to consumption or use), whereas metal mining can span larger scales from regional, through national to even global value-chains. Hence, value chains can span from local to regional or to national-EU-global level. A few of the cases deal with the integrated challenges (and solutions) across the value-chain, from data to extraction and remediation (e.g. SE case 3, PL case 7, GR case 11). An overview of the cases in this Manual according to their resource group can be seen in *Figure 2* below.

#### Aggregates

Sweden (case 1-3) Spain (case 4) Norway (case 5) Italy (case 9) Portugal (case 10) Greece (case11) Austria (case 14)

### Metals

Sweden (case 1-3) Norway (case 5) Ireland (case 6) Finland (case 8) Portugal (case 10 & 13) Greece (case 12) Industrial Sweden (case 1-3) Norway (case 5) Poland (case 7) Italy (case 9) Portugal (case 10)

#### CRMs

Sweden (case 2&3) Norway (case 5) Finland (case 8) Portugal (case 10)







As outlined above this manual is divided into 7 thematic chapters according to the MinLand Good Practice Streams (see <u>Annex I</u> for methodological notes), as well as the identified challenges and success factors of the 14 MinLand case templates (see <u>Annex II</u> for a complete compilation). To give readers an overview, the main highlights of chapter 1-7 are found summarised below, as well as in a small intro in each respective chapter.

# Data Management in Policy and Land-Use Planning

How do we overcome the challenge of access to high-quality data for minerals- and landuse planning?

- Strengthen the role of geological surveys in compiling data and increasing availability and accessibility of data.
- Focus on capacity and resources for relevant authorities and actors to ensure data compilation and management.
- Consider the benefits of standardisation and harmonisation of data.
- Address the willingness to share data among different public authorities and industry.

### **2** Equal Assessment of Mineral and Other Land Uses

How can minerals and other land uses be assessed on parity?

- Development and application of valorisation methods and criteria for assessing mineral resources that go beyond economic value;
- Design and implementation of mechanisms and processes that transfer the results of these assessments into land use planning;
- Design and implementation of methods that equally assess minerals and other land uses for a final designation of land use of a given area.

**5** Instruments for Mineral Safeguarding

What crucial aspects and elements **contributed to safeguarding practices** in the MinLand cases?

- Processes and instruments related to information of existing and potential mineral data available for land use planning and policy making;
- Land use planning processes and instruments which allowed weighing of interest and changes to land-use and zoning plans;
- Transparency of interlinkages between data access, land-use assessment, policy integration, and permitting processes.

Mandates for geological surveys as well as willingness to exchange information between different public bodies and industry.

Collaboration between different levels of government on objective and technical criteria fosters uptake of mineral resource data in land use planning.

Safeguarding is receiving increased political attention but what does it entail in practice?





# Policy Integration of Minerals and Land-Use Planning

How can the **two public policy streams of minerals policy and land-use planning be better aligned and integrated**, given differing policy objectives, stakeholder interests and governance structures?

- Emphasise the importance of minerals on the national political agenda;
- Develop regulations and national frameworks for integration of minerals into landuse planning;
- Utilise 'soft-policy approaches' of informative and collaborative nature to foster inclusion of minerals in land-use planning;
- Ensure coordination channels between departments and levels of governments. Specific attention should be given to ensuring capacity of all actors to achieve policy integration.

# 5 Transparency in Mineral Exploitation and Land-Use Planning

What can be done by public authorities and industry alike to **increase transparency in land-use planning and mining**?

- Provide a clear planning process description, based on the national planning system, and share this with all interested parties;
- Share information regarding companies' spatial and environmental plans with stakeholders;
- Include stakeholders' input in planning before submitting proposals to the authorities.

# Social Aspects and Civil Society Involvement

Regardless of mineral potential, raw material production in Europe is facing **challenges of societal acceptance and conflicting interests** of stakeholders. How can these challenges be addressed?

- Early stakeholder involvement, even outside of mandatory consultation procedures, show improved relationship between industry and stakeholders;
- Utilising different communication channels and allowing continuous information exchange throughout operations allowed for broader participation of stakeholders and increased transparency of mining practices;
- Statutory public consultation and public sector initiatives to foster sustainable practices facilitated trust and positive attitudes towards operations;
- Allowing co-existence of mining and other land uses, through e.g. compensation measures increased acceptance of mining operations and land-use conflict mitigation.

Policy integration is a specific task for the public sector; the process requires both national commitment (political agenda) as well as local capacity and coordination.

Achieving transparency in mineral exploitation requires sharing of information and involvement of stakeholders in early stages of operations.

Efforts by industry to engage stakeholders early and find mitigating and compromising strategies have a positive impact on the social acceptance of mining.





# 7 Permitting and Licensing

Permitting requires **resources and capacity**, from both **public sector** and **companies** alike. How can the permitting process, often encompassing numerous jurisdictions and public authorities, be made more **efficient and transparent**?

- Involvement of different authorities in an integrated manner ensures inclusion of relevant expertise in the permitting process;
- Parts of the permitting process handled on a regional level ensured inclusion of regional and local interest and knowledge;
- Development of national guidance tools, as well as support mechanisms involving national geological surveys ensured knowledge and information provision and improved efficiency of permitting processes;
- → Making documents related to permitting **publicly accessible** when possible, and conducting **public consultation** procedures increases transparency and participation;
- Internal capacity and voluntary actions (e.g. early stakeholder involvement) by companies enabled a more efficient and favourable outcome of the permitting process.

In the public sector permitting often requires division of responsibilities; placing emphasis on capacity and coordination in ensuring timeefficiency and transparency.

From an industry perspective, the permitting process may also require internal capacity as well as stakeholder involvement.

### Understanding Good Practice

This manual is based on the rigorous compilation of good practice information in the MinLand cases. For a complete overview of the methodological process of compiling and structuring this information see Annex I on methodological notes. Readers of this manual should however be aware of how 'good practice' information is structured in the following chapters. As *figure 3* below shows, each Good Practice Template (which can be found in <u>Annex II</u>), addresses specific good practice topics – which are represented by the 7 chapters in this manual, respectively. The case good practice aspects, elements and suggestions for transferability are then presented in part 2 of each chapter – in the form of a table to give the reader an overview and short summary of the case examples. Highlights and trends from this table are then discussed and summarised in part 3 of each chapter – in order to give the reader a synthesis and overview of some of the trends identified.



Figure 3 Structure of Good Practice Information





#### Structure of the individual chapters:

→ Good Practice Topic: Refers to one out of eight major MinLand project topics that each addresses one of the major identified challenges for linking mineral and land-use planning policy in Europe. These are stated on the first page of the Good Practice Template, and for this deliverable they are imbedded in the chapters 1-7.

#### Found in part 2 of each individual chapter:

- → Good Practice Aspect: Represents a solution or an approach to address a challenge or problem related to the broader good practice topic, it outlines the highest aggregated level of information of good practice information. Cases often describe several Good Practice Aspects which may relate to one or more good practice topics. In this Manual they are found in respective chapters under section 2, the titles of the Good Practice Aspects are directly linked to respective aspects in the Good Practice Templates found in Annex II.
- → Elements of Good Practice Aspects: These are "building blocks" of the good practice aspects, explaining how the good practice aspect came about or challenges encountered in the process. These are characterised by the case authors as 'success factors', 'challenges encountered', 'strategic choices', or 'framework conditions'.
- → Recommendations for Transferability: The good practice template further contains a section on recommendations for transferability, these are linked to specific elements of a Good Practice Aspect and constitutes suggestions by the case authors on recommended practices that could be transferred into another context.





# 1. Data Management in Policy and Land-Use Planning

Authors: A. Raaness, H. Schiellerup (NGU), S.L Gottenhuber (WU)

Overcoming challenges of access to high-quality data for minerals and land-use planning requires the strenghtened role of geological surveys in compiling data and increasing availability and accessibility of data. There is a need to focus on capacity and resources for relevant public authorities and other actors, but also address 'the willingness to share' data to ensure data compilation and better data access. Good Practice Aspects and Elements of the cases highlight the importance of not only having access to data but ensure that this data can be understood and utilised by land-use planners.

The current chapter addresses MinLand cases and good practice examples that relate to data assessment and the identification of actual and potential land uses. Some of these examples mention 'weighing and assessment of land-use options', an aspect which will be further addressed in chapter two. The focus of this chapter is data access and use in policy formulation and land-use planning, and the chapter describes good practice from Sweden (case 1), Spain (case 4), Norway (case 5), Italy (case 9), Portugal (case 10), and Austria (case 14). For a more in-depth understanding of the cases, readers are advised to consult the complete good practice templates of individual cases of interest, found in <u>Annex II.</u>

### **1.1 Introduction**

High quality spatial/geological data on known and potential mineral resources are needed by both the prospective and extractive industry, as well as for proper land use management. It is also worth considering what 'high quality data' implies in different contexts; for example, how is the data organised and adapted in e.g. GIS (Geological Information System)? How is this data gathered and is the process thereof well documented? Regarding land use planning, 'high-quality data' may also refer to whether the polygons are correctly defined and that enough information is available (and adapted or understandable through e.g. guidelines) to ensure proper 'uptake' in land-use management. Hence, land-use management is essential to ensure access to current and future resources, and to prevent unnecessary sterilization of resources caused by competing land-uses. Data on mineral resources must be available, accessible and of sufficient quality to make informed decisions in the land use planning processes. However, the availability of, and access to, high quality data is not a given; land use planners and decision makers must be able to consider both well documented deposits as well as areas of high likelihood for discovery in the planning process.

An evolving dataset will be characterised by differences in the quality of geological data. Resources in demand today may not be equally important in the future, and mineral deposits not economically viable for extraction today may turn out to be profitable in the future. On European level, several countries have organised or mapped their data on mineral resources to be compatible with INSPIRE (Infrastructure for Spatial Information in Europe). INSPIRE-compliant data on land use planning is currently in the process of being implemented throughout Europe. As observed in the results of the MinLand WP2 deliverable 2.3 (Carvalho et al., 2019a), a number of countries are working towards compliancy on this stage as well. The INSPIRE directive highlights some of the challenges related to data assessment in the MinLand cases: "The problems regarding the availability, quality, organisation, accessibility and sharing of spatial information are common to a large number of policy and information themes and are experienced across the various levels of public authority. Solving these problems requires measures that address exchange, sharing, access and use of interoperable spatial





data and spatial data services across the various levels of public authority and across different sectors." (The European Parliament and the Council of the European Union, 2007, p. 1).

Access to geological data is usually not enough for land-use planners and decision makers. The design of land use planning needs to be integrated with knowledge about mineral raw materials and their authorisation process (tightly connected to land use). As a part of this design, land-use planners and decision makers also need to understand the information in order to appraise the data in competition with other land uses correctly. Against this backdrop, assessment of deposits and weighing potential benefits of competing land-uses are a necessary next step in the land-use planning and decisionmaking process (see chapter 2 for more information). The industry has reporting codes for assessing the value of deposits, mostly based upon the CRIRSCO classification. When available, public authorities may also utilise these reports in order to gain insights into evaluation of deposits for land use and permitting purposes. Further details on this topic can be found in the MinLand deliverable 4.1 Existing valorisation and classification schemes and valuation methods for mineral land use practices (Kot-Niewiadomska and Galos, 2019). Examples from the MinLand cases show that international reporting codes are used to some extent within land-use planning and permitting, such as PERC, which is now used in several EU Member States, e.g. Ireland and Sweden. In addition, there are examples of national systems of data repositories in Austria (Austrian Mineral Resources Plan) and Norway (case 5). Reporting systems (codes, standards, classifications) have distinct applications; on the one hand, information of mineral reserves and resources (including potential deposits) is important for commercial reporting and company internal reporting systems. On the other hand, this information is highly valuable for public authorities in both policy formulation but primarily in land-use planning processes (Tiess et al., 2018). Requirement for industry to supply and report such data varies greatly in different EU MS jurisdictions, thereby also indicating the need for data accessibility from other sources (e.g. geological surveys). 'Quality of geological database' is listed in the Fraser Report (which serves as a quality indication), as one of the policy factors affecting industry investment decisions: Sweden, Finland and Ireland have continuously been ranked high for this factor over the past decade (Fraser Institute, 2018). However, the Fraser report does not include all countries, and there are many geological surveys throughout Europe with high-quality data bases.

As described in several of the cases in the MinLand project, such as from Nordland (Norway), West-Ribero (Spain, Kevitsa (Finland), Fäbodtjärn (Sweden), effective structures for compiling high quality data, and exchanging and accessing data on mineral resources are necessary in land use planning. In Sweden (case 1), this has for example contributed to new exploration projects. Thus, high-quality available data is an important step to make better informed decisions in the land use planning processes.

As outlined in this introduction, there central challenges pertaining to data assessment and the identification of actual and potential land use are:

- Availability & reporting requirements of data: compilation of mineral inventories following national or international templates for reporting. Availability and requirements differ according to EU MS jurisdiction;
- Quality of data data does not only have to be available but must also be of certain quality. This challenge can partly be related to different reporting criteria and standards as well as terminology used.





- Accessibility of data regarding both compiled data (industry, geosurvey etc.) but also access to other relevant data for local authorities and land use planners.
- Harmonisation & Standardisation lack of harmonisation between countries (different reporting codes and systems).
- **Collecting, archiving and enhancing the quality of geological data** not only from the public sector but also from exploration and **mining companies and making this data freely available**.

The MinLand cases related to data assessment and identification of actual and potential land use outlined below address these challenges and provide good practice examples to overcome them.

### **1.2 Good Practice Aspects**

The following section aims to identify Good Practice Aspects and transferability suggestions related to data assessment and the identification of actual and potential land use in MinLand cases. The table is intended to give the reader an overview of some of the successes, challenges and contextual factors related to a specific good practice aspect, as well as the case experts' own suggestion for transferability. Readers should always consult the comprehensive MinLand good practice description of the case (found in the Annex) for more in-depth information and suggestions.





#### D6.2: Final Manual for Good Practice Guidance

Table 1 Good Practice Aspects of Data Management in Policy and Land Use Planning

Good Practice Aspect	Description and Element(s)	Suggestions for Transferability
Available high quality geological information (SE case 1)	Archived open-access exploration information: Geological information and data has been archived by the Geological Survey of Sweden, official government authority for geological matters. The information and data consist of geophysical data (gravity, magnetics, electromagnetic measurements) base geological information including gathered data from the field. Prospecting information from exploration permits, shall also be given to the survey upon closing down of prospecting. Thus, information from these projects are saved and made available for the next exploration company (as well as for research). One important aspect of the gathered geological data utilised in case 1 (SE) is the storage of drill cores from earlier exploration activities.	Availability of open geological and geophysical information including reuse of previous exploration data, like stored drill cores, and making these available ensures a sustainable use of all exploration activities as well as improves upon possibility for successful exploration. The relevance for exploration activities is considerable.
(Metallic; Aggregates; Industrial)	<b>Active support mechanism for use of geological data:</b> The geological data is provided to industry and public authorities with <b>expertise and support provided by the geological survey</b> of Sweden (SGU).	Having a support mechanism and inclusion of expertise regarding geological data can serve as an advisory purpose for both industry and public authorities alike.
	<b>Geological data and land use planning:</b> The geological data is also being <b>used for</b> <b>land use planning</b> and forms the bases for determining if a deposit should be considered as an area of national interest.	High quality geological information is necessary for determining if a deposit is of sufficient value for being introduced as a part of the general land use and thus receive a form of protection in the land use system.
Enhancing mineral resources knowledge for land use planning and use in policy	<b>Elaboration of Potentially Exploitable Resources Maps:</b> The first step to <b>involve</b> <b>regional authorities</b> on the idea of integrating geological and mining aspects in the land use planning processes requires that they realise which geological resources are available in their territory. <b>Geological characterisation and assessment of the</b> <b>exploitability of the mineral resources</b> , defining different types or varieties of potentially exploitable resources, as well as their geographical delimitation is required. The cartographic expression of this research is the Map of Potentially Exploitable Resources.	The initiative must be characterised by expertise and be based on objective data gathering. Authorities, stakeholders and industry should be involved in the process due to their knowledge of geological data. Transferability should consider both existing geological information but also the willingness of involved actors to cooperate.
(ES case 4) (Aggregates)	<b>Availability of Information:</b> The elaboration of Mining-Environmental Planning Maps (including Maps of Potentially Exploitable Resources) is only feasible when enough information is available or can be acquired at the specific working map scale. <b>The need</b> <b>for information and thematic cartographies of the different elements</b> that make up the natural and socioeconomic environment, in order to acquire a greater knowledge of the characteristics of the territory, was noteworthy.	Financing for a mapping process to collect data (from various ministries and other actors) and to group such data according to different land-uses (in order to avoid land-use conflicts).





*Willingness to cooperation by involved actors:* It is also important to consider the *will* The development of a process of information exchange and of the stakeholders (and even the mining companies themselves) for sharing information which even may be sensitive in some cases (nesting areas, economically strategic outcrops, archaeological sites, etc.).

**Development of** tools and procedures for the assessment of actual and potential land uses in order to reduce conflicts within extractives industries (ES case 4) (Aggregates)

Improved data on

mineral resources

(NO case 5)

(Aggregates; Metallic; Industrial;

CRMs)

Development of the Mining-environmental planning map: The Miningenvironmental planning map is a cartographic zoning proposal whose main aim is to select the best location for the mining activity, taking into account the Potentially Exploitable Resources Maps as well as all the socio-environmental and legal (environmental, mining and land-use planning) constrains. This map includes different categories as "Non-Exploitable Zones" and "Exploitable Zones". These categories were based on prioritisation criteria attending to the aptitude for the extraction of aggregates and the carrying capacity. This categorisation must be consistent with the mineral resources, environmental and land-use planning regulations.

Issues regarding the zoning criteria employed: Since there are diverse actors involved (with different interests) in the assignment of land uses, pressures regarding the modification of the results may arise.

Data-availability: Data on mineral resources are available for all; land use planners, consultants, private companies, etc. Data include polygons on well-documented and less documented resources ("prospects"), valorisation, assessments and various geological information. The fact that all stakeholders have availability to the same dataset ensures transparency regarding mineral resources in the area planning processes. Datasets on mineral resources are available both directly from the Geological Survey of Norway (data owner) and through a common portal for land-useplanning relevant datasets at geonorge.no.

Criteria of valorisation: Non-subjective, semi-quantitative criteria for valorisation of mineral deposits. Previously, deposits were assessed, but non-fixed and mainly quantitative criteria and usually highly dependent on the geologist assessing it. Using a set of known criteria, originally developed in cooperation with the Norwegian Directorate of Mining, has made it easier for other than the original geologist assessing the deposit to understand why the deposit is considered to be of information. If the system is developed trans-nationally, international, national, regional or local significance.

collaboration. A working group should be set up by both mining and land-use planning authorities. The mapping process should bring actors together.

The zoning works must be performed attending to strictly objective criteria. Authorities must endorse the results. Stakeholder's perception regarding the results must be considered to the extent possible. It would be also important to consult regional and local associations. Due to similarities in the governance framework, this aspect may be directly transferable to any other region of the Spanish territory by adapting specific issues to the socioeconomic, environmental and mineral resources reality

It is necessary to point out again that zoning works must be performed attending to strictly objective technical criteria commonly-agreed by the actors involved in order to allocate specific weights to the different land uses.

In contrast with point-data, polygons may be imported and used directly by land use planners. The system of polygonising indicated prospects, as well as known deposits with valorisation, should be deployed both on a national, regional and local scale. Ensure easy access of all stakeholders to datasets with polygons for mineral resources. In Norway this is done through the exchange of land use data between various public institutions.

Developing criteria and classes for valorisation in cooperation with various stakeholders (governmental organizations, industry and more) to make the valorisations easy to understand and use. It is important that the system is not too complex, but still expose the necessary





**INSPIRE compliancy:** The nomenclature of the **national mineral resource databases has been updated** to some extent following an outdated national standard to be more or less compliant with INSPIRE. This will make transfer of data to European levels, such as Minerals4EU, easier. A challenge related to this element is the time-consuming work of updating the national standards to be INSPIRE compliant as well.

Lack of data and information exchange: Access to the latest data on recently examined deposits, where private companies have done the work, as well as detailed mineral statistics used for valorising deposits in production related to life-time assessments.

**Requirements by national mapping authority:** The Planning and Building Act defines a **broad set of data suitable for processes on land use planning** etc. (being a part of the Public Data Foundations). These data sets are assessed by the Norwegian Mapping Agency on a yearly basis. There are **certain requirements that need to be met**, relating to data quality, coverage, metadata and technical solutions. These requirements are pushing data owners to evolve their data sets further.

Policies and strategies concerning mineral resources in land use planning (NO case 5) (Aggregates; Metallic; Industrial; CRMs) **Policies and strategies demanding better data on mineral resources:** In Norway, Implet there are **national strategies/policies** called "National Expectations" that are strategies/policies called "National Expectations" that are plann about every second year or after each national election. The National plann Expectations state what themes the current government expects to be addressed and data. improved (in general). **Mineral resources in land use planning were specifically mentioned** in 2011, 2015 and 2019. Improved data quality and suitability for land use planning have been a requirement.

comparison of mineral deposits across countries would also be enabled.

Have responsible authorities to invest in and update the national standards to be INSPIRE compliant. The use of INSPIRE compliant nomenclature will reduce the work needed on re-mapping national datasets for harmonisation at European level.

Routines for transferring data between authorities should exist, particularly when exploration licences expire, or companies leave an exploration area. Establishing and maintaining a national database, or metadata-database telling who, what and where, for mineral resources may be a solution. In Norway, such a database exists for geotechnical examinations. This database started as a metadata-database, but lately more and more companies have realised that a joint platform is a good way to store these data, and that sharing information is useful for all parts.

Clear and reasonable requirements should be established to ensure that data quality is as good as possible, including routines for assessments and developments. This could be done as an informal practice or incorporated into national/federal/regional legislation (laws, acts, regulations, codes, policies etc.).

Implement or consider the implementation of a national strategy/policy regarding mineral resources in land use planning that is updated regularly and /or adaptive to new data.





D6.2: Final Manual for Good Practice Guidance

<u>Study for a mining</u> and landscape <u>route</u> (IT case 9)	Mapping the geology of the area with particular references on potential geological heritage: the working group, set up by the municipality together with the support of the region, has found new geological heritage areas, in some cases revealed by the exploitation activities themselves. This new layer of information has been implemented as part of the regional geological database. The connection between these new areas is the core part of the new mineral route for tourism. The study led to proposed modifications in the municipality mining plan, thereby increasing tourism and natural protection use area suitable for exploitation, on other hand the municipality concentrates all the impact of exploitation activities in one single area.	Create a working group of local experts, university and public authorities' expert. The creation a working group composed by experts coming from different sector was the first step to achieve the final goal of the project/study. Bringing together experts with different background, knowledge of the area, sensitivity in reference with some topics, will help to propose to the general public (if a stakeholder engagement is foreseen) whole comprehensive and interdisciplinary project/study.
(Aggregates;	Mapping the closed quarries area looking at their potential future touristic uses:	Where it is possible restoration must be an opportunity for
Industrial)	together with the mapping of relevant natural aspects, the study has a particular	the relevant authority to change land uses to improve the
	focus on quarries areas not anymore exploited. As done for the geology part the	performance for the whole area targeting to a specific goal
	working group employed experts on flora vegetation and on fauna mapping. The study discovered new protected flora never identified in this area. In the end, a detailed map	(touristic destination, natural destination etc.). Fundamental
	of flora was made on GIS to update MAB UNESCO heritage site characteristics.	in this work is the local stakeholder engagement.
Preventing sterilization of minerals in LUP (PT case 10) (Aggregates; Metallic; Industrial; CRMs)	<b>Fostering the acquisition of information on the existing and potential mineral</b> <b>resources at municipal level.</b> The review process of municipal land use plans is based on bio-physical characterization studies, which, usually, do not consider the mineral resources. Therefore, the Portuguese land use planning methodology for mineral resources developed at a national level by the mining authority and geological survey for safeguarding mineral resources fosters the acquisition of information about the mineral resources that might occur at municipal level. This is a different issue of inventorying and characterizing the mining activities already established.	Tools, such as the H2020 Project MINATURA2020, may be used to equally weigh the use of land for mineral or other activities.
An integrated national plan for mineral safeguarding and minimisation of land use conflicts (AT case 14)	Mapping raw-material deposits and outline minable deposits with low conflict potential: Using comprehensive data sets on mineral resources to apply a methodology of supply and demand projections to outline and describe deposits with potential low land-use conflicts. Providing information baseline for minable deposits with low conflict potential: The collection, provision and management of data to provide a data baseline for identifying minable deposits with low conflict potential.	Developing a methodology that has certain quality criteria, is able to include and process several different data items (deposits of minerals, different land use forms etc.), including data from other policy streams, to support the coordination and improve linkages between mineral policy and land-use planning policy (and other policy streams, such as environment, nature protection, water management, forestry/agriculture). Using data and including policy goals/outlined polygons into policy making – is only initial
(ASSICSULS)		step - including persons/actors/stakeholder from those





**policy streams** is important for coordination and integration and improve implementation. Resource provision to the Geological Survey to perform the mapping, hence the mapping/evaluation of mineral deposits is not only the outcome of business-based exploration activity but is performed by the Geological Survey prior to any exploration activity.

Lack of data and information exchange: In general, data and information exchange are very limited. In particular, vertical and horizontal information exchange is non existent: i.e. there are neither formal nor informal working groups in place where public administrators from different provincial governments and the ministry (due to data sharing responsibilities) could share experience and information fostering policy implementation.

Provide resources and organisational structure for national level as well as provincial, regional and local level of administration to more effectively manage the data exchange (i.e. AMRP data for informing land use planning at lower levels; information on altered land use forms informing the AMRP in terms of having up-to-date and valid data). LUP needs accessible, suitable GIS/data interfaces, defined polygons to integrate them into LUP process and valuation/comparison with other land use options as well as needs (e.g. infrastructure/processing sites, etc.) LUP should have knowledge on protected deposits and evaluation of attainment of "safeguarding" policy goals

(informing AMRP policy process as feedback loop).





### 1.3 Central themes of Good Practice Aspects and transferability

As outlined in the introduction, the challenges related to data assessment and identification of actual and potential land use relate to availability, accessibility, quality, standardisation and harmonisation of data between countries. The most prevalent challenges addressed by the MinLand cases relate to availability and accessibility of data, but also the importance of gathering high quality and objective data from a multitude of actors (which sometimes may use differing terminology) and making this data available for exploration and associated land-use purposes. Since the responsible organisations are public authorities, mostly geological surveys, there is a common trend among Good Practice Aspects showing the necessity for a political mandate. This is necessary to facilitate processes of data compilation and the setup of a national (and/or regional) minerals data repository.

# Data compilation, availability and accessibility: the role of Geological Surveys and Public Authorities

One good practice trend that surfaced from the cases was both the role and mandate of the geological surveys to compile and analyse data and to provide expertise to land use planning authorities and industry. Case 1 (SE) outlines how the mandate to archive and compile data both from finished prospecting and conducted field surveys allowed for increased availability of data that could be utilised both for exploration purposes and for future land use planning activities (in considering 'areas of national interest'). Case 1 (SE) illustrates how the available geolgocial data has propagated exploration and aided in land-use planning. Case 5 (NO) describes a similar good practice aspect where datasets on mineral resources are made available both directly from the Geological Survey of Norway and through a common portal for relevant land-use planning datasets. The mandate of the Norwegian geological survey as well as the National Mapping Agency to gather information from relevant public authorities and industry was highlighted as a crucial aspect. Moreover, routines for transferring data between authorities was suggested as a way to deal with challenges of availability and accessibility. Case 10 (PT) addresses the process of formulating a methodology, instigated by the mining authority (DGEG) in collaboration with the Portuguese Geological Survey (LNEG), to not only introduce minerals, but also to foster the acquisition of data on mineral resources by the municipal land-use planning level.

### Sufficient capability and resources for data management

In order to enable data compilation, availability and accessibility for different public authorities, several cases (ES, AT, NO) address the need for financial as well as personnel resources, the institutionalised data management (formal processes and structures), and political commitment or mandates. In this regard, both case 4 (ES) and 14 (AT) describe the need for adequate resources and political mandates to conduct mapping of mineral resources on national level (by geological surveys) as well as on regional and local levels (by local public authorities). Moreover, case 4 (ES), case 5 (NO), and case 14 (AT), all addressed the importance of establishing processes for data and information exchange: The Spanish case (case 4) suggested setting up a process of information exchange and collaboration including both mining and land use planning authorities. The Norwegian case (case 5) suggests the importance of establishing routines for data transfer between authorities as well as the importance of political mandates or programmes ("*National Expectations*") to facilitate actions on the development of improved quality data and suitability for land use planning. The Austrian case (case 14) further shows that in order to effectively manage data exchange it is important to support the provision of resources and an organisational structure for national, provincial, regional and local level of administration.





# The need for high quality and accessibility of data for better informed land use planning and decision-making

Another good practice trend that surfaced from the MinLand cases was the approach of "resource maps" for improving availability and awareness of minerals data for informed land-use planning - this trend is further addressed in chapter 2 – Equal Assessment of Mineral and Other Land Uses and chapter 3 – Instruments for Mineral Safeguarding. Aspects of accessibility and quality of data for such an approach is important. Good Practice Aspects are mostly related to the data availability, but also how information was compiled and transferred (data quality) to allow for a better uptake by land-use planning authorities. In order to utilise the geolgical informaton regarding well documented deposits is of course necessary to delinate these. Examples highlighting this are found in e.g. case 5 (NO) and case 14 (AT), which describe how polygon data can be imported and used directly by land-use planners, and how the polygonising of indicated prospects and known deposits with valorisation (chapter 2) fosters informed and transparent decisions in land-use planning processes (NO case 5). Hence, the use of defined polygons allow for easier integration into land-use planning processes and assessment of land use options as well as associated land-use needs (AT case 14). These Good Practice Aspects touch upon an important challenge of data assessment and identification of actual and potential land uses, namely that data access in itself is not sufficient, but that the data also need to be transferable and understandable in a specific context (see also MinLand Deliverable D7.6: Nordic local workshop results on delineation of the deposit). In the cases from Norway and Austria, the use of polygons ensure easy access and simplified the usage of data for the purpose of land-use planning and, were, therefore suggested as an interesting point for transferability.

### Harmonisation & Standardisation

Four of the above-mentioned MinLand cases (AT 14, ES 4, PT 10, NO 5) address the use of a standardised and harmonised approach given varying reporting codes and systems as well as different EU MS frameworks. In this regard, the Norwegian case highlights the Good Practice Element of establishing reasonable data requirements to ensure quality as well as INSPIRE compliant updates to the national mineral resource database. The Austrian case (case 14) describes the development of a methodology (The Austrian Mineral Resources Plan) for the use of quality criteria, inclusion and processing of different data items (similar to Case 4 ES) as well as the involvement of other policy streams (and relevant authorities). Furthermore, the Portuguese case (PT case 10) suggests the adoption of methodologies developed in other EU projects such as for example the MINATURA proposed tools to harmonise data for weighing different land use options (chapter 2). Case 4 (ES) states that enhancing mineral resource data for land use planning and policy formulation rests on the compilation of objective data and involvement of authorities, stakeholders and industry alike in sharing such data. Case 5 (NO) indicates that using a set of known criteria (developed in cooperation with the Norwegian Directorate of Mining) allowed for a better understanding of why deposits could be considered of international, national, regional or local significance.

#### Willingness to share data among different public authorities and industry

The lack of data and information exchange was one of the challenges addressed by the cases. This challenge was often mentioned in relation to supply of data from industry to national public authorities' databases (case 5), but also for data exchange among public authorities. Both the Spanish (case 4) and the Austrian (case 14) case address the importance of 'willingness to cooperate' between levels of government as well between authorities in order to ensure data exchange. In which way this





cooperation should be facilitated by legislative or voluntary procedures is less described in the cases. To overcome challenges of data sharing, the Norwegian case (case 5) addresses the importance of having quality requirements in place, establishing policies and strategies on improved data quality and suitability for land use planning, as well as recommending the development of routines for transferring data between authorities. On the willingness to exchange data, the case from Basio, Italy (IT case 9) describes a participatory process between stakeholders from the community, academia and local authorities for mapping of geology, flora and fauna data, as well as closed guarries to propose changes to current land-use plans. The collected data, for example, was fed into a Geographical Information System (GIS) as a part of the regional geological database (GIS data is often sought for and expected by industry). The Good Practice Aspect of changing legislation (land-use plans) for the purpose of creating a 'new mineral route' was attributed to the willingness of local authorities and local stakeholders to be involved in the project from the very beginning. The examples from the cases indicate that although data assessment and identification of actual and potential land uses appears to be a technical endeavour, more often than not, it relies on voluntary exchange between authorities where such exchange is not legislated and collaboration among different stakeholders to reduce landuse conflicts and achieve 'a common terminology' of data usage. Some country examples, however, show examples of legislation fostering exchange, through land-use planning processes (e.g. Sweden, Portugal, Norway), or permitting procedures (e.g. Ireland, Finland, Portugal; see also chapter 7).



## 2. Equal Assessment of Mineral and Other Land Uses

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This chapter summarises Good Practice Aspects of MinLand cases that relate to assessment of mineral resources and development next to other land uses. The chapter addresses the **development and application of valorisation methods and criteria for assessing mineral resources** that go beyond their economic value, the **mechanisms transferring assessments results into land use planning**, and design and implementation of **methods that equally assess mineral and other land uses**.

The MinLand project addresses the topic of assessment of mineral and other land uses in deliverable <u>4.1 Existing valorisation and classification schemes and valuation methods for mineral land use</u> <u>practices</u>, which presents the existing methodologies. Through this deliverable the topic is further highlighted in the compiled MinLand case Good Practice Aspects, in an effort to shed light on practical implementation, challenges and success factors. 11 MinLand cases address the topic of a transparent and equal assessment (SE case 1, SE case 3, ES case 4, NO case 5, IE case 6, FI case 8, PT case 10, GR case 11, GR case 12, PT case 13 and AT case 14). A distinction was made between availability, accessibility, quality, standardisation & harmonisation of mineral data (chapter 1) as a prerequisite for assessment methods, and instruments and processes that use results of methods presented in this chapter for mineral safeguarding in mineral and land-use planning policy contexts (chapter 3).

This chapter, thus, looks more closely into 1) the methods and criteria for assessing of mineral resources beyond their short-term economic value, 2) mechanisms and processes that transfer these results into land use planning, and 3) methods that equally assess mineral development and other land uses for a final designation of land use of a given area. As chapter 2 is closely related with geological data availability, assessment and quality (chapter 1) as well as minerals safeguarding (chapter 3), readers are advised to consult these chapters as well as the complete GPTs found in the annex.

### 2.1 Introduction

A transparent assessment of minerals in land use planning is an important step in the process of safeguarding minerals deposits – i.e. granting the access to land for minerals development where deposits occur or may occur (see chapter 3<sup>2</sup>). Without a provision of mineral information and data (see chapter 1) along with other land-use interests based on an open, science based and multi-criteria assessments, there is no guarantee that minerals development will be considered on equal terms with other land uses for the actual process of designating land uses. Therefore, these assessment processes are important prerequisites for effective safeguarding in land use planning policy. Information on minerals resources or deposits can enter land use planning process from sources that are readily available, in most instances from Geological Surveys or the ones that are newly created, by either geological surveys or, in some instances, by mining / exploration companies through their assembled geological data and related ore classification.

The assessment of mineral resources can be done in one or two steps;

• firstly when they are entered into land use for strategic future exploration and extraction

<sup>&</sup>lt;sup>2</sup> Chapter 2 introduces assessment methodologies for minerals and other land uses in the land use planning process while chapter 3 looks into instruments and processes that apply these methodologies in mineral and land use planning policy contexts.







• secondly during the exploration and extraction stage (this part will mostly be dealt with in chapter 7

The step for strategic land use: traditionally this step is data driven wherefore the importance of the deposits is highlighted. This, for example, can be carried out through two main groups of methodologies. One refers to CRIRSCO compatible methodologies, which are based on measured and statistically computed quantities of minerals and costs related to the so-called "modifying factors" (e.g. mining and processing costs, environmental and social costs). These methodologies aim to assess the level of confidence in the quantification of the identified resources in a given location. The field of application of these methodologies is the reporting to the stock exchanges market by companies engaged in the exploration of mineral deposits but the results may be used by public authorities for land use and permitting purposes. The other methodology is based upon well defined geological data, without a geo-statistical evaluation, but rather a spatial evaluation of the mineral resources. These two groups of methodologies are not suitable for the consideration of mineral resources in land use planning, mainly because they deal with measured quantities and monetary values, factors that are often not taken into account in national mineral inventories and spatial or land use planning legislation (Tiess et al., 2018). However, either during the land use planning phase or the permitting phase valorisation of the mineral deposits for land use planning purposes is done by a multi-criteria assessment using geological, economic, environmental, social, and other data. This process also facilitates awareness about importance of deposits in a given land use context.

Deciding which mineral resources are worth for entering land use planning or safeguarding is a twostep approach. According to results obtained in MINATURA2020:

- Assessing the importance of mineral deposits through a valorisation process that should rely on a multi-criteria assessment.
- A transparent and equitable assessment process of the existing land use options in land use planning (i.e. mineral resources and extractive activity taken on par with other natural resources and other activities).

This process assesses whether areas with mineral deposits are designated for mineral extraction alone, for extraction compatible with other land uses or not for extraction (i.e. sterilisation).

Valorisation of mineral resources through multi-criteria assessment is not so common in Europe. Known methodologies in Europe refer to 1) Austria – Mineral Resources Plan, 2) Norway – Norwegian valorisation of mineral deposits, 3) Poland – Valorisation of undeveloped mineral deposits, 4) Portugal – Multi-dimensional methodology supporting a safeguarding decision on the future access to mineral resources, 5) Sweden – Deposits of National Interest, and 6) Ireland, and 7) the EU level Harmonised Mapping Framework approach proposed by MINATURA2020 project. These methodologies had some implementation success (Austria, Sweden, and Norway) while some countries (Poland, Portugal) are trying to introduce such approaches in land use planning processes. The Irish system as such does not provide safeguarding but engages in a holistic approach where all land-use issues except related to exploration are being resolved during the permitting stage. This, however, is discussed in more detail in chapter 7.

Currently, the valorisation of mineral deposits for their integration into land use planning is mostly applied to identified mineral resources. However, as the long-term supply of society depends on the





not yet discovered mineral resources, finding options to assess the value of them poses significant challenges to both minerals and land use planning policy. Thus, mechanisms dealing with the assessment of the mineral potential and not resources per se might be a way to tackle this problem. The valorisation process builds on available geological information provided by the geological surveys in most European countries, via their own expert judgments. Exceptionally, UNFC framework classification or CRIRSCO compatible methodology (potentially undertaken by mining companies) are used. Geological data complemented with social, economic and environmental data are the essential criteria for conducting a multi-criteria valorisation of mineral resources aimed to assess a preferred land use during the land use planning process.

At the moment, there is no commonly agreed process or standardized format for the valorisation process nor how its result enter the land use planning process among European countries. More specifically, whether there are processes that facilitate or guarantee whether or how minerals enter the land use planning process for further safeguarding actions depends on each country's own mineraland land-use policy framework. These methodologies represent very different approaches with regards to: the object of the assessment (e.g. all mineral deposits or only the ones outside nature conservation areas, or only those with measured resources, etc.), the assessment criteria (geological, economic, environmental, social, etc.), the way they are embedded in the very heterogeneous land use planning systems and practices in EU MS. Most of these methodologies only address indentified mineral resources, while only some, such as those derived from the MINATURA2020 approach, also include undiscovered ones, i.e. exploration results which indicate areas of minerals with potential to become a deposit. These are preliminary prospecting/exploration areas with determined prospective resources (also called Speculative Resources or Hypothetical Resources according to the level of geological confidence). Moreover, the number of criteria taken into account in multi-criteria valorisation methodologies is quite extensive and their character varies widely. However, methodologies for mineral resources valorisation can be adapted according to a country's policy framework conditions; however, this makes it difficult to compare and assess their effectiveness.

According to the UNs sustainability criteria and as follows from MINATURA2020, each methodology should contain a mix of geological, economic, environmental, and social assessment criteria, although the nature of the criteria and their weighting can vary significantly. In addition, criteria for conflicts with other land uses, not for safeguarding purposes but to evaluate whether the deposit is worth exploiting, could be of value. Still according to the MINATURA framework (Tiess et al., 2018), mineral deposits valorisation and their integration into land use planning could consist of 6 steps:

- 1. Analysis of the mineral policy, mineral demand forecasts and economic context;
- 2. Identification and classification of mineral deposits deserving to be safeguarded at European, country and regional levels;
- 3. Analysis of alternative land uses (current and future);
- 4. Creation of a proposal of Mineral Safeguarding Areas (MSA) for each selected mineral deposit;
- 5. Validation of the selected mineral deposits and respective MSAs, and;
- 6. Inclusion of MSAs into local land use planning documents.

It should be noted that systems like the Swedish Areas of National Interest and the Irish permitting system can decide upon step 3 at the end of the permitting process (see more in chapter 7).





The limited number of widely recognised methodologies for mineral resources valorisation and their scarce implementation is an obstacle for their recognition as a tool to help decision-making in land use planning – i.e. via a transparent and equitable assessment process of the existing land use options. Thus, there are no common agreed process as well as little knowledge about applied examples for processes of a transparent and equitable assessment process. Only few European countries (SE, NO, PT, GR, IE, for NL see Luodes et al., 2019) have developed and implemented methodologies for an equal and transparent assessment of minerals and other land uses in order to make decisions as to what land use should have priority.

### 2.2 Good Practice Aspects

The following section aims at identifying Good Practice Aspects and transferability suggestions related to assessment of minerals and other land uses in the MinLand cases. The table is intended to give the reader an overview of some of the success, challenge and contextual factors related to a specific Good Practice Aspect, as well as the case expert's own suggestion for transferability. Readers should always consult the full good practice template (found in the Annex) of the case for more in-depth information and suggestions.





D6.2: Final Manual for Good Practice Guidance

Table 2 Good Practice Aspects for equal assessment of mineral and other land uses

Good Practice Aspect	Description and Element(s)	Suggestion for Transferability
Available high quality geological information (SE case 1) (Metallic; Aggregates; Industrial)	Geological data and land use: The geological data is also being used for land use planning and forms the bases for determining if a deposit should be considered as an area of national interest. Geological information and data has been archived by the Geological Survey of Sweden, official government authority for geological matters. Within the survey one division, mining and mineral information has been particularly tasked with providing, storing and advice upon geological information. The information and data consists of geophysical data (gravity, magnetics, electromagnetic measurements,) base geological information including gathered data from the field.	Availability of open geological and geophysical information including reuse of previous exploration data, like stored drill cores, and making these available ensures a sustainable use of all exploration activities as well as improves upon possibility for success. <b>High quality geological information is necessary for determining if a deposit is of sufficient value for being introduced as a part of the general land use</b> and thus receive a form of protection in the land use system.
Linked Mining and Land Use Policy (SE case 1) (Metallic; Aggregates; Industrial)	'Areas of National interest': The system of National Interests partly ensures the process of evaluating the different land uses against each other for optimal use. The tool 'areas of national interest' which includes all types of mineral resources is one of the corner stones in the overall land use process. They form the governments' tool to affect the land use planning and contains eleven different categories of strategic land use aspects. The instrument for National Interests is a tool so that the most appropriate land use can be achieved which in some instances is mining whereas in other cases denials have been the result of the application process.	Need for mineral raw materials are at different levels from local to European scale. Therefore having a strategic tool improves possibilities for long term planning. The establishment of areas of national interest must be executed by professionals knowledgeable on mineral deposits and their valuation.
<u>Weighting of different</u> <u>land-uses</u> (SE case 3) (Metallic; CRMs)	Weighted the different land uses in the permitting process. In decision for the final mining permit, the environmental permit, land uses such as infrastructure development, nature protection, forestry, reindeer herding, were evaluated according to all pillars of sustainability and optimal use. This decision forms the final land-use since the land use for mining was weighted higher than the other land uses though with some provisions, e.g., based on a holistic view of weighting different land uses. However, built into the system of National Interests is that certain land uses such as Natura 2000, due to EU directives, have a very strong position. In order to weigh the different land uses a holistic approach to the use and consequences need to be taken. Here it is presented how impacts are minimised and compensated for. The <b>impacts of all land uses were considered and that these impacts on other land uses were minimised to an acceptable level.</b>	In the decision process, here within the permitting, including tools (the system of National Interest) and decisions (the granting or denial of the permits) on how to weight different land uses. The Swedish process is that the final permitting, the environmental permit, is decided at the environmental court as the formal part of last step of the process. As a supporting tool the system of National Interests is being used.





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Enhancing mineral resources knowledge for land use planning and use in policy formulation (ES case 4)	<b>Elaboration of Potentially Exploitable Resources Maps:</b> The first step to involve regional authorities on the idea of integrating geological and mining aspects in the land use planning processes requires that they realize which geological resources are available in their territory. In that vein this element would be helpful in order to impress on mining authorities the importance of developing their own mining strategies. Geological characterisation and assessment of the exploitability of the mineral resources, defining different types or varieties of potentially exploitable resources, as well as their geographical delimitation is required. The cartographic expression of this research is the Map of Potentially Exploitable Resources.	The works must be carried about by professionals with appropriate training and experience and based on scientific data. It would be necessary to implicate authorities, stakeholders and especially mining companies which usually have better knowledge regarding mineral resources on the area. The transferability could reach different levels of successful depending mainly on the previous existing geological and mining information and the willingness to cooperate by involved actors sharing information.
(Aggregates)	<b>Availability of Information:</b> The elaboration of Mining-Environmental Planning Maps (including Maps of Potentially Exploitable Resources) is only feasible when enough information is available or can be acquired at the specific working map scale. (See chapter 1 on data).	Key point for transferability would include: <b>finance a</b> <b>mapping process to collect data</b> (from various ministries and actors) and to group such data according to different land-uses (in order to avoid land-use conflicts).
Development of tools and procedures for the assessment of actual and potential land uses in order to reduce conflicts within	<b>Development of the Mining-environmental planning map</b> : The Mining-environmental planning map is a cartographic zoning proposal whose main aim is to select the best location for the mining activity having had previously into account the Potentially Exploitable Resources Maps as well as all the socio-environmental and legal (environmental, mining and land-use planning) constrains. This map includes different categories as "Non-Exploitable Zones" and "Exploitable Zones". These categories were performed based on prioritisation criteria attending to the aptitude for the extraction of aggregates and the carrying capacity. This categorization must be consistent with the mineral resources, environmental and land-use planning regulations.	The results must be necessarily endorsed by authorities. Stakeholder's perception regarding the results must be considered to the extent possible. It would be also important to consult regional and local associations. Due to similarities in the governance framework, this aspect may be directly transferable to any other region of the Spanish territory by adapting specific issues to the socioeconomic, environmental and mineral resources reality.
<u>extractives industries</u> (ES case 4) (Aggregates)	<b>Issues regarding the zoning criteria employed:</b> Since there are diverse actors involved (with different interests) in the assignment of land uses, pressures regarding the modification of the results may arise.	It is necessary to point out again that zoning works must be performed attending to strictly <b>objective technical</b> <b>criteria commonly-agreed by the actors involved</b> in order to allocate specific weights to the different land uses. These criteria must be as clear as possible for every authority and stakeholder involved. Thus, an intense work of coaching, in this regard, would be likely necessary.





Improved data on mineral resources (NO case 5) (Aggregates; Metallic; Industrial; CRMs)	<b>Non-subjective, semi-quantitative criteria for valorisation</b> of mineral deposits. Previously, deposits were assessed, but non-fixed and mainly quantitative criteria and usually highly dependent on the geologist assessing it. Using a set of known criteria, originally developed in cooperation with the Norwegian Directorate of Mining, has made it <b>easier for other than the original geologist assessing the deposit to understand why the deposit is considered to be of international, national, regional or local significance.</b>	Developing criteria and classes for valorisation in cooperation with various stakeholders (governmental organizations, industry and more) to make the valorisations easy to understand and use. It is important that the system is not too complex, but still expose the necessary information. If the system is developed trans- nationally, comparison of mineral deposits across countries would become easier as well.
Integration of mineral resources in land use planning legislation (NO case 5) (Aggregates; Metallic; Industrial; CRMs)	<i>Mineral resources in land use planning legislation:</i> Since July 2018 mineral resources have been included as a specific topic in the Norwegian land use planning legislation and must be considered in the land use planning process. Although the Mineral Act treat different commodities differently, the Planning and Building Act includes all mineral resources in a similar way.	If not present and made mandatory in the planning process, <b>mineral resources should be included in</b> <b>legislation and/or policies</b> . In land use planning, there are several topics that need to be considered. Mandatory topics have been mentioned in the Planning and building Act. During the latest revision of this Act, it became mandatory to include mineral resources.
Policies and strategies concerning mineral resources in land use planning (NO case 5) (Aggregates; Metallic; Industrial; CRMs)	<b>Conflict reducing strategies:</b> Some of the tools that are available to Norwegian land use planners to reduce possible conflicts are described in the Planning and Building Act and its related regulations. As a part of the planning process, there are meetings between different governmental institutions to reduce the level of conflicts for different land uses. The current valorisation and characterisation is an important tool in the aim to both identify areas of conflict early, and make decisions as to what land use is decided through a political decision. Clear and transparent process of land use designation: <b>current valorisation as</b> to what land use designation: <b>current valorisation and characterisation is an important tool in the aim to both identify areas of</b> and make decisions as to what land use designation: <b>current valorisation and characterisation is an important tool in the aim to both identify areas of</b> conflict early, and make decisions as to what land use designation: <b>current valorisation and characterisation is an important tool in the aim to both identify areas of</b> conflict early, and make decisions as to what land use designation: <b>current valorisation and characterisation is an important tool in the aim to both identify areas of</b> conflict early, and make decisions as to what land use should have priority.	Mandatory meetings with different responsible government authorities and departments involved in land use planning provide way for conflict mitigating strategies.
Policy Integration (IE case 6) (Metallic)	<b>Hierarchy of Policy:</b> The importance of the raw materials industry is directly referenced in the National Planning Framework 2040, the strategic 20 year plan for the country. This <b>feeds regional and local planning documents</b> , specifically the <b>Regional Spatial and</b> <b>Economic Strategies and County Development Plans</b> which must take direction from the national spatial strategies.	Policies formed at national level must be considered at regional and local level (i.e. the Planning and Development Act 2000, as amended, ensures that lower level plans are compliant with higher level plans, in a hierarchy manner)





LUP that allows changing of zoning according to a project. During preparation of the regional land use plan (no National land-use plan exists), consultation is conducted and, according to regional development strategies, updates to zoning is proposed. Certain areas enter land use plans by other regulations (conservations areas, cultural areas, Sami homeland and Skoll community area, etc.), or can be instigated by other procedures relating to development actions by e.g. the government, or impacted by EU directives (e.g. Natura 2000), or interested stakeholders. Not all land is zoned, zoning is done according to the needs with the ultimate objective to achieve sustainable development.

Land Use Plans that allow Inclusion of minerals over time (FI case 8)

(Industrial)

Inclusion and integration of mineral resources during LU planning process. LU plan includes the potential increase of the area of mining activities, and potential additional deposits to be developed. The land use and building act regulates the land use planning and refers also to participation and expertise. Experts, authorities and stakeholders are involved in the process. The regional land use plans are built considering national land use guidelines and special needs of the regions. In Finland minerals are considered strategic important within the mineral policy and by certain regions where mining is more active. The regions have possibility to decide which are the main aspects to be stressed for own development. The regional council consult experts, in this case geological survey, to include minerals into land use planning.

Preventing sterilisation of minerals in land use planning (PT case 10)

(Aggregates; Metallic; Industrial; CRMs) Addressing the unknown/hypothetical resources: The Portuguese land use planning methodology for mineral resources (LUP-MR) provides for the delimitation of areas for mining activities that cover the entire value chain of mineral resources, i.e. Including mineral deposits not yet discovered, known mineral deposits not yet being exploited, deposits being exploited and areas under rehabilitation. Particularly regarding the mineral deposits not yet discovered, LUP-MR foresees the delimitation of Potential Areas, i.e. those with demonstrated potential for the occurrence of mineral deposits, on which depends the long-term supply of minerals to the society.

Land use planning process that allows re-evaluation of land use zoning according to new development possibilities (projects) outside the defined re-evaluation periods contributed to the flexibility and success of developing the Kevitsa mine. Normally land use plans go under a revision after 10-20 years, but given the possibility to evaluate new project possibilities in a flexible manner, and to allow the changes to land use plans (through the possibility of company finance), minerals, land-use planning and socio-economic factors are considered continuously given new demands and interests.

Following the example of the Kevitsa case study, practitioners interested in the integration of minerals into the land use planning process and LUP maps should consider the following triggers that contributed to inclusion of minerals in to LUP processes:

-**National interest** in mineral exploitation -policy (as part of sustainable development),

-**Regional interest in mineral exploitation** (as part of sustainable development),

-participation /consultation of experts in the land use planning process.

Land use practitioners should grant the access to the not yet discovered mineral deposits, i.e. should **not restrict the access to areas for mineral exploration activities and should prevent their occupation by uses that could unnecessarily compromise the extraction of minerals**.





	An approach focused on mineral resources, regardless of their location and economic value: During the initial steps of the municipal LUP review process, municipal authorities often establish rules that prohibit the exploitation of mineral resources in certain areas (e.g. in nature conservation areas, in agricultural areas). When DGEG proposes the implementation of LUP-MR, municipal LUP authorities become aware of the importance of mineral resources and that they should be approached in a different point of view: natural resources having an economic interest that changes with time and that should be safeguarded from sterilisation.	Land use practitioners should <b>not restrict the total</b> <b>amount of resources available to the society based on</b> <b>their location or current economic value</b> . Therefore, they should always grant the access to mineral deposits (i.e. grant the access to exploration and extraction activities). Conflicts with other uses of land should be addressed latter, during the EIA stage etc.
	Fostering the acquisition of knowledge on the existing and potential mineral resources at municipal level: The reviewing process of municipal land use plans is based on bio- physical characterization studies, which, usually, do not consider the mineral resources. Therefore, the LUP-MR methodology fosters the acquisition of knowledge about the mineral resources that occur or may occur at municipal level. This is a different issue of inventorying and characterizing the mining activities already established.	Municipal authorities should rely on internal or external qualified human resources to characterize the mineral resources.
	<b>Equal Footing evaluation of minerals</b> : To avoid that areas where mineral deposits occur (or may occur) are <b>unnecessarily occupied by uses or activities that compromise their</b> <b>extraction</b> , implies that the use of land for mineral activities should be treated on an equal footing with other possible uses.	<b>Tools</b> developed by the H2020 Project MINATURA2020 may be used <b>to equally weight the use of land for mineral</b> <b>or other activities</b>
	Allowing the coexistence of compatible uses of land: The Portuguese LUP legislation, through a normative act aiming at criteria harmonization and directed to municipal LUP authorities, promotes the coexistence of compatible land uses and specifies compatibility between mining, agricultural and forestry activities. This is achieved by directly expressing that the use of the land should respect "the principle of compatibility of uses, ensuring the separation between incompatible uses, and promoting the coexistence of compatible and complementary uses".	
Devising an integrated policy tool to secure/safeguard aggregates extraction from conflict free extraction areas (GR case 11)	Integration of conflict free aggregates extraction areas into legally binding spatial plans: The extraction of aggregates located within Quarrying Areas (QA) constitutes an example of how a policy tool could contribute to the rational and secure exploitation of a mineral resource since it is an area assigned exclusively for their exploitation and incorporated in the regional spatial plans. Equal representation of different authorities/interests and knowledge needs in the consultation committee: Various interests are weighted against each other applying a multi-criteria assessment of the area under investigation.	Mining and Spatial Planning authorities on the national and/or regional scale responsible for policy and regulatory framework design as well as industry, are identified as the main group of stakeholders that could contribute to the development of this tool and benefit from such an approach. The design of mineral safeguarding policies and the development of a similar tool for all mineral resources





(Aggregates)		should involve the active engagement/communication with representatives from local communities, mining associations and NGOs in order to facilitate commitment for later implementation.
Coexistence of mining with other land uses (GR case 12) (Metallic)	<b>Respect for other land uses and compromise with related legislations</b> : The restrictions imposed primarily by the archaeological survey led to the underground exploitation of bauxite. The decision of underground mining allowed the favourable designation of regional land planning.	Underground exploitation (when applicable) can diminish the negative reactions and allow co-existence of mining with other activities
Introduction of the principle of parity (PT case 13) (Metallic)	<b>Principle of parity:</b> Mining and land use decision makers have recognized the importance of both of the natural resources, and have agreed in <b>creating conditions to harmonise</b> <b>these two different overlapping uses of land</b> (for mining in the Iberian Pyrite Belt which is one of the most important Volcano massive sulphide provinces in the World and for Natura 2000).	It is important to communicate, listen and be constructive when finding solutions. All players must understand each other (mining, land use and environmental), and agree on essential and elementary issues, that are equally important to each of them. Every player must leave its "comfort zone" and make the necessary adjustments. The objectives are: Create higher trust, transparency and proximity between mining company, mining authority and local land use decision makers. Present strong arguments in order to explain the importance of mineral resources which are also natural resources.
<u>Co-existence of land</u> <u>use introduced into</u> <u>legislation</u> (PT case 13) (Metallic)	<b>Regulatory aspect:</b> Consider the possibility of having different activities in the same area, with mining being a temporary activity which may be developed in coexistence with other activities in rural soil. At a <b>national level a regulatory framework on land use and mining accepting the possibility of coexisting activities in rural soil</b> has been created, similar to what happens in Portuguese legislation on rural soil.	The Government at national or regional level depending on the administrative structure of the country/region, should prepare a piece of legislation where considers flexibility and co-existence of different land uses for each areas in the land use planning.
An integrated national plan for mineral safeguarding and minimisation of land <u>use conflicts</u> (AT case 14) (Aggregates)	Mapping raw-material deposits and outline minable deposits with low conflict potential: Using comprehensive data sets on minerals resources to apply a methodology of supply and demand projections to outline and describe deposits with potential low land-use conflicts.	Developing a methodology that has certain quality criteria, is able to include and process different several data items (deposits of minerals, different land use forms etc.), including data from other policy streams, to support the coordination and improve linkages between mineral policy and land-use planning policy (and other policy streams, such as environment, nature protection, water management, forestry/agriculture). Data availability from different policy streams (nature, infrastructure,




		agriculture/forestry, etc.) is the starting point in the administrative process for spatial planning in order to delineate land uses or zoning.
	<b>Providing information baseline for minable deposits with low conflict potential:</b> The collection, provision and management of data to provide a data baseline for identifying minable deposits with low conflict potential.	<b>Political mandate</b> given to the ministry to gather this data and develop the planning tool: a) Providing sufficient amount of resources and time; b) One ministerial department: 2-3 staff members & 5 years) for data compilation and setup of the AMRP.
Implementation of the AMRP: Option 2 - Sectoral Action Plan: Gesteinsabbaukonzept Tyrol (AT case 14) (Aggregates)	<b>Supply &amp; demand outlook and planning tool:</b> Intermediary sectoral plan, that outlines the <b>need, demand and requirements for mineral extraction</b> (aggregates: demand based evaluation for aggregates; Metals/etc.: supply based evaluation) and its interlinkages to other policy streams (i.e. tourism, conservation, agriculture).	Requires intensive research on regional demand forecast of raw materials from all sectors. Inter-linkage to other policy streams requires and integrated and extensive collaboration approach with other policy areas that can be demanding in terms of resources and time.



# 2.3 Central themes of Good Practice Aspects and transferability

Following the distinction made in the introduction of assessment of minerals and other land uses this section describes the central themes of the Good Practice Aspects and suggestions for transferability outlined in the table above. The three central themes that emerged from the MinLand cases were: i) development and application of valorisation methods and criteria for assessing mineral resources that go beyond their economic value, ii) the design and implementation of mechanisms and processes that transfer the results of these assessments into land use planning, and iii) design and implementation of methods that equally assess minerals and other land uses for a final designation of land use of a given area (i.e. mineral resources and extractive activities taken on par with other natural resources and land uses such tourism or agriculture). All three themes indicate that assessment of minerals and other land uses are an important next step after geological data management (chapter 1) and a prerequisite for minerals safeguarding instruments and processes (chapter 3). For a complete understanding, readers are always advised to consult the individual good practice templates of cases of interest.

# Valorisation methods for mineral resources: methodologies and their implementation

The valorisation of mineral resources that goes beyond economic value plays are an important factor for increasing the importance of minerals resources in the actual land use planning process. There are several MinLand cases (ES case 4, NO case 5, PT case 10, AT case 14) that highlight interesting methods as well as implementation experiences. The first trend among these cases indicates methods for objective and technical as well as commonly or in cooperation among involved actor agreed criteria for assessment. For example, Norway describes a methodology that developed criteria and classes for valorisation in cooperation with various stakeholders that make them easier to understand and use. More specifically, using a set of known, objective, semi-quantitative criteria for valorisation has made it easier for other stakeholders and organisations to understand the importance of a deposit. Another trend shows that some valorisation methods (ES, AT, PT) employ criteria going beyond economic value: e.g. 1) the aptitude for the extraction of aggregates and the need, demand and requirements for mineral extraction (e.g. ES: Mining-environmental planning map), 2) relation to other industry sectors (i.e. tourism, conservation, agriculture) in a regional sectoral plan (e.g. case 14 – Regional Sectoral Action Plan "Gesteinsabbaukonzept Tyrol": aggregates: demand based evaluation for aggregates; Metals/etc.: supply based evaluation), 3) minerals deposits according to low conflict potential (case 14), and 4) the PT LUP-MR that also includes valorisation of unknown resources. Implementation experiences across European countries are mixed: While the AMRP reports that data compilation and valorisation requires substantial amount of resources (personnel and financial) only possible via political support, other countries such as Portugal and Greece usually depend on the willingness of public authorities to collect data and apply the given valorisation methodologies.

# Mechanisms and factors facilitating the uptake of mineral resource data in land use planning

In order to bring minerals resource land use on an equal standing with other land uses, mineral resources and their valorisation results need to enter the land use planning process. Several European countries such as Sweden, Norway, Finland, Spain, Portugal and Austria applying valorisation methods have indicated multiple ways to consider minerals resources and their valorisation. Among these, there is a clear trend for coercive approaches such as land use planning legislation (i.e. Ireland: integrating minerals development from national into regional and local planning documents; Norway: Planning and Building Act to include all mineral resources in land use planning, Portugal: National Program for land use planning policy - Law 99/2019, and the national land use planning laws its associated support





mechanisms for knowledge and data transfer to land use planning authorities provided by the Geological Survey of Sweden). Furthermore, in Finland better framework conditions such as a general national interest in mineral exploitation, specific regional interest in mineral exploitation, and the participation or consultation of experts from geological surveys in the land use planning process facilitate the uptake of minerals resources and represent soft/non-mandatory approaches. However, as several examples show (FI, PT, ES), the willingness for cooperation of local and regional land use planning authorities is a key factor. Against the backdrop of willingness to cooperate and different legislative and administrative responsibility for land use planning, the Austrian Minerals Resources Plan (AMRP) faced the challenge to introduce nationally compiled mineral resources data into lower levels of governance (provincial and regional) of land use planning. Thus, the AMRP indicates that there is a need to provide resources and organisational structure for national level as well as provincial, regional and local level of admiration to more effectively manage the data exchange and flow.

# Methods for the equal assessment of minerals and other land uses

The valorisation of minerals resources and processes to facilitate the uptake of results thereof through appropriate mechanisms are important steps to enable the assessment of minerals on par with other land uses: i.e. without knowing about the value of minerals resources, it is less likely that mineral development will be chosen over other land uses. At the same time, without a method for assessing minerals on equal terms with other land uses, there can be no informed decision on the importance minerals for society compared to other land uses, and, consequently, respective safeguarding mechanisms for access to land and later exploitation. In this regard, several European countries (SE, NO, PT, GR, FI, IE) have developed and implemented methodologies for an equal and transparent assessment of minerals and other land uses in order to make decisions as to what land use should have priority. Countries such as PT, SE, NO, and to some extent GR, apply methods that use a multi-criteria approach for assessing different land uses including mineral resources. In this regard, Sweden uses the so-called "System of National Interests" (case 1 and 3) that aims at evaluating land uses against each other for optimal function (according to criteria that respond to all pillars of sustainability and optimal use). In Norway (case 5) assessment is an important tool to both identify areas of conflict early and make decisions as to what land use should have priority. The Portuguese assessment method (case 10) also applies a multi-criteria assessment of the area under investigation. In Greece (case 11) land use options are discussed in a consultation committee with equal representation of different authorities/interests where various interests are weighted against each other using a multi-criteria assessment of the area under investigation. Against this backdrop, several methodologies use approaches that aim for co-existence or overlap of certain land uses together with minerals exploitation: For example cases of Sweden (case 3), Finland, Portugal and Greece use of specific criteria 1) that allow two different overlapping uses of land, or 2) flexibility and co-existence of different land uses, or 3) that allow creating conditions to harmonise these two different overlapping uses of land. In the case of Greece, for example, this allowed the favourable designation of regional land planning for mineral exploitation (GR – 12: Bauxite underground mining; PT – 13: mining in Natura 2000 area, similarly, to the design of the mining area (Sweden case 3) and Portugal, compensation measures for co-use or selection of optimal use (Sweden case 3).





# 3. Instruments for Mineral Safeguarding

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Practical examples from the MinLand cases highlight processes and instruments related to **information of existing and potential mineral data, the weighing of interest and changes to land-use and zoning plans, transparency of interlinkages between data access**, land-use assessment, policy integration, and permitting processes as crucial aspects and elements that contributed to **mineral safeguarding practices.** 

The MinLand project addressed the topic of mineral safeguarding in deliverable <u>2.3 Safeguarding</u> <u>mineral resources in Europe: existing practice and possibilities</u>, which describes the existing legislative approaches on this issue. This deliverable further highlights this topic through the compiled Minland case Good Practice Aspects, in an effort to shed light on some of practical implementations, challenges and success factors. Eight MinLand cases address the topic of safeguarding (SE case 1, ES case 4, NO case 5, FI case 8, PT case 10, GR case 11, GR case 12, and AT case 14) that is highly related to chapter 2 – Equal assessment of minerals and other land-uses. Hence, the distinction was made between assessment methodologies for minerals and other land uses in the land use planning process (chapter 2) and instruments and processes that apply these methodologies in mineral and land-use planning policy contexts (chapter 3). This chapter, thus, looks more closely into the implementation practices and examples surrounding both the challenges and success factors thereof. As safeguarding is interlinked with assessment of land-uses introduced on par, readers are advised to consult chapter 2 as well as the complete GPTs found in the annex. Case 13 (PT) for instance, addresses the introduction of the principle of parity and the co-existence in legislation but does not address the use of instruments and processes to achieve safeguarding, hence, this example is addressed in chapter 2.

# 3.1 Introduction

Minerals play an important role for the European economy, hence secure and sustainable supply of minerals have long been on the agenda of the EU (European Commission, 2013, 2008). One concept that has received increased political salience related to the 2<sup>nd</sup> pillar of the Raw Materials Initiative – sustainable supply of raw materials from EU sources - is minerals safeguarding. During the last decade, minerals safeguarding has been raised on the agenda by EU communications such as the Raw Materials Initiative and the Strategic Implementation Plan on Raw Materials, as well as in national strategies and instruments in, for example, Austria, Greece, Spain, Portugal and Norway. As can be discerned from the MinLand cases, the concept of minerals safeguarding is, however, understood and implemented quite differently. In land use planning, for example, "minerals safeguarding" is often addressed as a non-mandatory tool to protect mineral deposits whereas extraction permits (licenses, concessions) are mandatory and integrated in the land use planning process. The interest in safeguarding further increases the relevance of understanding how the different EU MS translate 'safeguarding objectives' into actual policy and land-use practices.

In general, the non-energy raw materials sector is confined to operate in locations which possess known and commercially viable deposits of minerals. The access and use of primary mineral resources need to be included and equally pondered (parity and co-existence) with other components of the raw materials and energy flows, because of the importance of access to minerals for society. Addressing the role of exploration and exploitation of primary and secondary resources is furthermore crucial for the transition to a circular economy, because without these vital components of the material cycle,







the downstream industrial supply would be threatened, as well as all the paths towards innovation and a low-carbon economy.

Thus, the Raw Materials Initiative, for instance, states that in order to benefit from favourable mining and recycling projects around the world, new initiatives in the EU still need to consider 'necessary strategies to safeguard access to deposits for future use'. Furthermore, the RMI states that "access to land is a key requirement for the extractive industry, but the area available for extraction in the EU is being steadily squeezed out by other land uses", therefore, "the long term access to mineral deposits should be taken into account in land use planning" (European Commission, 2008, p. 9). In this way, safeguarding mineral deposits as a concept as well as in practice is understood both in terms of 'future' use, but also as a strategy to avoid 'sterilisation' of deposits from competing land-use (Carvalho et al., 2019b; Lopes et al., 2018; Wrighton et al., 2014). Further adding complexity to the matter, safeguarding may also encompass 'unknown' deposits of mineral resources. The Strategic Implementation Plan on Raw Materials stipulates that: "The objective is to foster access to known and still undiscovered mineral deposits, improve the conditions for sustainable access and supply of raw materials in the EU and safeguard the mineral wealth for future generations by classifying within a regulatory framework, the importance for society of certain mineral deposits" (European Commission, 2013, p. 18). Following the UK concept that was also adopted by the MINATURA2020 project (Tiess and Murguía, 2016), within the MinLand project, the definition of safeguarding is understood as 'the act, process or procedure to ensure that areas containing, or potentially containing, mineral resources are not needlessly occupied by other uses that may prevent their future extraction, including spaces for installing mining/quarrying infrastructures' (Carvalho et al., 2019b).

Minerals safeguarding thus highlights an important connection between minerals supply and spatialor land-use practices due to the competing interests of different land-use options that are weighed against each other in the decision-making process (Bax et al., 2019; de Groot, 2006; Lechner et al., 2017), and the need to resolve social and environmental impacts (Everingham et al., 2013). The topic hence, does 'not only' relate to competing interests and the weighing of land use options but also the question of multi-level governance systems in EU MS for safeguarding in land use planning: (i) the presence of mechanisms integrating safeguarding in land use planning (i.e. translating policy into practice), (ii) levels of consultation between planning authorities, and (iii) the existence of relevant safeguarding policies in local plan documents (McEvoy et al., 2007).

# 3.2 Good Practice Aspects

The following section aims at identifying Good Practice Aspects and transferability suggestions related to safeguarding in the MinLand cases. The table is intended to give the reader an overview of some of the success, challenge and contextual factors related to a specific Good Practice Aspect, as well as the case expert's own suggestion for transferability. Readers should always consult the full good practice template (found in the Annex) of the case for more in-depth information and suggestions.





D6.2: Final Manual for Good Practice Guidance

Table 3 Good Practice Aspects of Safeguarding

Good Practice Aspect	Description and Element(s)	Suggestions for Transferability
	'Areas of national interest': The tool 'areas of national interest' which includes all	Need for mineral raw materials are at different levels from local
	types of mineral resources is one of the corner stones in the overall land use	to European scale. Therefore having a strategic tool improves
Linked mining and land use	<b>process</b> . It forms the governments tool to affect the land use planning and contains	possibilities for long term planning. The establishment of areas
policy	eleven different categories of strategic land use aspects. The land use planning is	of national interest must be executed by professionals
	made at municipal level. The instrument for National Interests is a tool so that the	knowledgeable on mineral deposits and their valuation.
(SE case 1)	most appropriate land use can be achieved which in some instances is mining	
	whereas in other cases denials have been the result of the application process.	
(Metallic; Aggregates;	In the Swedish case, after exploration permit, which is handled by the mining	There must be a point in the exploration activities where land
Industrial)	inspectorate, a <i>mining concession gives the company exclusive right</i> for extraction	is made available in order for operations to be feasible.
	and secures land for the deposit and a safeguarding for the deposit. The exploration	
	and mining concession permits are handled by the Swedish Mining Inspectorate.	
	The system of National Interests partly ensures the process of evaluating the	A the decision process, here within the permitting, are
Weighting of different	different land uses against each other for optimal use. However, built into the	including tools (the system of National Interest) and decisions
landuses	system is that certain land uses such as Natura 2000, due to EU directives, have a	(the granting or denial of the permits), and final environmental
$(SE_{COSO}, 2)$	very strong position. In order to weigh the different land uses a holistic approach to	impact assessments to create a holistic system of weighing of
(Metallic: CRMs)	the use and consequences need to be taken. Here it is presented how impacts are	different land uses.
	minimised and compensated for. This is also heavily coupled to the stakeholder	
	engagement.	
	Mining and environmental Planning Map: In general, safeguarding mechanisms	It would be important to include the mining sector
	for the protection of mineral deposits for the future do not exist and only few	(professionals from the mining authorities) in the development
Integration of mineral	municipalities in Spain consider mining use in their land-use planning, hence case 4	of regional and local Land-Use Plans similarly to what happens
<u>resources into land-use</u>	(ES) addresses this topic. Results of the Mining-environmental map are based on a	with other sectors (e.g. responsible institution for hydrologic
<u>planning for mineral</u>	balance between the environmental sensitivity to mining and the potential for the	planning or civil infrastructures). On the other hand, the
resources safeguarding	development of mining. In addition, the zoning proposal is consistent with the	perspective of authorities related (mining authorities,
	mineral resources, environmental and land-use planning regulations and policies.	environmental authorities and local administration) should be
(ES case 4)	The "Mining and environmental Planning Map" becomes a tool that directly could	taken into account in the process as well as be kept fully
	lead to determining safeguarding categories for mineral resources (provided that	informed of results through periodical briefing, establishment
(Aggregates)	the generated product is finally used in land use planning proceedings). Thus,	of follow up commissions, etc.
	integration of mining activities in land use planning has been unquestionably	
	improved in a framework of mineral resource safeguarding.	





	<b>Effective coordination and information exchange among responsible institutions:</b> key element is the <b>improvement of coordination and information exchange</b> among responsible institutions (environmental authorities and land-use planning authorities) and other stakeholders, and consulting of regional and local associations in the decision making process.	The results of all previous work need to be transferred at the governance level. This fact necessarily requires understanding and consensus among all the organisations involved in the decision making process. Practically, inter-administrative commissions must be implemented in order to reach this objective. Inasmuch the competences of the local level in land uses issues it will be necessary to have good feedback from local organisations, in particular from the local administration, concerning the results
Improved data on mineral resources (NO case 5)	<b>Improvement of national databases:</b> Case 5 (NO) describes how, in general, the awareness of mineral safeguarding has increased on all levels of governance. Developing, assessing and <b>adapting existing data in national databases to the needs of land use planners have eased the use of the data.</b> Most importantly, for land use planners, the transition of a point-based data set to a dataset with polygons have had the largest impact with highly increased visibility of the mineral	In contrast to point-data, polygons may be imported and used directly by land use planners. The system of polygonising indicated prospects, as well as known deposits with valorisation, should be deployed both on a national, regional and local scale. Ensure easy access of all stakeholders to datasets with polygons for mineral resources.
(Aggregates; Metallic; Industrial; CRMs)	resources data. Data on mineral resources are available for all; land use planners, consultants, private companies, etc. Data include polygons on well-documented and less documented resources ("prospects"), valorisation, assessments and various geological information.	
<u>Policy Integration</u> (IE case 6) (Metallic)	<b>Government support through active policy choices</b> encourages the entry of exploration companies to the Irish market and is reflected in the Fraser Institute rankings where Ireland regularly scores highly for policy perception and data availability. <b>Minerals are now considered in the Government Climate Action Plan and the National Planning Framework 2040.</b> The latter includes National Policy Objective 23 which provides direct support to the extractive industry. The presence of significant mining, exploration and geology expertise within government and the regulatory bodies adds to the confidence with which the government can support the industry.	Data availability can be a key driver of inward investment in the minerals industry which directly leads to a more visible presence and allows governments to vocally support the mining sector development. Expertise at a government level allows for informed decisions to be made about broad policy supports. Inclusion of minerals in national policies or strategies gives clear indication of government support.
Land Use Plans that allow Inclusion of minerals over <u>time</u> (Fl case 8)	Adaptable Land use plans: Land use plans allowing change of zoning denomination that allows the land use to evolve with time. During preparation of the regional land use plan (no National land-use plan exists), consultation is conducted and, according to regional development strategies, updates to zoning is proposed. Certain areas enter land use plans by other regulations, or can be	A land use planning process that allows re-evaluation of land use zoning according to new development possibilities (projects) outside the defined re-evaluation periods contributed to the flexibility and success of developing the Kevitsa mine. Normally land use plans go under a revision after





#### (Metallic; CRMs)

instigated by other procedures relating to development actions by e.g. the government, or impacted by EU directives (e.g. Natura 2000), or interested stakeholders. Not all land is zoned; zoning is done according to the needs with the ultimate objective to achieve sustainable development. The possibility to zone or change zoning allows for flexibility and development of activities over time, including consideration of socio-economic evaluation (over time).

Inclusion and integration of mineral resources during LU planning process. The LU plan includes the potential increase of the area of mining activities, and potential additional deposits to be developed. The land use and building act regulates the land use planning and refers also to participation and expertise. Experts, authorities and stakeholders are involved in the process. The regional land use plans are built considering national land use guidelines and special needs of the regions. In Finland minerals are considered strategic important within the mineral policy and by certain regions where mining is more active (see more in chapter 3).

Land use planning methodology for mineral resources: The Portuguese land use planning methodology for mineral resources (LUP-MR) is a soft-policy instrument developed at national level to safeguard mineral resources (includes all the mineral resource groups). LUP-MR provides for the delimitation of areas for mining activities that cover the entire value chain of mineral resources, and foresees the delimitation of Potential Areas, i.e. those with demonstrated potential for the occurrence of mineral deposits, on which depends the long-term supply of minerals to the society. Many municipalities adopted the LUP-MR by delineating these land subcategories in their municipal land use plans. Municipalities not adopting the LUP-MR, however, are made aware of the importance of minerals for society and the necessity for safeguarding.

<u>Preventing sterilization of</u> <u>minerals in LUP</u>

(PT case 10)

(Aggregates; Metallic; Industrial; CRMs) An approach focused on mineral resources, regardless of their location and economic value. Minerals are often considered according to their known economic value, excluding the not yet discovered mineral resources and deposits with low intrinsic economic value (e.g. aggregates). Such kind of decision ignores that the economic value of mineral deposits is a variable that changes with time, endangering the long-term accessibility to these minerals. When a responsible authority proposed the implementation of LUP-MR, municipal LUP authorities become aware of the importance of mineral resources and that they should be

10-20 years, but given the possibility to evaluate new project possibilities in a flexible manner, and to allow the changes to land use plans (through the possibility of company finance), minerals, land-use planning and socio-economic factors are considered continuously given new demands and interests.

Practitioners interested in the integration of minerals into the land use planning process and LUP maps should consider the following aspects that contributed to inclusion of minerals in to LUP processes: national interest in mineral exploitation -policy (as part of sustainable development); regional interest in mineral exploitation (as part of sustainable development); participation /consultation of experts in the land use planning process.

Land use practitioners should grant the access to the not yet discovered mineral deposits, i.e. should not restrict the access to areas for mineral exploration activities and should prevent their occupation by uses that could unnecessarily compromise the extraction of minerals.

Land use practitioners should not restrict the total amount of resources available to the society based on their location or current economic value. Therefore, they should always grant access to mineral deposits (i.e. grant access to exploration and extraction activities). Conflicts with other uses of land should be addressed, for example, in the later EIA stage.







	approached in a different point of view: natural resources having an economic interest that changes with time and that should be safeguarded from sterilisation.	
	Fostering the acquisition of knowledge on the existing and potential mineral resources at municipal level. The review process of municipal land use plans is based on biophysical characterisation studies, which, usually, do not consider the mineral resources. Therefore, the LUP-MR methodology fosters the acquisition of knowledge about the mineral resources that occur or may occur at municipal level. This is a different issue of inventorying and characterizing the mining activities already established.	Municipal authorities should rely on internal or external qualified human resources to characterize the mineral resources.
	<b>Equal Footing evaluation of minerals.</b> To avoid that areas where mineral deposits occur (or may occur) are unnecessarily occupied by uses or activities that compromise their extraction, implies that the use of land for mineral activities should be treated on an equal footing with other possible uses.	Tools developed by the H2020 Project MINATURA2020 may be used to equally weight the use of land for mineral or other activities
<u>Flexible integration of</u> <u>mineral resources in LUP</u> (PT case 10) (Aggregates; Metallic; Industrial; CRMs)	LUP-MR is an <b>non-mandatory methodology (soft policy instrument)</b> that requires a debate with land use municipal authorities to carry out its implementation. From experience of working with them and given the kind of positions mentioned earlier, sometimes there are conflictual debates because biased, non-technical or rational arguments against mining are presented. However, after creating awareness about the importance of mineral resources, and explaining the concept of "minerals safeguarding", most of the times the LUP-MR is implemented by the municipality.	The difficulties encountered by this soft policy instrument will be easily overcome if it were a mandatory policy instrument. However, in order it becomes a binding tool, it will need awareness and engagement of national LUP and Environment authorities (political decision-makers) for a normative act expressing that the already legislated Spaces for the Exploitation of Geological Resources should include the land subcategories of LUP-MR.
Devising an integrated policy tool to secure/safeguard aggregates extraction from	<b>Integration of conflict free aggregates extraction areas into legally binding spatial</b> <b>plans:</b> The extraction of aggregates located within quarrying areas (QA) constitutes a policy tool that could contribute to secure mineral exploitation since it is an area assigned exclusively for their exploitation and incorporated in the regional spatial plans.	Mining and Spatial Planning authorities on the national and/or regional scale responsible for policy and regulatory framework design as well as industry, are identified as the main group of stakeholders. These stakeholders could contribute to the development of this tool and benefit from such an approach.





<u>conflict free extraction</u> <u>areas</u> (GR case 11) (Aggregates)	<b>Equal representation of different authorities, interests and knowledge needs in the consultation committee</b> . Various interests are <b>weighted against each other applying a multi-criteria assessment</b> of the area under investigation (i.e. proposed QA). The regional authorities are responsible for coordinating the relevant procedures based on estimations of their future needs of aggregates. The members of the appointed consultation committee represent mostly local and regional authorities and interests.	The design of mineral safeguarding policies and the development of a similar tool for all mineral resources should involve the active engagement/communication with representatives from local communities, mining associations and NGOs in order to facilitate commitment for later implementation. Social acceptance issues and potential opposition from local communities should be resolved through a consultation process prior to the implementation stage of such a policy tool.
	<b>Regulatory policy tool for implementing mineral safeguarding: Regulatory tools</b> <b>are much more efficient in implementing minerals deposit safeguarding</b> . The designation of the QA into spatial plans as areas where the extraction of aggregates is a priority over other activities (e.g. tourism, agricultures etc.) may be considered a best practice approach that could be transferred to other mineral resources.	A political mandate is needs to be given to the competent Ministry to develop the regulatory framework. Availability of data on mineral resources that should be protected for future development. Selection of areas with mineral potential to be incorporated in land-use plans by applying a multi criteria assessment that considers mineral resources and mining areas on equal terms with the other natural resources and activities (e.g. tourism, agriculture) and by considering the exploitation of mineral resources as a priority activity in the area of interest.
Coexistence of mining with other land uses (tourism, cultural heritage, areas of naturalistic interest) (GR case 12) (Metallic)	The <b>Regional Spatial Plan for Central Greece</b> provides for the <b>extractive sector the</b> <b>following strategic guidelines</b> : a) Recognises that the Region holds a distinct position in the international and European economic and business system due to its industrial production, the range of its MRM and the magnitude of the business groups operating in its territory. b) Designates the entire bauxite zone as zone of exclusive mining activity with the comment that this designation concerns the mining properties (only underground) whereas the local planning will determine the specific exploitation zones.	The designation of " <b>suitability zones</b> " for the extractive sector is a useful tool to establish priorities among different and conflicting activities. Underground exploitation (when applicable) can diminish the negative reactions and allow co- existence of mining with other activities





Mapping raw-material deposits and outline minable deposits with low conflict potential: Using comprehensive data sets on minerals resources to apply a methodology of supply and demand projections to outline and describe deposits with potential low land-use conflicts. Providing information baseline for minable deposits with low conflict potential: The collection, provision and management of data to provide a data baseline for identifying minable deposits with low conflict potential.

An integrated national plan for mineral safeguarding and minimisation of land use conflicts (AT case 14)

(Aggregates)

Case 14 (AT) outlines a number of **challenges related to the national plan**, for instance, Lack of data and information exchange, no policy monitoring is taking place in order check the impact of the AMRP, or to check the progress of the implementation on the provincial and regional level, as well as the non-disclosure of the policy document resulted in various difficulties (e.g. for once the public interest was not disclosed, hence legal actions and steps for provincial spatial planning resulting from disclosure were missing). Moreover, a challenge described was the lack of political sensitivity in the technical planning approach of the policy design, too little consideration was given to political aspects, fragmented governance mechanisms, and poor stakeholder participation.

Developing a methodology that has certain quality criteria, is able to include and process different several data items (deposits of minerals, different land use forms etc.), including data from other policy streams, to support the coordination and improve linkages between mineral policy and land-use planning policy (and other policy streams, such as environment, nature protection, water management, forestry/agriculture). Political mandate given to the ministry to gather this data and develop the planning tool. Providing sufficient amount of resources and time to develop such a tool.

(1) Provide resources and organisational structure for national level as well as provincial, regional and local level of admiration to more effectively manage the data exchange and flow. (2) Apply qualitative and quantitative policy monitoring and evaluation tools to keep progress of the implementation of policy tools. (3) Similar as with public data of conversions or rezoning of green or rural land to urban land, information of raw materials deposits need to be available to public administration responsible for spatial planning. (4) Active engagement and multi-level/network governance approaches: including also representatives from lower organisational units, industry, other stakeholder groups, NGOs and civil society should be actively involved in the design and drafting and evaluation process of mineral safeguarding policies.





<u>Flexible approach (soft</u> <u>policy tool) for</u> <u>implementation of a</u> <u>national level mineral</u> <u>safeguarding policy</u> (AT case 14) (Aggregates)	Though the policy document AMRP is a technical report, without any legally binding effect, the provincial government and the linked departments in public administration showed willingness (to different degree) to engage with the AMRP. Soft instruments, like regional plans implementing the AMRP, still provide a lot of freedom for the decision makers as well as provide guidance and facilitation of a common understanding of terminology for decision-makers on lower levels of implementation. However – specific, stringent and strategic securing of land for mineral resources on regional and provincial scale is not facilitated.	In case spatial and mineral policy legislative competence is distributed along different levels, a more integrated approach for communication and coordination is necessary to achieve safeguarding of mineral resources. Turning the implementation process into a strong "communication" approach between the different levels is further relying on the willingness of other public policy bodies to move in the intended direction and implement policies in coherent way.
Implementation of the	Regulatory Policy tool for implementing mineral safeguarding: The "Regional Programme" in Styria is a regulatory tool, which proved <b>efficient in implementing minerals deposit safeguarding</b> compared to soft (voluntary) policy tools.	Regulatory tools compared to soft policy tools form more coercive instruments, and, thus <b>provide a legal protection</b> that can be enforced and are <b>obligatory for all down streamed planning decisions</b> .
AMRP: Option 1 - Ordinance "Regional Programme" Styria (AT case 14 – Regional implementation) (Aggregates)	Alternative and masked safeguarding mechanisms: These are indirect methods for safeguarding of mineral deposit (e.g. access to mineral deposits can be safeguarded via the definition of priority zoning for "agriculture" - agriculture on the surface does not impact the accessibility of the mineral resource).	In case there are less favourable conditions (political commitment or interest) in mining <b>indirect methods for safeguarding of mineral deposit are applied based on the data originating from the AMRP.</b>
	<b>Implementation of Priority zones:</b> Establishment of <b>exclusive zones</b> (depending on particular landscape types) and Priority Zones on the regional planning scale (linking regional development and spatial planning on regional level, 2 policy streams).	Implementing priority zones of a coercive character can provide strong protection of deposits against other land uses that could hinder or limit future extraction of the deposit, thereby ensuring safeguarding.
Implementation of the AMRP: Option 2 - Sectoral Action Plan: Gesteinsabbaukonzept Tyrol (AT case 14 – Regional implementation) (Aggregates)	<b>Comprehensible illustration of important regional, provincial interests for nature</b> <b>conservation</b> : The Sectoral Plan (Gesteinsabbaukonzept Tyrol), which integrated parts of the ARMP, describes and discusses land use areas and interests. This indicates that there is weighing of different land-use options in the decision making process. <b>Support for on-demand decision-making:</b> The Gesteinsabbaukonzept Tyrol, which serves as a voluntary instrument, is used for expert opinions and administrative procedures, when the demand for minerals is of public interest. A non-regulatory or soft policy tool can be perceived as a compromise for dealing with a controversial topic or a topic with less political traction, which nevertheless provides guidance for planning and decision-making.	(1) Access to information of different land use areas (from the ARMP) allowed for informed weighing of land use of regional and provincial interest in the formulation of the Sectoral Plan (Gesteinsabbaukonzept Tyrol). (2) Access and knowledge of a sectoral plan for safeguarding; requires information channels and coordination between actors responsible for land use planning and adjacent actors. (3) In case there is no obligation for implementation active and co-creative engagement as well as multi-level governance approaches for policy design and later implementation are required.





# 3.3 Central themes of Good Practice Aspects and transferability

Following the distinction made in the introduction of safeguarding referring to the 'act, process or procedure' to ensure that areas containing, or potentially containing, mineral resources are not needlessly occupied by other uses that may prevent their future extraction, this section outlines the central themes of the Good Practice Aspects and suggestions for transferability outlined in the table above. The central themes that emerged from the MinLand cases were on the one hand, processes and instruments centred around data and information of existing and potential minerals for the purpose of ensuring 'safeguarding' in land-use planning processes on other levels of government. Another trend discerned was the description of land-use planning processes and instruments, which allowed weighting of interests and changes to land-use and zoning plans (based on assessment methodologies for mineral and other land use, see chapter 2). Both these central trends again highlight that minerals safeguarding takes place during land-use planning, hence giving further credence to understanding the link between land-use planning and minerals safeguarding. Another crucial aspect worth mentioning is the strong link between safeguarding and other central themes in this manual, for instance, safeguarding requires access to data (chapter 1) as well as weighing of different land-uses that does not lead to 'unnecessary sterilisation of mineral deposits' (chapter 2). Moreover, the topic of safeguarding also seems interlinked with level of policy integration i.e. inclusion of minerals in land-use planning policies (chapter 4) as well as the procedures relevant for the permitting process (chapter 7). For a complete understanding of the cases and examples presented, readers are always advised to consult the individual good practice templates of cases of interest.

#### Processes & Instruments for data on existing and potential minerals deposits

Three cases (ES case 4, PT case 10 and AT case 14), describe similar processes and instruments to achieve safeguarding. Case 4 (ES) described the construction of a mining-environmental map based on balance between environmental sensitivity to mining and the potential for development of mining operations. The mining-environmental map was constructed as a response to the lack of safeguarding mechanisms in municipal land-use planning and can be used as a tool to determine categories of safeguarding for mineral resources. Similarly, case 10 (PT) describes a methodology (land-use planning methodology for mineral resources - LUP-MR), intended to be used to delineate potential areas of mineral deposits in municipal land-use plans. Case 14 (AT) includes the mapping of raw-material deposits and is designed to provide an information baseline for minable deposits with 'low conflict potential' for provincial governments and public administration tasked with land-use planning. Similar for all these three examples is that the methodology takes on the form of a 'soft-policy' instrument and the successful implementation rests on the willingness and capacity of local authorities to achieve implementation. Hence, challenges and recommendations for transferability of these cases include the need to consider multi-level governance approaches, as well as the coordination and capacity of the authorities concerned with the implementation of the instrument. In contrast, case 11 (GR) also describes a regulatory instrument for the purpose of integrating "conflict free" areas for aggregate extraction by integrating these areas directly into legally binding spatial plans. Case 5 (NO) is primarily related to data assessment (chapter 1), but provides important insights regarding safeguarding insofar as the streamlining and accessibility of data (a recently passed legislative instrument integrates mineral resource information into land-use planning) led to an increased awareness of mineral safeguarding for local land-use planners.





# Processes & Instruments for weighting of interests and changes to land use and zoning plans

Three cases address the characteristics of a land-use planning system (processes and instruments) to resolve competing interests of different land-use options and introduce minerals deposits into land use and zoning plans. Case 1 (SE) describes how the weighting of interests (including minerals) is constantly addressed in the land-use planning tool of 'areas of national interest' thereby including minerals as an aspect of land-use planning to be weighted and safeguarded against other land-use interests. Case 12 (GR) outlines how the regional Spatial Plan for Central Greece provides strategic guidelines that recognise the importance of minerals raw materials and designates 'suitability zones' to establish priorities among different and conflicting activities. Furthermore, case 10 (PT) presents legislation that addresses the concepts of co-existence between different activities in the same class of soil, and the parity considering the value of mineral resources in equal footing as other natural resources, primarily so in a new law from 5<sup>th</sup> of September 2019 (National Program for the Land Use Planning Policy).

Case 8 (FI), outlines an important characteristic of the land-use planning system, namely, the ability to change land-use plans and zoning in a flexible manner. The case describes that a normal land-use revision procedure occurs after 10-20 years, but due to the possibility to evaluate new projects (if a deposit is discovered) changes to land-use plans can be proposed outside the defined re-evaluation periods. The ability to re-evaluate land use plans and zoning, especially given new information, effectively limits the risks of sterilisation of known and unknown deposits. Furthermore, minerals safeguarding is linked to the process of land-use planning and the weighing of different land-uses (see chapter 2). Hence, ensuring minerals safeguarding requires 1) awareness and access to data (chapter 1), 2) instruments and process in place to use that data in the decision-making processes and land use plans (chapter 2), and 3) political will or mandate to consider the integration of minerals and other land-uses on equal terms in a land-use planning processes.

#### Safeguarding as a cross-cutting topic

As the examples from the MinLand cases show, the topic of safeguarding is highly interlinked to crucial steps in the 'value-chain' of mining, in this case from the existence of, and access to, quality data until the final steps of permitting. This is illustrated through e.g. ES case 4 and NO case 5 regarding access to, and inclusion of, data in land-use planning, to 'weighing' of land-use interests ensuring inclusion of minerals in relation to other land-uses as exemplified by case 1 and 3 from Sweden. These processes are analysed in chapter 1 on data management and chapter 2 on equal assessment. Moreover, access to data for informed decisions and inclusion of minerals in land-use planning is further linked to levels of policy integration. As exemplified by case 3 (SE), case 4 (ES), 6 (IE), 10 (PT), 11 (GR) and 14 (AT), integrative tools of promoting minerals policy and inclusion of mineral into land-use planning by national governments (legislation or strategy) or in informative policy tools (minerals land-use planning maps) further provide examples of how safeguarding is impacted by policy practice. Weighing of different land-use, as well as flexibility and transparency of land-use planning as demonstrated by the examples from the Irish case (6) and Finnish case (8) hence have an impact on safeguarding practices. This is further demonstrated by the permitting processes (see chapter 7), where the actual designation of land for exploration and mining occurs. Safeguarding, thus, occurs in the interlinkages between availability of data, the inclusion of such data in land-use planning as a part of minerals integration into land-use planning and manifested in integrative land-use planning as well as in the actual permitting processes.



# 4. Policy Integration of Minerals and Land-Use Planning

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The MinLand cases show that aligning policy streams of minerals- and land-use planning policies can be facilitated through emphasising the importance of minerals on the **national political agenda**, developing **regulations and national frameworks** for integration, and/or developing '**soft-policy approaches' of informative and collaborative** nature to foster inclusion of minerals in land-use planning. This chapter describes Good Practice Aspects for promoting policy integration such as ensuring availability and function of coordination channels between departments and levels of government, and particularly, directing attention towards building capacity of all actors to achieve policy integration.

The following chapter outlines the challenges related to the integration of minerals and land-use policies. The Good Practice Cases of seven countries (Austria, Greece, Portugal, Ireland, Finland, Sweden and Spain) addressed this topic and related Good Practice Aspects. An elaboration of these aspects, the context as well as suggestions for transferability are presented and elaborated on in the sub-chapters of 4.2 and 4.3. Chapter 4.1 provides a general overview and sheds light on important challenges related to the integration of minerals and land-use planning policies in the EU.

# 4.1 Introduction

Bridging two diverse policy streams (minerals and land-use planning) is a complex public policy task, not only due to differing objectives, goals and agendas, but also due to the involvement of a diverse set of stakeholders and authorities on various levels of government. The complexity of the task, further nuanced by the different types of governance regimes (e.g. centralised, decentralised, federal, etc.), necessitates the application of multiple policy instruments, e.g. regulations, fiscal instruments, information-based instruments and/or national strategies (Endl et al., 2018). Following a mapping of the MinLand cases, the following policy instruments were shown to have an important role in the integration of minerals and land-use planning policy streams:

- **Regulatory instruments:** for instance, demanding compliance equally, steering predictability of governmental decisions (rule of law) and often followed by sanctions for non-compliance.
- **National policy strategies or policy guidelines:** proposing a framework and/or identifying suggested criteria for consideration of minerals in e.g. land use planning.
- Information-based instruments: maps, data and tools to be utilised (on a voluntary or regulated basis) for the integration of minerals/land-use plans.

The interlinked nature of minerals and land use planning policy streams via the provision of land for extractive activities calls for an integrated approach. Policy integration is related to the management of cross-cutting issues in policy-making, in dealing with issues that "transcend the boundaries of established [single] policy fields" (Meijers and Stead, 2004, p. 1). Policy integration aims at replacing elements of existing policy streams, 'fine-tune' policy instruments and goals in order to avoid conflicting objectives and counterproductive or sub-optimal policy outcomes (Rayner and Howlett, 2009). Policy integration is stressed as being of particular importance regarding cross-cutting issues such as Environmental- or Climate Policy Integration (Di Gregorio et al., 2017; Jordan and Lenschow, 2010; Nilsson, 2005; Lafferty and Hovden, 2003) but also for minerals- and raw materials policy (Endl, 2017; Clausen and Mcallister, 2001). In the scope of the MinLand project, this particular cross-sectoral





challenge relates to the integration between minerals policy and land-use planning. While land use planning concerns the management of scarce land, according to politically and societally defined goals and their spatial appropriation, minerals policy governs the secure and sustainable supply of minerals from primary production (Endl et al., 2018a). As land use conflicts arise on account of competing interests of different activities (mineral extraction and others), there is a need to integrate land-use and minerals policy and thereby ensure a cross-sectoral coherence of policy goals, instruments and governance processes (horizontal policy integration). Horizontal policy integration is often understood as pertaining to organisational and institutional interactions across distinct sectors or, the extent to which a central authority has developed a comprehensive cross-sectoral strategy (Di Gregorio et al., 2017; Lafferty and Hovden, 2003). Horizontal policy integration can thus be seen in converging two (or more) policy streams to obtain a coherent approach, as policy streams with conflicting goals may undermine long-term alignment of overarching goals across sectors (Nilsson, 2005). Horizontal integration takes place between sectors, authorities or actors working on the same level of the governance hierarchy, this means that horizontal integration can take place either, or simultaneously, between national departments, or between different regional authorities. Hence, horizontal integration can occur at different levels of government in parallel.

However, as land-use planning is managed by public authorities at different levels (national, regional, county, or local levels), the challenge of integrating minerals policy to land-use planning is not only related to cross-sectoral (horizontal) integration but also to (vertical) integration across the different levels of government. *Vertical policy integration* takes place among different levels and hierarchies across political administrative levels and/or territories and involves actors from different levels of government such as, for example, national ministries, regional authorities and local municipalities (Endl, 2017). Vertical policy integration can involve processes of devolving responsibility to local levels, and can foster coherency, consistency and learning between different levels of government (Nilsson, 2005).

# 4.2 Good Practice Aspects

The following section aims at identifying Good Practice Aspects related to policy integration, described in the MinLand cases. Although the cases often relate to a specific MinLand topic stream (A-H) there are, however, overlaps. As can be seen from the context and elements of the presented Good Practice Aspects (table 5) there are a few overlaps to other chapters of this report, e.g. assessment of minerals and other land-uses on equal footing (chapter 2) or the strategic consideration of safeguarding (chapter 3). This chapter, however, will pay specific attention to good practice (and challenges) related to the MinLand topic stream of policy integration, such as vertical and horizontal coordination, agenda setting and governance mechanisms, as other streams, such as valorisation and safeguarding, are discussed in their individual chapters (see chapters 2 and 3). The table below outlines all 'Good Practice Aspects' listed in the MinLand cases that relate to policy integration, their context, as well as the connected suggestions for transferability stipulated by the case elaborators. It should be noted that this table provides a synthesis of context and elements of the presented Good Practice Aspects and readers are advised to follow the hyperlinks of the Good Practice Aspect to find the information in full, located in the Good Practice Templates in the Annex.





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Table 4 Good Practice Aspects of Policy Integration

Good Practice Aspect	Description and Element(s)	Suggestions for Transferability
Linked mining and land use policy (SE case 1) (Metallic; Aggregates; Industrial)	In Sweden, the integration of land-use policy and minerals resources is translated into a <b>'holistic' system of National Interests</b> (where mineral deposits can be considered a national interest). <b>Weighing and prioritisation of actual land-use</b> (in the planning) lies with the municipalities in Sweden. The national level can still intervene if municipal plans do not take areas of national interest into account in their planning. The tool areas of national interest which includes all types of mineral resources is one of the corner stones in the overall land use process. They form the governments tool to affect the land use planning and contains eleven different categories of strategic land use aspects.	<ul> <li>(1) Valorise minerals as a key aspect of land use through strategic tools e.g. 'areas of national interests';</li> <li>(2) A high degree of cooperation between different involved parts in the land use and permitting system. Particularly important is not only capacity within the system but also competence to formulate and execute the policy.</li> </ul>
Integration of mineral resources into land- use planning for mineral resources safeguarding (ES case 4) (Aggregates)	Development of a <b>mining-environmental planning map</b> with the intention of being used as a ' <b>starting point of the definition of mineral and mining strategies'</b> in local land-use planning. However, given the decentralised planning system and the nature of the planning map as a 'voluntary soft-policy tool' challenges of vertical integration the uptake and utilisation of the methodology has yet to be transferred to regional levels.	(1) Inclusion of expertise e.g. professionals from the mining authorities, environmental authorities and local administration in the development of regional and local land-use plans. (2) Feedback-loop and sharing of results between different levels of governance through establishing inter-administrative commissions.
Integration of mineral resources in land use planning legislation (NO case 5) (Aggregates; Metallic; Industrial; CRMs)	Since July 2018, mineral resources have <b>been included as a specific topic in the</b> <b>Norwegian land use planning legislation and must be considered in the land use</b> <b>planning process</b> (the Planning and Building Act). The national planning and building act requires local land use planning processes to consider mineral resources, and if a deposit is valorised to be of regional, national or even international significance, the Norwegian Directorate of Mining may intervene if a competing land use is suggested in the planning.	Consider inclusion of mineral resources a mandatory element in land use planning legislation.
Policies and strategies concerning mineral resources in land use planning (NO case 5) (Aggregates; Metallic; Industrial; CRMs)	The National Expectations state what themes the current (political) government expect to be addressed and improved (in general). <b>Mineral resources in land use planning were</b> <b>specifically mentioned in 2011, 2015 and 2019.</b> As a part of the planning process, there are meetings between different governmental institutions to reduce the level of conflicts for different land uses. Nordland County was spatially defined and classified and included in the county and national land-use management tool— in an effort to mediate potential land-use conflicts and safeguard mineral resources of possible current and future value.	Suggestions include access to data and mapping but also: organise mandatory meetings with different responsible government authorities and departments involved in land- use planning in an effort to mitigate potential land-use conflict.
Policy Integration (IE case 6)	In Ireland, the Planning and Development Act sets out the regulatory framework in a hierarchical 'top-down' system. Complemented by a National Planning Framework, the <b>integration of minerals is envisaged through a policy objective</b> that addresses rural	(1) Access to quality data and expertise contributes to informed decisions and supports policy formulation.





(Metallic)

development through the sustainable and economically viability of extractive industries, bio-economy and accelerating other sectors, whilst protecting the natural landscape and heritage vital for rural tourism. The general objectives of the framework are then translated into regional and county level plans. The case still indicates that the integration of minerals policy in land-use planning appear modest.

areas specifically zoned for industry or development. Policies which mandate development within planned areas can are flexible / can be altered to allow for the presence of mineral development in more rural centres. (3) Flexibility, a fair and balanced approach considering sustainable development and competing policy requirements as well as a decision-making on a case-bycase basis ensures avoidance of deposit sterilisation due

(2) It should be recognised at a strategic level that the

extraction of mineral resources is spatially confined to the

presence of those resources and may not occur within the

(4) Policies formed at national level must be considered at regional and local level (i.e. the Planning and Development Act 2000, as amended, ensures that lower level plans are compliant with higher level plans, in a hierarchy manner)

to lack of knowledge.

 Ensure that mineral exploitation is considered a 'national interest' on path to sustainable development.
 Increase participation and consultation of experts in land use planning processes.

Land Use Plans that allow Inclusion of minerals during time (FI case 8) (Metallic; CRMs) In the centralised policy system of Finland, the National Land Use Guidelines **stipulate policy streams and strategic goals** in a top-down approach, although the regions can contribute to such goals and objectives through setting their own priorities. During preparation of the regional land use plan (no National land-use plan exists), consultation is conducted and, according to regional development strategies, updates to zoning is proposed. Certain areas enter land use plans by other regulations (conservations areas, cultural areas, Sami homeland and Skoll community area, etc.), or can be instigated by other procedures relating to development actions by e.g. the government, or impacted by EU directives (e.g. Natura 2000), or interested stakeholders. Not all land is zoned, zoning is done according to the needs with the ultimate objective to achieve sustainable development.

Flexible integration of<br/>mineral resources in<br/>LUP<br/>(PT case 10)In Portugal, a soft-policy instrument named 'land use planning methodology for mineral<br/>resources (LUP-MR) was developed with the objective to achieve safeguarding through<br/>both<br/>introducing sub-categories of land into a policy-making process of the whole mining value-<br/>chain (from undiscovered/hypothetical mineral resources to extraction and exploitation).(1)(PT case 10)<br/>(Aggregates; Metallic;<br/>Industrial; CRMs)In formative tool, the LUP-MR is not legally binding, although the Portuguese case<br/>study clarified that many municipalities adopted the suggested land-categories in their(1)

 There needs to be a weighing of value and interests both in terms of land use and extent/nature of the deposit.
 Implementation challenges of 'soft-policy' tools can be overcome either through making such tools binding (mandatory), or through awareness-raising and capacity building if tools cannot be made binding.



	municipal land use plans, increased information on the importance of safeguarding (from the national authorities) were directed towards municipalities which did not adopt the LUP- MR methodology.	(3) Awareness of the importance of minerals and minerals safeguarding should be ensured through all levels of governance, any review processes of land-use. plans should be done in committees which also includes relevant mining authorities.
	Participation of the mining authority in the Advisory Committee for the review of Municipal Land Use Plans. An Advisory Committee is set up for each municipal land use plan review process (regulated through a ministerial legislative act). The Advisory Committee includes public entities that are considered relevant for that specific municipality. DGEG (the mining authority) is called for most of these advisory committees, allowing to bring to the discussion the issue of minerals safeguarding. However, for the municipalities for which there are no active mining permits, DGEG is not called to participate. Therefore, no areas will be allocated to minerals safeguarding. Moreover, the rules for land use in these municipalities usually specify the interdiction for mineral activities in all its territory, implying that mineral exploration activities will not take place – unknown mineral deposits will never be discovered.	The review process of municipal land use plans should have an advisory committee where the mining authority should always be present, in order to propose LUP-MR methodology. Awareness about the importance of minerals to the society and on the need to safeguard their access in LUP is needed at the level of Municipal and Regional LUP authorities, which are the ones responsible for deciding which entities should integrate the Advisory Committee.
Devising an integrated policy tool to secure/safeguard aggregates extraction from conflict free extraction areas (GR case 11) (Aggregates)	The case from Greece described a <b>national level policy tool for safeguarding</b> the exploitation of primary aggregates, with focus on the framework applied for delineation of (land-use) conflict free aggregates extraction areas. The policy instrument in Greece is implemented as a top-down approach as it provides a national framework to be incorporated in regional and local spatial plans. Hence, the tool was implemented in a centralised (top-down) manner thereby <b>ensuring integration of the tool in to spatial plans</b> . The extraction of aggregates from quarries located within QA constitutes an example of how a policy tool could contribute to the rational and secure exploitation of a mineral resource since it is an area assigned exclusively for their exploitation and incorporated in the regional spatial plans. Various interests are weighted against each other applying a multi-criteria assessment of the area under investigation (i.e. proposed QA).	<ol> <li>Political mandate, availability of data and flexible criteria are crucial to develop a stable regulatory framework for minerals and land-use planning integration.</li> <li>Clear identification and inclusion of stakeholders and expertise when designing and implementing policy, design of mineral policy (and safeguarding policies) should involve active engagement/communication with stakeholders and representatives from communities, NGOs, industry, etc.</li> </ol>
Flexible approach (soft policy tool) for implementation of a national level mineral safeguarding policy (AT case 14)	This case regards the design and implementation of a <b>voluntary soft-policy tool with the</b> <b>aim of safeguarding mineral resources</b> on a national level and acts as a policy instrument that facilitates integrated minerals and land use planning policy implementation on a provincial level. The Austrian policy instrument (Austrian Mineral Resources Plan) assesses and determines raw material deposits and assess their conflict potential with other land- use option, as a voluntary tool, the ARMP can be utilised by the federal states and different	(1) Soft policy instruments demand high technical and managerial capacities and willingness of the involved actors (mineral policy and LUP) for ensuring a coherent and accountable monitoring of the overall land use process; good communication with the industry, local





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(Aggregates)

paths to implementation and realisation was documented in the MinLand case study (e.g. stakeholder and com differences between the federal states of Styria and Tyrol). to keep the overview

stakeholder and community and other policy departments to keep the overview and management.

(2) Transparency in the process: reasoning of the planning and decision making process on the valuation of land, land-use options and the decision taken, to ensure an accountable and transparent process, including the valuation criteria (e.g. weighing of different policy goals).
(3) In case there is no obligation for implementation active and co-creative engagement as well as multi-level governance approaches for policy design and later implementation are required: Such an approach requires the inclusion of representatives from lower organisational (regional and municipal) in in the design and drafting process of mineral safeguarding policies.





# 4.3 Central themes of Good Practice Aspects and transferability

The following section gives an overview of mechanisms applied in the different cases, either for the sole purpose of achieving policy integration or that contributed to policy integration. Please note that this section is only intended to give the reader an overview of the mechanisms applied and for further information and elaboration one should always consult the good practice templates found in <u>Annex II</u>.

#### **Policy Instruments**

The scrutiny of the MinLand cases show that there are both differences and similarities related to policy integration between minerals and land use planning, and that there are common trends worth considering. Below we have outlined mechanisms utilised in the different MinLand cases, for either the purpose of policy integration or that achieves policy integration. One the one hand, governments can ensure integration through regulatory instruments (followed by sanctions if not adhered to). On the other hand, governments can opt for 'soft-policy instruments' such as voluntary and/or suggested guidelines, information-based instruments and grander or more targeted strategies, often indicating the direction or agenda of specific topics on a national level. For example, five cases outline the importance of establishing minerals as a 'national interest' or as a valuable factor for sustainable development. Suggestions on how to do so range from national strategies, mandatory inclusion of minerals in land-use planning, to regulatory processes which demand a weighing of interests. Naturally, the application of instruments of different characteristics warrants and demands different types of policy integration mechanisms. Policy integration, and the type(s) of instrument(s) applied, also strongly relate to the type of national governing system, e.g. federal, decentralised or centralised systems and the type of mandates that comes with it.

**Regulations and national frameworks** with varying degree of integration between minerals and landuse policy were identified in Finland (case 8), Ireland (case 6), Austria (case 14), Norway (case 5), Greece (case 11), and Sweden (case 1). Although bearing similarities in their regulatory nature, the policies are quite different in scope and level of 'coerciveness' in implementation. For example, in the Norwegian case, the national planning and building act (regulation) requires local land use planning processes to consider mineral resources, and if a deposit is of regional, national or even international significance, the Norwegian Directorate of Mining may intervene in case a competing land use is suggested in the planning. In Sweden, the integration of land-use policy and minerals resources is achieved through a 'holistic' system of "National Interests" (different land uses considered of national interest e.g. minerals). Similar to the Norwegian system, but with the difference that the assessment and prioritisation of actual land-use (in the planning) lies with the municipalities in Sweden (see chapter 2), with the exception of some designation of land done in permitting processes in national processes (see chapter 7). In the case from Finland, the National Land Use Guidelines stipulate policy streams and strategic goals in a top-down approach, although the regions can contribute to such goals through setting their own priorities. In Sweden, Norway, Finland and Ireland, the cases deal with national land use guidelines (Finland), a national planning framework (Ireland), national expectations (Norway) and the definition of 'areas of national interest' (Sweden). In Finland, Norway and Ireland, mineral interests outline in the national guidelines and planning frameworks directly feed into regional and local planning documents indicating 'strong' vertical policy integration. The case from Greece is slightly different as this describes a national level instrument in the form of a framework implemented in a top-down approach, i.e. a national framework to be incorporated in regional and local spatial plans safeguarding the exploitation of primary aggregates.





Another trend regarding policy integration that surfaces from the cases is the use of **national strategies** or agenda setting as means to achieve policy integration. Placing minerals on a national agenda can help strengthen the role of minerals in land use planning. A national strategy often seeks to bridge the gap between perceived policy silos and establish a coherent approach in a specific target sector. Strategies, such as, for example, a National Minerals Strategy can be perceived as a government's commitment to establish a strategic policy framework for mineral policy and ensure coherence of policy integration (Endl, et al. 2018). Establishing an agenda (Norway) or defining strategies (Austria) can, thus, clarify the need, and provide incentives, for bridging objectives of two or more policy streams beyond direct, regulatory, instruments for integration. Although not a focal phenomenon in the cases, it may be worth noting that Finland, Portugal, Greece, Austria, Norway and Sweden all have National Minerals Strategies in place (Endl et al., 2018a). The cases further indicate that assessment of minerals (chapter 2) and policy integration is closely linked to establishing a national consensus on the importance of mineral resources. Not only addressing the need for a political agenda on minerals supply, the cases further suggest important aspects of policy, regulation and land-use planning. Such as, for example, the need to have flexible land-use plans as well ensuring 'binding' minerals integration where possible.

Informative instruments such as the Land-Use Planning Methodology for mineral resources (LUP-MR) in the Portuguese case (case 10), or the Austrian Mineral Resources Plan (AMRP, case 14) are characterised by utilising data (geological information and land-use classification) to enable the inclusion of minerals in land-use planning. Often these informative instruments are based on data assessment (chapter 1), resource mapping or zoning, with the objective of enhancing knowledge of potential land use, mitigate land use conflicts and/or integrating minerals into land use processes. These instruments are characterised by including assessments of land and mineral deposits (in some cases also including feasibility measures for exploitation), which can be utilised in planning and permitting processes (see chapter 2 and 7). The instruments differ according to their target audience - from being an only internal repository for public administrators (AT case 14) to being available for a wide range of stakeholders, including industry (NO case 5). Austria, Portugal and Spain all have devised a type of informative and voluntary 'soft-policy' tool in the form of a mineral resources plan (AT case 14), a land use planning methodology (Portugal), and a mining-environment planning map (ES case 4). These instruments are all subject to challenges of vertical integration as they are designed on a national level but with the intention to support mineral policy (and safeguarding) integration in local and regional land-use plans in federal or decentralised systems. To a varying degree, all cases address the need for coordination and communication between national and regional/local levels of government in achieving 'uptake' and integration of the instruments in lower levels of government. A specific challenge was the need to involve regional/local authorities early on in the design-process of instruments as this would ensure 'ownership' and, thus, willingness to integrate the instrument in regional/local land-use plans.

#### Coordination and Capacity

The cases highlight that the coordination and capacity needed to ensure integration is often lacking, and that there is a need for "active and co-creative engagement and multi-level governance approaches" (AT Case 14). The cases on **vertical integration** indicate the importance of coordination and communication between different levels of government, especially so regarding 'soft-policy tools' and cases that involved local/regional mandates over land-use planning. The involvement of lower levels of government early on in the design of instruments and policies (e.g. the case of Ribera Del Ebro





in Spain) was one of the aspects highlighted. It was apparent that 'strong' vertical integration of minerals policy into land-use planning was more prevalent in centralised systems where regulatory instruments demanded integration of goals in lower levels of government planning. Interesting to note is the mandate of local authorities to prioritise 'optimal land-use' in planning and permitting (SE case 1 and 3) or identify own pathways to realising national goals (FI case 8). This in turn provides flexibility of prioritising local interests and may increase legitimacy and ownership of policy and responsibility over connected challenges (Nilsson, 2005).

The information from the cases highlight **horizontal integration** in nationally developed instruments that integrate mineral resources into land-use planning policies. However, there appears to be a deficit in implementation of such instruments on lower levels of government (vertical integration) where regional and local levels of governments have land-use planning mandates (as seen in the examples from Portugal and Austria). This suggests that although full integration can occur on a horizontal level there are still challenges to achieve vertical integration. As seen from literature on policy integration, this again strengthens the notion that both dimensions of horizontal and vertical mechanisms are needed to achieve 'full policy integration' (Jacob and Volkery, 2004).

Evident in the Good Practice Aspects as well as their transferability, communication and coordination are crucial elements to ensure effective policy integration. Coordination mechanisms between public policy streams or different departments are taking place to mitigate possible land use conflicts (NO case 5), discuss, assess and negotiate different land-use options (GR case 11, PT case 10, AT case 14). For example, coordination mechanisms range from informal practises such as ad-hoc meetings (see AT case 14) or institutionalised practices such as Advisory Boards (see PT case 10) or Committees (see GR case 11). Committees and Advisory Boards can be considered as attempts to establish long-lasting mechanisms and processes for coordination. Regular and recurrent collaboration can contribute to decreasing transaction costs and better coordination efforts, the establishment of joint problem perceptions, mutual understanding (or acceptance), learning, and joint capacity building to negotiate possible solutions.





# 5. Transparency in relation to Mineral Exploitation

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Addressing **transparency** in land-use planning and mining operations, the MinLand cases presented in this chapter indicate the importance of providing a **clear planning process description**, based on the national planning system, and share this with all interested parties. Sharing **information regarding companies' spatial and environmental plans** with stakeholders, and include **stakeholder input in planning** before submitting proposals to the authorities were also seen as contributing to increased transparency in mineral exploitation and land-use planning.

The following chapter addresses MinLand cases and good practice examples that relates to transparency in land use planning processes in the cases from Sweden (case 1 and 2), Spain (case 4), Ireland (case 6), Poland (case 7), Finland (case 8), Italy (case 9), and Portugal (case 13).

# 5.1 Introduction

Transparency, according to the Cambridge English dictionary, can be defined as:

"Transparency: a situation in which business and financial activities are done in an open way

# without secrets, so that people can trust that they are <u>fair</u> and <u>honest</u>"

Based on this definition, we identify three important aspects:

- Transparency by providing clarity on how the planning process takes place;
- Transparency in relation to the **consultation of and communication with stakeholders** in mining operations, including stakeholders' role and power;
- Transparency with regard to the **ways and ethics of decision making** of the mining company.

Providing clarity on how the planning process takes place (i.e. making transparent on what decisions are taken and when) is related to mechanisms of the land use planning process. This transparency should lead to more clarity on decisions taken (i.e. these should be understandable and comprehensible for all players or stakeholders (i.e. a mining authority should understand how land use planning authorities arrive at certain decisions); these should be understandable and comprehensible for all relevant actors related to minerals and land use planning). However, transparency in the planning process itself is an aspect that is not controlled by the mining industry, nor can it be influenced much. At most, mining authorities can stimulate general planning authorities to provide guidance on planning process.

The second aspect, transparency regarding stakeholders has a strong focus on communication, but also on internal procedures used by the mining companies or mining authorities. How do you involve stakeholders, at what stage, what information do you want to share? And, perhaps most importantly, what role, capacity, expertise or power does the stakeholder have to influence spatial plans?

The last aspect, transparency regarding the ethics of decision-making, requires that a clear set of principles is followed, which includes respecting juridical procedures, respect for the environment





(precautionary principle), respecting human rights<sup>3</sup> etc. This should be of minor importance in this context considering general legislative requirements within the EU.

Nowadays, there is a strong pressure on the mining industry to act towards reducing its environmental footprint. For that reason, potential impacts of a mining project should be identified and quantified well in advance, preferably during the project's planning phase, in order to conclude on the most suitable mitigation measures and environmental monitoring plans, thus improving overall environmental performance (Marnika et al., 2015). It has been demonstrated that public discussion and consultation helps raise awareness of the issues at stake and the needs of each sector (be it the mineral sector or another sector, e.g. nature conservation). Hence, greater recognition and understanding of the needs of others contributes to a more integrated and informed decision-making.

Therefore, mining activities today are required to perform to higher standards with more transparency. More efficient communication with a wider spectrum of stakeholders has become a necessity<sup>4</sup>. Such stakeholder involvement and communication can be enhanced through:

- Statutory consultation requirements in the planning process
- Engagement and synergies beyond statutory obligation

Several European policies require consultation procedures, such as:

- The Environmental Impact Assessment EIA Directive (85/337/EEC) is necessary in the permitting for mining since it relates to harmful impacts upon the environment but also establishes stakeholder right to consultations.
- The European Strategic Environmental Assessment SEA Directive 2001/42/EC ensures that the
  environmental consequences of certain plans and programmes are identified, assessed and
  considered during their preparation and before their adoption. It requires an environmental
  assessment report, but it also demands that authorities and the general public have an opportunity
  to express their opinion on the environmental report as well as on the draft plan or programme.
  In this way, consultation not only helps to ensure that the information supplied for the assessment
  is comprehensive and reliable but also provides more transparency in the decision-making process.
- The Natura 2000 guidance document on Non-energy mineral extraction in Natura 2000 sites (European Commission, 2011) stresses the importance of following spatial planning procedures. Spatial planning in particular "encourages different economic sectors, interest groups and the general public to become engaged through public consultation, thereby ensuring greater transparency in the decision-making process". The guidance document otherwise focuses on legal and formal aspects regarding assessment and mitigation and compensation measures but does not provide guidance on transparency.
- A practical example on transparency in governance might be the Water Framework Directive (WFD). Public participation is a key element of Integrated Water Resources Management and is a major challenge in the implementation of the Water Framework Directive. The WFD aims to develop an "integrated community policy on water" by bringing together all water resources, uses, values, stakeholders, and relevant decision-making levels under a common legal regime (The



<sup>&</sup>lt;sup>3</sup> <u>https://www.miningglobal.com/operations/ethics-mining-challenging-necessary</u>

<sup>&</sup>lt;sup>4</sup> <u>https://www.unece.org/energywelcome/areas-of-work/unfc-and-sustainable-resource-management/applications/unfc-and-mineral-resources.html</u>



European Parliament and Council of the European Union, 2000, p. (9)). It is an explicit choice, embedded in legislation, for widening stakeholder involvement.

The United Nations Framework Classification for Resources (UNFC) is the only universal standard that considers all the necessary processes (including stakeholder involvement) for holistic development of the minerals sector enabling it to deliver both significant process efficiencies along the mineral value chain and socio-economic gains. The UNFC website states: "Today, mining activities are required to perform to higher standards with more transparency and requirements of structured sustainability reporting, often applying the best practices of a circular economy. More efficient communications with a wider spectrum of stakeholders have become a necessity."<sup>5</sup> The Geological Surveys of Finland (GTK), Norway (NGU) and Sweden (SGU), the Swedish Association of Mines, Minerals and Metal Producers (SveMin) and Petronavit a.s., have prepared a "Guidance for the application of UNFC for mineral resources in Finland, Norway and Sweden". This document uses 'transparency' in various ways, in relation to mineral land use planning. More specifically, it states: "...UNFC-2009 can be used as a communication tool that helps to capitalize on progress made in the fields of .... community engagement, and reporting transparency. All of these are key challenges in the sustainability debate and closely related to the public acceptance of mining, a key success factor for the industry" (Geological Survey of Norway (NGU) et al., 2017, p. 21). It mentions also specifically how to deal with landowners, local or indigenous people, in particular when resistance to the project might be expected. Engagement beyond statutory obligation, like promoting the implementation of responsible and innovative mining, could even lead to more confidence and trust in the process or operation at stake and would result in a good relationship between the local stakeholders (e.g. the local community and the mining company).

Stakeholder participation can extend from enquiries, polling systems whereby people can vote or express their preferences, up to a level where the public is in full control and has the right or opportunity to approve or reject plans for developments. There is a 'gradient' in the measure of public participation (see e.g. Arnstein's 'ladder of citizen participation'; (Arnstein, 1969) or Public Participation Pillar; (IAP2, 2007), which is shown in *Figure 5*. The level with the highest level of public participation ("empowerment"), implies that the public may finally decide. How abstract this may sound, there are ready examples of developing wind power with smaller windmills, whereby the public has a share and receives the benefits as well <sup>6</sup>. Each level of public participation. Figure 1, column 4 illustrates that in the case of public 'involvement' the goal is that this involvement should occur throughout the process. It should take care of the concerns of the community, and express that these are understood and considered. This also means that these opinions need to be reflected in the outcome of the process, in the plans.

<sup>&</sup>lt;sup>6</sup> https://www.nrc.nl/nieuws/2019/08/19/de-kleine-groene-windmolen-valt-wel-goed-in-de-omgevinga3970481



<sup>&</sup>lt;sup>5</sup> <u>https://www.unece.org/energywelcome/areas-of-work/unfc-and-sustainable-resource-management/applications/unfc-and-mineral-resources.html</u>



# IAP2 Spectrum of Public Participation



Increasing Level of Public Impa

Public participation goal	Inform To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	<b>Consult</b> To obtain public feedback on analysis, alternatives and/or decisions.	Involve To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	<b>Collaborate</b> To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	Empower To place final decision-making in the hands of the public.
Promise to the public	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.
Example techniques	<ul><li>Fact sheets</li><li>Web sites</li><li>Open houses</li></ul>	<ul> <li>Public comment</li> <li>Focus groups</li> <li>Surveys</li> <li>Public meetings</li> </ul>	<ul> <li>Workshops</li> <li>Deliberative polling</li> </ul>	<ul> <li>Citizen advisory committees</li> <li>Consensus- building</li> <li>Participatory decision- making</li> </ul>	<ul> <li>Citizen juries</li> <li>Ballots</li> <li>Delegated decision</li> </ul>

Figure 4 An example of levels of public participation and the required techniques (IAP 2007)

The scheme of Figure 4 therefore makes the general levels of involvement explicit and provides a selection of techniques that can be used for stakeholder involvement.

Public meetings are often used as a participatory tool, yet they rarely achieve their goal of empowering community members in decision-making. The timing of initial consultations can be similarly crucial in fostering a positive or negative reception – generally, the sooner, the better – and likewise the timing of information releases will influence the possible opposition or support to a proposed project. Thus, it is not only the level of involvement, but also the way the information is provided which may affect the perception of mining operations (besides other factors such as labour conditions). Negative perceptions of proposed mining projects were in some cases found to be due to procedural factors (e.g. timing, consistency in consultation, lack of two-way dialogue) and personal and contextual factors (e.g. mistrust of the company and its representatives, community disenfranchisement, and failure to meet community expectations or a public policy decisions)(Walsh et al., 2017). It may seem in the interest of the company, to work top-down, to limit the influence from community stakeholders, and to minimize the number of those opposing. In the short run this may speed-up considerably all decision



making, towards the implementation of the exploration and exploitation plans. However, in the longer run this is exactly what may cause opposition in any sector. One such example is the conflict between mining and indigenous people, after protests of the people the mining company defends itself by stating that 'people have the right to request information... they adhere to the countries mining laws'<sup>7</sup>. Opposition or resistance is closely linked to the extent that transparency and participation is aimed for. The less transparency there is in the process, the more mistrust and finally opposition and resistance might be expected. This is illustrated by an example for Natura 2000 site designations in the Netherlands and in the UK. In the Netherlands, late information provision resulted in mistrust and finally strong opposition against the establishment of the sites. The development of the Natura 2000 site was stopped as a result of public resistance. On the contrary, in the UK stakeholders were involved from the early start. Several businesses and companies saw opportunities, and the general support of declaring the area as a protected site was high (De Vries and Beunen, 2009). These cases underline the important role of the provision of information at an early stage, even if plans are still unclear.

Challenges for transparency relate to the level of stakeholder involvement based on:

- **Degree of influence:** can they influence plans, can they propose alternative opportunities, or block activities or certain management measures?
- **Definition of stakeholders:** who is a stakeholder, or who has a 'stake'. This can be very arbitrary, are these the owners of the land? Does this also include the municipality? Or are all residents of the municipality, or even the region or province stakeholder? In how far represent NGOs interests of the municipality, or conservation interest groups, human rights and minority groups are these all included in the stakeholders? What is included in the definition of a stakeholder depends on the context.
- Identification of stakeholders: How can you select or involve the right stakeholders? Effective practice means early scoping of the potential range of stakeholders and ensuring that they are informed about their potential interest in the process.
- When do we inform: do we inform people once we have a concrete plan? Or do we rather inform them before preparing plans, while it is still unknown how people may be affected which can likewise result in unrest or confusion?

Finally, regarding ethical decision making, despite the fact that this seems more an issue in former Soviet states like Ukraine (Van der Sluis et al., 2011) or other continents (e.g. Edwards et al., 2014), there are examples which point to violation of the law or taking large risks like the Bara Maia disaster in Romania in 2000. The mining industry should hold up high standards - the mentioned precautionary principle - and use codes of conduct as referred to before (e.g. UNFC). Large mining companies like Anglo-American have their code of conduct on the internet, which could be considered a best practice although this did not appear in the MinLand cases.

# 5.2 Good Practice Aspects

The following section aims at identifying Good Practice Aspects related to transparency, described in the MinLand case studies. Eight MinLand cases, which stem from seven countries (Sweden, Spain, Ireland, Poland, Finland, Italy and Portugal) addressed the transparency topic and related good practice aspects. As can be seen from the context and elements of the presented Good Practice Aspects (table 1) there are a few overlaps to other chapters of this report, e.g. other land-uses on equal

<sup>&</sup>lt;sup>7</sup> <u>https://www.business-humanrights.org/en/mexico-indigenous-communities-oppose-mining-company-alamaden-minerals-claiming-lack-of-consultation-includes-company-comments</u>





footing (chapter 2). This chapter, however, will pay attention to good practice (and challenges) related to the MinLand topic stream of transparency, such as involvement of local stakeholders. The table below outlines all Good Practice Aspects listed in the MinLand cases that relate to transparency, their context, as well as the connected suggestions for transferability stipulated by the case elaborators. It should be noted that this table provides a synthesis of context and elements of the presented Good Practice Aspects and readers are advised to follow the hyperlinks of the Good Practice Aspects to find the information in full, located in the Good Practice Templates in Annex II.





#### D6.2: Final Manual for Good Practice Guidance

Table 5 Good Practice Aspects of Transparency

Good Practice Aspect	Description and Element(s)	Suggestions for Transferability
Local Stakeholder Interaction (SE case 1) (Metallic; Aggregates;	<b>Early involvement with stakeholders:</b> In Sweden, the exploration companies need to establish a <b>work plan that is approved</b> with minimum necessary impact on other land uses and affected parties. The work plan needs to be <b>communicated with affected parties</b> . In certain cases, agreements must be	Involvement of local knowledge and capacities in the environmental permits process. Use regional and local knowledge in the evaluation/determination of environmental issues.
Industrial)	established also with landowners and affected parties.	
	<b>Independent agency facilitating the process:</b> A landscape design agency led the process for the planning of a rehabilitation plan. A professional design and facilitation team that works as an <b>independent agency guarantees transparency</b> , trust and an un-biased process of the company activity.	Establish a professional design and facilitation team that works as an independent agency, to guarantee transparency, trust and an unbiased process of the company activity.
	<b>Application of multi-method participatory design approach:</b> Using different methods for feeding results into the design process provide broad opportunities for inhabitants with different user and engagement needs (e.g. elderly people, schoolchildren etc.) requires experienced and professional teams.	Use multiple methods for information and consultation with stakeholders, specifically designed for the different categories of stakeholders and personal needs.
An extensive and collaborative civic engagement process developing a	<b>Early and long-term involvement in the process:</b> The participatory approach started early in the project and lasted for more than one year with several consecutive phases that allowed to understand local community interests and build up trust for company action.	Involve stakeholders early on in the project, and for the long run.
(Metallic; CRMs)	<b>Involving a wide range of stakeholders in the design process:</b> The participatory design engaged a wide range of stakeholders such as local inhabitants, employees, authorities, and attention was paid to the involvement of underrepresented groups such as schoolchildren and indigenous communities. The mining operations are situated within traditional Sami land. It is common to have an open dialogue about the overlapping interests, to build trust and find solutions that are beneficial for both sides.	Involve a broad range of stakeholders, local inhabitants, employee's, authorities, interested parties, indigenous communities, schoolchildren, etc. to give the affected stakeholders a chance to voice their concerns and contribute to the project. Pay attention to the involvement of underrepresented groups, such as schoolchildren and indigenous communities.
	<b>Company principles for SLO – the Boliden Approach:</b> A well-planned communication strategy was developed according to the operating principles of the mining company. This provided credibility to the civil society engagement process and provided positive preconditions for its success.	Develop a process for communication and consultations well before the start of the project, in combination with a well-planned stakeholder dialogue strategy for the mining company.





D6.2: Final Manual for Good Practice Guidance

Enhancing mineral resources knowledge for land use planning and use in policy	<b>Elaboration of potentially exploitable resources maps:</b> (Spatial) data was <b>compiled and analysed in a participatory</b> process with authorities and other stakeholders. This mapping process brought actors together by creating a shared understanding.	Make sure the work is carried about by professionals with appropriate training and experience, and is based on scientific data. Involve authorities, stakeholders and mining companies that have the best knowledge regarding local mineral resources.
formulation (ES case 4) (Aggregates)	Willingness to cooperation by involved actors: Through this process, the stakeholders were willing to share and knowledge, even if this was sensitive information.	Develop a process of information and (spatial) data exchange and collaboration in the form of a working group or stakeholder platform, set up by both mining and land-use planning authorities.
	<b>Statutory consultation requirements in the planning process: Public consultation</b> in both forward planning and development management is rooted in planning legislation and is statutory.	Include public consultations as statutory requirements for minerals developments. All comments which are made on a plan or an application should be made publicly available, including how these have addressed.
Public participation and Transparency (IE case 6) (Metallic)	<b>Public engagement beyond statutory obligation:</b> Where information is not commercially sensitive, it is shared with the public. Communities are updated in relation to operations in the local area. This promotes <b>confidence and trust in mining operations</b> and good relationship between the local community and the company.	Keep an open-door with the public and the planning authorities, for mining and exploration companies
	<b>Formal and informal communications channels:</b> To communicate with communities, they use a <b>variety of communication channels</b> , including local radio and papers to give updates to local communities.	Use a variety of tools to communicate with the public to help reach a larger public and to prevent exclusion for certain persons.
Integration of social aspects and civil society involvement (SLO) - positive Company image and	<b>Corporate Social Responsibility company policy:</b> Before the proposed land use change, the Company's management <b>discussed plans with the local community</b> (during a village meeting) and presented investment plans. Next, an external company held talks with owners of plots located on the boundary of the deposit which was to be extended. The villagers were presented financial proposals related to the purchase of plots.	Provide constant support for local organizations, authorities and the local community.
<u>related social</u> <u>acceptance</u> (PL case 7) (Industrial)	<b>Good communication approach to stakeholders:</b> Talks <b>and negotiations with</b> <b>local and regional institutions</b> were always conducted with the participation of the Chairman of the Board (the highest representative).	Allow for a good communication with stakeholders. Recognize at an early stage the needs of the widest possible group of stakeholders. Make stakeholders aware of the benefits and costs well in advance. Be open to discuss proposals from other stakeholders. Meet representatives of all groups and do not avoid sensitive issues.





<u>Effective</u> <u>environmental and</u> <u>SLO performance</u> (FI case 8) (Metallic; CRMs)	<b>Communication approach between stakeholders since early stages +</b> <b>Guidelines to support mineral exploration and extractive activities</b> : The mining act that regulates the extraction activities refers to the <b>need to</b> <b>communicate at early stages</b> (exploration phase) with the identified stakeholders. Land use planning authorities, landowners, Sami, reindeers herding associations are some of the stakeholders listed by the act.	Reflexive land use planning, with the industry and other stakeholders being involved in the process: Involve stakeholders in the activities related to land use for mineral utilisation at the earliest stage
<u>Stakeholder</u> Involvement (IT case 9) (Aggregates; Industrial)	<b>Stakeholder involvement during the study development:</b> The local population was informed of critical and enabling factors for the process – the establishment of a touristic mineral route. <b>During a public discussion, local inhabitants could propose ideas under the precondition of the general objectives</b> presented by the municipality. At a later stage, the local population was kept informed and finally got copies of a book about the scenic and geological highlights of the area and the results achieved during earlier phases of the process.	Involve stakeholders from the start of the process and keep them involved by sharing data, information and (end) results, to create trust, participation and to make the local population feel listened to by the public authorities.
Introduction of the Principle of Parity (PT case 13) (Metallic)	Principle of parity: Land use planners recognised the importance of the mineral resources and weighed the project against other natural resources, since this mine is in a Natura 2000 area. The principle of parity (parity being: 'social arrangements that permit all (adult) members of society to interact with one another as peers' (Blue et al., 2019) has been accepted due to all the work that has been done during the last 30 years in Portugal, among governmental organisations, mining companies, land use planners and environmental decision makers.	Create higher trust, transparency and proximity between the mining company, mining authority and local land use decision makers. Make the organisations with knowledge and competences on mining (mining authority, geological survey, universities and other experts) present scientific, solid and substantiated arguments in order to explain the importance of mineral resources (natural resources). Make sure that the stakeholders (mining, land use and environmental) understand each other, and agree on essential and elementary issues, that are equally important to each of them. Enable every stakeholder to leave its "comfort zone": the actors should be willing and able to compromise in order to reach common ground





# 5.3 Central themes of Good Practice Aspects and transferability

The mining and exploration of minerals in Europe shows a diverse picture of challenges, requiring more efforts to overcome these across countries and sectors. Transparency is one of the challenges, which, if not sufficiently incorporated in all aspects of the planning process, may lead to public resistance, limited support for societal and economic benefits, therefore, continuous efforts are needed to improve the performance of the industry. The introduction shows the various aspects related to transparency: clarity about the planning process, communication in relation to the role and powers of stakeholders, and transparency with regard to ethical standards followed. The eight MinLand cases all address some of these aspects, apart from the topic of ethical standards.

#### Providing clarity on the planning process

As highlighted in the cases from Ireland (case 6), Sweden (case 2) and Poland (case 7), transparency can be increased by providing clarity on how the planning process takes place. Especially the Irish case relates to mechanisms of the land use planning process. For instance, there can be different means to arrange public engagement, either as a statutory requirement, where consultation of the public is embedded in the planning legislation, or as a civil society activity. Providing clarity on the way public engagement is organised creates understanding on how e.g. land use planning authorities arrive at certain decisions.

Using a variety of means to communicate is a recurring aspect in providing clarity on the process. In Ireland a large range of tools is used, including local radio and papers to give updates. This helped to reach a large part of the public and prevented exclusion of certain groups or persons. Also, in Sweden (case 2), different channels for information provision are advocated. Such a communication strategy should be planned well before the start of the project, which is echoed in the Polish case. The following good practices are inspired by the MinLand cases:

- Provide a clear planning process description, based on the national planning system, and share this with all parties e.g. on the website, or at an information point: The MinLand project, as well as similar projects like MinLex can provide a good explanation of the national planning context. Make sure to check facts and details on procedures with the planning authorities and get their approval;
- Share information regarding the companies' spatial and environmental plans with stakeholders: provide all relevant information to stakeholders, related to the planning process (see a. above) and use this to keep stakeholder informed, and keep the company's own process on track;
- Include stakeholders' input in planning before submitting proposals to the authorities: Incorporating stakeholders' interests in plans will work positively in two directions, towards stakeholders as well as towards the planning authorities.

#### Involvement of stakeholders

The notion that transparency can also be enhanced by involving and empowering a broad range of stakeholders in the process, is shown in all eight MinLand cases. Involvement of stakeholders in planning is generally believed to provide for a 'social license to operate'. A social license can be considered to exist when a mining project is seen as having the ongoing approval and acceptance of society to conduct its activities. Relating to the provision of clarity, transparency regarding stakeholders has a strong focus on communication as described above. Moreover, the internal procedures used to involve stakeholders are emphasized. The establishment of a professional design and facilitation team that works as an independent agency, to guarantee transparency, trust and an un-biased process towards stakeholders has been practised in Sweden (case 2) and Spain. Additionally, the use of scientific data and approaches is highlighted in Spain and Portugal.





Involving stakeholders early on in the project, and keep them involved and informed in the long run, is emphasised in the cases of Sweden (case 1 and 2), Poland, Finland and Italy. This would allow for an understanding of the local community's interests and would build up trust for the developments at stake.

The role or power that stakeholders need to have to influence spatial plans is hardly touched upon in the MinLand cases. In most cases the participation was limited to information sharing and to a lesser extent consultation (see figure 1). Providing the public with information to assist them in understanding the planning of the developments is mentioned for the cases of Sweden (case 1), Poland and Finland. Moreover, in Sweden (case 2), in Spain and Italy public consultation took place to obtain detailed local information and understand local community interests. A special means of stakeholder involvement is highlighted for the Portuguese case. There, the principle of parity was applied to make all stakeholders interact at an equal footing. This ensures that the stakeholders (from the mining, land use planning and environmental sector) understand each other, and agree on essential and elementary issues, that are equally important to all of them. All stakeholder had to leave their "comfort zones" to be able to compromise in order to reach common ground. Once more, inspired by the MinLand cases we can outline the following:

To realise more transparency in the role and powers of stakeholders it is essential to:

- Be clear about the level of involvement of stakeholders: As explained in the introductory chapter, it should be clear from the start what role and powers are foreseen for stakeholders, and this should be clearly communicated. Where possible it is stimulated (and can be considered a Good Practice) to give stakeholders explicit influence on decision making. This will help to create trust in the company as well, and in due time, this may pay off by developing a positive attitude towards the company's operations;
- Involve a wide range of stakeholders and interest groups in the planning process: Allow a wide range of stakeholders to participate in the planning process. Formulate, however, fair conditions under which they can participate, to ensure a constructive process;
- **Provide timely information:** Provide all relevant information to stakeholders, do not hide information or hold hidden agendas, since this will come out eventually and create a backlash in the end and frustrate the planning process. Moreover, involving all the stakeholders to the full extent may result in better plan development;
- Ensure that the right information is provided: Be open, share all relevant information as far as no sensitive or competition-critical data is not involved. If that is the case, make this clear. Data sharing is essential to develop further trust and good relations.
- Ensure trust building through the inclusion of independent organisations that are involved in the planning process

It is important to ensure at least good provision of information and public participation in decision-making. The MinLand cases have demonstrated that this works and that this increases public support for the industry. In Figure 5 various tools are shown, and it is indicated at what stage in the plan preparation and execution of mining activities these tools are of particular importance. The table can be understood as guidance only, and good practice can differ according to the local context.





Step	Good-practice approach & tools							
	Share information	Pro-actively approach stakeholders	Organize walk-inns	Provide written information	Open a contact/ information point	Take time to answer public questions	Involve community relations officer	Community participation
Identification of areas	٧		٧		٧	٧		
Environmental Impact Assessment	٧	٧	٧	٧	٧	٧	٧	٧*
Application for permits	٧			٧	٧			
Mining operations	٧	٧	٧	٧	٧	٧	٧	
Expansion/changes license	٧	٧	٧	٧	٧	٧	٧	٧
Closing operations		٧		٧	٧	٧		

Figure 5 Good practice approaches & tools during various steps of the mining (preparation) process. The tools mentioned are partly based on Figure 4 and coupled with various stages in the plan preparation and execution.

\*Regarding the EIA, companies should design alternative scenarios based on input from stakeholders, scenarios that are then compared with the other scenarios. This can form a basis for discussion in the final choice of the planning alternative.

A good opportunity for stakeholders involvement is to discuss prior to operations what the area should look like after closing (e.g. during EIA). It can be a good opportunity to approach stakeholders proactively. Also in case of large scale operations considerable time might have lapsed between the start and closing operations, and in this period stakeholder insight for the area might have changed so new consultations may be very important – and likewise sharing information about this.

Finally, it is important to be clear on the ethical standards. Be clear about transparency and ethical principles held by the company: Companies are under scrutiny, and it is important for their 'social licence to operate' that they show their standards, be clear about ethical aspects, i.e. no corruption, open and competitive operations.





# 6. Integration of Social Aspects and Civil Society Involvement

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Improving the Social License to Operate (SLO) and including civil society early on in mining operations can mitigate potential land-use conflicts and ensure practices more considerate of local needs and knowledge. The cases show the importance of **early stakeholder involvement** (even outside of mandatory consultation procedures), and utilising **different communication channels to increase participation and outreach**. The cases also indicate that **statutory public consultation and public sector initiatives** to foster sustainable practices facilitated trust and positive attitudes towards operations. Examples of **co-existence of mining and other land uses** (e.g. compensation measures) also showed potential in mitigating potential land-use conflict.

The following chapter addresses the MinLand Good Practise Stream G "Integration of Social and SLO aspects" and provides examples from MinLand case studies 2 (SE), 3 (SE), 6 (IE), 8 (FI), 9 (IT) and 13 (PT).

# 6.1 Introduction

Mineral raw materials have played a significant role for the development of Europe – and will continue to do so in the future – or not? They have been a basis of our economic system and source of wealth for many centuries, if not millennia, many times at great environmental (e.g. water, soil or air pollution) and social costs (e.g. poor working conditions, land use and other conflicts). Hence, do we really need mineral raw materials from European sources or should we better let others produce the billion tons of materials needed every year for industrial production in Europe; or could we even get along without mining new minerals in a new, circular economy?

Primary mineral raw materials are an indispensable basis for the circular economy, as societal ("in-stock use"), thermodynamic (energy requirements) and physical aspects (separation technology) will impose limits. They are also an indispensable basis for future low-carbon technologies and as such a part of a complex innovation biotope (i.e. batteries for electric vehicles and the current status of European vs. Asian producers). Lastly, mineral raw materials from European sources should be seen as part of a risk mitigation strategy: It is a very risky proposition to import up to 100 % many of the 27 Critical Raw Materials from supplier countries outside of Europe (European Commission, 2017), many of which are politically unstable and have environmental and working standards below European ones. However, primary mineral production in Europe faces the following challenges:

- Europe has the mineral potential to supply itself largely in crucial industries. However, the geological knowledge is often limited due to lack of drilling, cover of overburden or lack of active exploration. Europe's ground must be explored by the geological surveys and its mineral raw materials potential made known to domestic innovation supply.
- Public policy plays a significant role in the facilitation of mining and recycling practices. A unification process across the EU needs to be started to ensure investment security, easy value chain management and shorter permitting processes.
- Societal acceptance of mineral raw materials production in Europe is a crucial factor. However, 98 % of European construction raw materials (around 4 billion tons) are produced every year locally due to price and environmental factors. Polls show that people who live close to these production sites largely accept them. Personal connection to the extraction is comprehended and local benefit appreciated. This is a strong indicator that with the appropriate measures such acceptance can also be achieved for other types of mineral raw material extraction e.g. for critical raw materials (Moser and Feiel, 2019).




The current status of societal acceptance of raw materials production in Europe shows a diverse picture with the potential and need to do more across EU Member States and various commodities. <u>Deliverable 4.2 Land</u> <u>Use Policies and Valuation of Land</u> (Gugerell et al., 2019), looked at the valuation of mineral resources in public policy and planning: the report describes social valuation as the most intangible term used by the MinLand case interview respondents ranging from requirements for social impact assessments to the need for a social license to operate (SLO). Another EU project looking specifically into the SLO topic is MIREU (<u>www.mireu.eu</u>), which states that "..., the SLO discussion around mining-related issues in Europe appears to be still in its infancy. In mapping the eight MIREU regions, we found neither SLO definitions nor concepts, with the exception of some areas where Canadian companies are operating (like the Lapland region), in contrast to ample and long-standing research in Canada or Australia."(MIREU, 2018). Improving the societal acceptance of mineral raw materials should matter to all stakeholder groups. The public needs to be re-connected with raw materials and should care where the materials in their phones or cars come from and that they have been mined responsibly. This would also be in the interest of policy makers and mining companies.

#### 6.2 Good Practice Aspects

The following section aims at identifying Good Practice Aspects and transferability suggestions related to MinLand topic stream G – Integration of Social Aspects and Civil Society Involvement (SLO). The table below includes Good Practice Aspects from seven MinLand cases that relate to integration of social aspects and civil society involvement. The table provides an overview to the reader of some of the central elements and contextual factors related to a specific Good Practice Aspect, as well as the case elaborators' own suggestion for transferability. Readers should always consult the full Good Practice Template (found in <u>Annex II</u>) of the case for more elaborate information and suggestions.





#### D6.2: Final Manual for Good Practice Guidance

Table 6 Good Practice Aspects of Social Aspects and Civil Society Involvement

Good Practice	Description and Element(s)	Suggestions for Transferability
Aspect		
Local Stakeholder Interaction (SE case 1) (Metallic; Aggregates; Industrial)	<b>Early, meticulous and cautions work with stakeholders</b> has from other cases shown to be productive and has been adopted in this case, within and beyond the Environmental Impact Assessment procedure. The company has had <b>public</b> <b>meetings with the stakeholders</b> as well as worked preventively with impacted stakeholders (reindeer herders).	Early stakeholder interaction has proven successful to mitigate potential land-use and interest conflicts.
	<b>Independent agency facilitating the process.</b> The company responsible (Boliden) choose a landscape design agency to <b>facilitate a participatory design process</b> for the planning of the rehabilitation plan. The design team was responsible to translate the stakeholder ideas, needs and civic design proposal into professional plans.	Involving an external and professional agency contributed to an un- biased participatory process design of stakeholder involvement.
<u>An extensive and</u> <u>collaborative</u> <u>civic engagement</u>	<b>Application of multi-method participatory design approach.</b> The case illustrates that the <b>co-design process was consciously designed</b> and facilitated different and suitable methods for different stakeholder groups. The application of different methods of interaction provided more opportunities for inhabitants to engage given their preferences and availability.	<ol> <li>Use multiple methods for information and consultation with stakeholders. Specifically designed for the different categories of stakeholders and personal needs.</li> <li>Increase involvement of citizens with different backgrounds into the design process of the project, in this case remediation of old mining activities.</li> </ol>
<u>developing a</u> <u>rehabilitation</u> <u>plan</u> (SE case 2) (Metallic; CRMs)	<b>Early and long-term involvement of stakeholders in the process.</b> The participatory approach started early in the project, <b>aiming to engage residents and create an active collaborative setting.</b> After the initial planning phase, the whole participatory design process comprised of one year with different steps: 1. stakeholder identification, continued with information meetings 2. Online questionnaires 3. different events for politicians, Sami groups, NGOs and other stakeholder groups were held. 4. A public meeting was held were a plan for the next steps was presented.	Identify important stakeholders, ensure establishment of long-term information channels, and events for outreach. Apply participatory methods to ensure early and long-term involvement of stakeholders in the project.
	Involving a wide range of stakeholders in the design process. The participatory design process engaged local inhabitants, employees, authorities, interested parties and concerned stakeholders and payed particular attention to the involvement of target groups (underrepresented groups) such as school children and indigenous communities.	Involve a broad range of stakeholders, local inhabitants, employee's, authorities, interested parties, indigenous communities, schoolchildren. This gives the involved stakeholders a chance to voice their concerns and contribute to the project.





	<b>Wide-spread media coverage and public outreach.</b> The participatory design project has generated a big engagement from the school kids, Boliden employees, the municipality and other residents in the society Boliden and the closest villages.	Utilise different media to foster a successful stakeholder dialogue and dissemination of project news in the media, to increase outreach and transparency.
	<b>Company principles for SLO</b> applied for the abovementioned participatory design approach. (a) Set aside time and make a personal commitment; (b) Adapt to the location and stakeholders; (c) Identify stakeholders and get to know each other; (d) Talk to each other early on and throughout the project; (e) Establish meeting places and informal contacts; (f) Arrange visits to operations; (g) Participating in community planning; (h) Annual meetings with all types of stakeholders; (i) Open, credible talks.	<ul> <li>(1) Establish a set of principles for transparency and commitment;</li> <li>(2) A process for communication and consultations has been specified before the project start – necessary with a well-planned strategy from the company for a successful stakeholder dialogue.</li> </ul>
Establishing and Managing Sami relations facilitating SLO	<b>Co-existence of different land uses</b> : re-establishment of reindeer grazing areas in rehabilitated mining areas. Together with researchers at the Swedish University of Agricultural Sciences and the relevant Sami villages Boliden is taking new steps to learn more about re-establishing reindeer grazing areas - an important step in being able to carry out <b>rehabilitation with added value</b> .	<b>Re-establishment of reindeer grazing areas in rehabilitated mining</b> <b>areas:</b> Research projects and monitoring activities will create better conditions for reindeer herding and grazing. Focusing on research and monitoring for co-existence of land can be transferred to other contexts as well.
<u>of land uses</u> (SE case 2) (Metallic; CRMs)	Innovative ICT applications reduce conflict with reindeer herding. Boliden, in collaboration with SLU (Swedish Agricultural University) and the affected Sami villages, initiated a project where to find out how mining operations affect reindeer and reindeer husbandry use of the pasture.	Innovative ICT and web applications is a useful endeavour for minimising conflicts and allowing for co-existence. This is case better monitoring of reindeer movement, and, thus less road accidents and improved information on environmental pollution.
Compensation measures for infringement upon areas of valuable nature (SE case 3) (Metallic; CRMs)	<b>Compensation measures</b> , within the economy of the future mining project, can be a solution for mining when impacting on other land uses such as sensitive nature. Particularly in this case other land that used by the mining operation has been supported and set aside for nature conservation purposes.	In case of infringement upon other land uses or land aspects like sensitive nature, other land can be set aside as a compensation measure.
<u>Carefully planned</u> <u>and early</u> <u>interaction with</u> <u>stakeholders</u> (SE case 3) (Metallic; CRMs)	<b>Early involvement of stakeholders prevented conflict of land use.</b> Case 3 describes how <b>stakeholder involvement</b> (both early and during the EIA process) lowered potential land-use conflicts with other strategic important aspects, e.g. sensitive nature, infrastructure, reindeer husbandry, etc. This also improves upon the final EIA since a solid stakeholder interaction used in the EIA as always positive. The company worked preventive in seeking solutions with land use from reindeer herding leading to no conflict in the final application part at the environmental court.	Positive impact of involving stakeholder early on in the process as well as outside of the EIA to build trust and acceptance.





	Public documents within the permitting and land use process.	Having some documents (related to EIA) public, insofar as they do not contain sensitive information, increased transparency and trust of the system, and gave clearer directives to industry and stakeholders.
	<b>Public Engagement.</b> Mining companies in this case have an <b>open-door policy</b> with local communities, where information which is not commercially sensitive is shared with the public. To communicate with communities, they use a variety of means, including local radio and papers to give updates to local communities. <b>Transparency</b> is a key ingredient to a successful mining company in Ireland. By communicating with local groups, mining operators promote transparency and trust ('This is what we are doing'). It also helps in the planning process, particularly when mines seek planning permission to extend their facilities.	Public engagement should not be limited to statutory engagement as part of the planning process. Keeping an open-door policy with the public or other interested parties (e.g. engaging with local social or sporting activities) helps building a good reputation and supports good relationships.
<u>Public</u> articipation and Transparency	<b>Formal and Informal Communication channels.</b> Prospecting and mining companies keep the <b>communities updated</b> in relation to their activities in the local area. They might use the local newspaper, the radio, social media, etc. and will communicate either in English or Irish if necessary. This <b>promotes confidence</b> in the mining operation and good relationship between the local community and the company.	Using a variety of tools to communicate with the public helps reach a larger public and prevents exclusion for certain persons. It is recommended that both traditional and social media be used so that all categories of the population are reached, particularly as rural communities, where mines are often located, can have a higher share of older persons who may not be as attuned to social media.
(IE case 6) (Metallic)	<b>Corporate Social Responsibility.</b> Irish mining companies are very active with their Corporate Social Responsibility and as a result become very involved with the daily activities of local communities. To that effect, they provide <b>funding towards social</b> <b>and community infrastructure</b> (some of them imposed by the Planning Authorities) and sponsor events and local groups and club activities. It is important for mining companies to be seen to be involved with local groups as it helps them integrate with communities and gain trust.	Attaching conditions to consent, whether financial or infrastructural, ensures community gain. Providing support to communities outside of planning/consent parameters through parameters of shared value and sustainability contributed to good relationships between parties. It is not compulsory and up to mining companies to decide what sort of relationship they want with local communities.
	Statutory Public Consultation Requirements in the planning process. The planning system also allows for local concerns to be heard and addressed during the planning process. There are several opportunities from forward planning to development management where the public and other stakeholders can get involved and formulate their concerns on development proposals. Opportunities to get involved in forward planning arise at all levels of the planning hierarchy from national to local level. This is also applicable to decision-making, where any person or body can make a submission on a planning application, on a prospecting license	Statutory public consultation in forward planning (plan-making) and development management (decision-making), Integrated Pollution Control (IPC) licensing and prospective and mining licensing ensures / guarantees the right of the public to have a say in planning or decision- making. It makes all parties equal and allows for fairer decisions to be made. All comments which are made on a plan or an application should be made publicly available, including how these have been addressed as it promotes transparency in plan-making and decision-





application, a State mining lease application or an integrated pollution control application.

**CSR policy of the company**. The company described in this case successfully combines business activities with all activities for the benefits of the local society. The company actively and responsibly participates in the local community life by **engagement in solving the local problems and supporting many local initiatives.** Many years of experience and a number of initiatives have led the Company to be one of the most important entities acting for the benefit of the local community.

Integration of social aspects and civil society involvement (SLO) - positive Company image and related social acceptance (PL case 7)

(Industrial)

**Good communication approach to stakeholders** (communication from early stages with different groups of stakeholders). **Before the planned change** of land use directions, the Company's authorities held a **consultation with the local community** (during village meeting) presenting investment plans. In the next steps, an external company (after obtaining corporate consent) held talks with proper owners of plots located in the boundaries of extended deposit. They were presented with financial proposals related to the purchase of plots. The negotiation process was successful all owners agreed to the purchase of land by the Company. Talks and negotiations with local and regional institutions were conducted together with the Chairman of the Board (the highest representation).

**Reclamation of post-mining areas and minimisation of the mining activities impact on the environment.** Various direction of land use in boundaries of mining area of Czatkowice Mine (and in his surroundings)(sports and tourism areas, forest areas and areas intended for afforestation, agricultural areas, and areas of singlefamily housing) **require effective and integrated activities in the area of mining land** reclamation and minimisation of environmental impact. The company is financing these activities of reclamation on a voluntary basis with funding from their operations.

making. Public consultations should be included as statutory requirements for minerals developments to ensure that the public are included in the decision making process.

The guarantee of success for mining activities (in area with complicated environmental and spatial conditions) is support for and collaboration with local organizations, authorities and local community. It is also important to create good working conditions and professional development. This is especially important if the company's employees come from the local community (this is the case here). It is important that the pro-social activities of the Company are voluntary and carried out on their own initiative. They must be addressed to a wide group of recipients (e.g. women / men, adults / children, authority/community etc.)

Following this case, suggestions to obtain similar elements in other contexts should involve: properly and early on recognize the needs of the widest possible groups of stakeholders who may be involved in the case (local authorities, local community, prospective mine neighbours, landowners, etc.). Stakeholders should be made aware of and know in advance the benefits and costs related to starting mining/processing operations. Be open to discussions and proposals from individuals as well as groups / organizations / communities); meet representatives of all groups and do not avoid confrontation.

Minimise the negative effects of your activity (mining or/and processing). This will avoid additional costs and will have a good impact on the company's image. The company will be better perceived by both the local community and local authorities as well as institutions responsible for environmental issues in the region (and at the same time taking part in the process of mining license obtaining).





Effective environmental and SLO performance (FI case 8)	<b>Communication approach between stakeholders since early stages + Guidelines to</b> <b>support mineral exploration and extractive activities.</b> Policy relevant for Mineral development refers to the need of early engagement. The mining act that rules the extraction activities refers to the <b>need to communicate at early stages</b> (exploration phase) with the identified stakeholders. Land use planning authorities, land owners, Sami, reindeers herding associations are some listed by the act. As a support to the policy, specific guidelines for exploration in specific critical cultural, natural areas pointed out in the mining act have been written to support the activity in respect to the stakeholders and the protected areas (created under the ministry of economy by experts).	The policy on mineral development identify the interested stakeholders and require early engagement within the activities relevant for developing minerals (exploration, exploitation, closure, rehabilitation). Supporting tool: Guide created by relevant authorities and experts support the practical activities.
(Metallic; CRMs)	<b>Higher environmental commitments build trust.</b> Requirement for lower emissions and <b>commitment of the mining company to increase environmental performance</b> allows the project to progress and adds trust. As a part of the revision procedures for proposed activities the authorities commissions experts to update emissions limits, promoting technological uptake and improve environmental standards. The Finnish Network for Sustainable Mining also offers a supporting tool that provides instructions for sustainable operations to mining companies.	<ol> <li>(1) Ability of the permitting authority to set adaptive and updated emission limits considering e.g. improvement of technology to foster higher environmental commitments from industry.</li> <li>(2) Supporting tool for the companies to evaluate the best available technology: A guide was created by cooperation of industry, experts and authorities.</li> </ol>
<u>Stakeholder</u> <u>involvement</u> (IT case 9) (Aggregates;	<b>Stakeholder involvement during the study development.</b> During the development of the study on repurposing of land, <b>civil society was involved</b> , the results were also <b>shared and accepted by the local population</b> . First the working group presented the background analysis of the area to the population, showing them the criticality and the enabling factors for increase the touristic awareness. In an open public discussion people proposed ideas in the framework of the general objectives presented by the municipality. A second meeting was held to present a first draft result of the mineral route. Finally, a book containing results of the study was shared with the local communities in the area.	The stakeholder involvement has to start from the beginning of the study/project, to have people motivated to participate. First step is to give them all the background analysis (maps, bibliography, etc.) made by the working group. This will help them to be confident and participative to the stakeholder involvement process. Be transparent give you the legitimation to work and to proceed in the study/project. Second step is to let them feel listened to by the public authorities, involving them in field visit, open meeting, web discussion. Finally, the results achieved by the project/study has to be shared.
Industrial)	<b>Raising of public awareness of the touristic potential of the area</b> . Several events, particularly addressing schools, were conducted with the purpose of <b>improving knowledge of the territory</b> , in particular on geology aspects and flora/fauna heritage.	Raising awareness is a focal point to increase the social acceptance of the study/project. Teachers or environmental associations/NGOs often have different instruments and outreach activities to involve even young children, e.g. field geology laboratories, flora and fauna observations etc.





<u>Re-investment</u> <u>into local</u> <u>communities</u> (PT case 13)	Portugal has a royalties policy, regulated by the mining authority, contributing to trust, awareness and re-investment into communities. SOMINCOR (which case 13 revolves around) has a <b>Community Investment Policy</b> that seeks to build capacity in local communities, improve the social and environmental conditions in communities nearest the operations and to create opportunities for employees to be SOMINCOR ambassadors in their communities. A significant amount of money has been and is being spent on education, community wellness, local supplier development and road safety initiatives, as well as research and biodiversity projects (in collaboration with universities and NGOs).	<ol> <li>Mining companies have to be committed to high standards and have close relationship with local communities, authorities and NGOs, prior to opening the mine.</li> <li>Industry and Government should take the initiative to create partnerships between universities, NGOs and the mining company.</li> </ol>
(Metallic)	Government created a <b>royalty policy with focus on strengthening social</b> , <b>environmental and cultural standards</b> , for the benefit of local communities. The royalty policy considers that up to 25% of the value of the royalties due to the Government may be used directly on sustainable projects for the benefit of local communities. This value may be applied to local and regional programs, plans and projects proposed by the civil society.	Create national or regional regulatory framework on the use of the royalties paid by the mining companies in applying part of the money in local developments.



### 6.3 Central themes of Good Practice Aspects and transferability

As outlined in the introduction to this chapter, social acceptance of raw materials production in Europe shows a diverse picture of challenges and more needs to be done across countries and sectors. A social license can be considered to exist when a mining project is seen as having the ongoing approval and acceptance of society to conduct its activities (Prno and Slocombe, 2012), and approving this acceptance should matter to all stakeholder groups. In the following section we summarise and draw attention to some of the examples that arose from the cases regarding stakeholder involvement (more details are found in chapter 5) and Social License to Operate (SLO). For a complete overview of aspects, context, and transferability suggestions the reader should always consult the individual cases found in the Annex.

#### Early and voluntary practices for stakeholder involvement

What can be discerned from the cases is the importance of stakeholder involvement, which often is a mandatory step in many Environmental Impact Assessments (EIA) – a required step in the permitting process (e.g. SE Case 1-3, FI Case 8). However, all cases indicate that stakeholder and civil society involvement outside of the EIA process throughout the whole mining life cycle facilitated a 'social license to operate' and trust and acceptance in the community. Stakeholder involvement outside of an EIA process is instigated on a voluntary basis by the mining company and took on a few different forms. The example from Boliden (SE case 2) includes the involvement of an independent agency to facilitate a participatory process where civil society was invited early on in the process to achieve a 'collaborative and active setting'. To increase involvement, the agency and company also applies a wide range of various media channels and held continuous outreach activities to foster long-term engagement. Similarly, the Irish case (IE case 6), although not focusing on one specific company, describes a corporate "open-door-policy" which also utilised various media channels and events for outreach to and inclusion of stakeholders. Common for both of these two cases is that the local community was not only involved in the early stages of the permitting process but also continuously updated in relation to local mining activities thereafter. Early engagement and continuous stakeholder involvement, as well as a Corporate Social Responsibility (CSR) policy is also highlighted as good practice in the Polish case (case 7). Another important aspect (SE case 2, PL case 7, IT case 9 and PT case 13) is the involvement of other 'independent' actors such as Non-Governmental Organisations (NGOs), universities or even schools and teachers to instigate e.g. research activities to resolve potential land-use conflicts or to plan restoration and remediation projects before, during or after mining operations. Moreover, the corporate voluntary and pro-active actions to minimise negative effects of mining or processing activities are described as beneficial for increasing trust and improving the image of operations (PL case 7). The early involvement of stakeholders as well as the involvement of both government and non-governmental organisations is often mentioned as contributing to an unbiased and transparent process (for more information on transparency in land-use planning see chapter 5).

#### Guidelines and Public Sector support

Although statutory public consultation (IE case 6) or mandatory stakeholder involvement in the EIA process (FI case 8, SE case 2) are described as supportive to societal acceptance or SLO, all the above mentioned cases stressed the importance of going beyond legal requirements to increase stakeholder involvement and foster trust in order to obtain a social license to operate. The Finnish case (case 8) mentions the positive aspect of providing guidelines for mining companies, developed by relevant





authorities and experts to support practical activities and ensure sustainable operations. The Portuguese case (case 13) also describes how a legislated 'royalty policy' contributed to ensuring investments in local communities affected by mining operations. This policy stipulates that up to 25% of the value of the royalties can be directly allocated to strengthening social, environmental and cultural projects, programs and plans on a local and regional level.

#### Co-existence of mining and other land uses

PL case 7 and IT case 9 describe ways to improve the acceptance of mining through the consideration of linkages with other land uses. The Italian case does so in the early stages of a project by raising awareness of the land, its geology and biodiversity, especially with teachers and schoolchildren to raise the touristic potential of the region. The Polish case describes that the minimisation of environmental impacts in the active mining phase and proper rehabilitation enables other land uses such as sports, tourism, and forest areas, and areas intended for afforestation and agricultural areas, which helps to build trust between the company and the local community - and saves costs for the company in the longer term. Similarly to minimising impacts (PL case 7) and re-investment schemes for the community (PT case 13), one example from case 1 (SE) showed that compensation measures for infringement on areas of e.g. sensitive nature had a positive impact on mitigating land-use conflicts and perception of the project. Case 3 (SE) show that compensation measures which took into consideration the infringement on land uses of economic, cultural and recreational value mitigated potential land use conflicts in the final permitting stages.





# 7. Permitting and Licensing

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Permitting requires **resources and capacity**, from both **public and private sector** alike. The MinLand cases show that the involvement of different authorities and regional level of administration led to both inclusion of relevant expertise, as well as regional and local interests and knowledge in the permitting process. Development of **national guidance tools**, as well as support mechanisms **involving national geological surveys** ensure knowledge and information provision and improved efficiency of permitting processes. Public documents pertaining to permitting as well as conducting public consultation lead to increased transparency and participation in the permitting processes described in the cases. Moreover, **internal capacity and voluntary actions** (e.g. early stakeholder involvement) by companies enable a more efficient and favourable outcome of the permitting process.

Although not originally foreseen as a MinLand good practice stream (A-H), examples related to permitting and licensing have been included in this report due to: (1) the strong importance to the sector; (2) the linkages to minerals and land-use planning, and; (3) the relation to other MinLand streams. Such streams include the transparent and equal assessment of minerals and other land-uses (chapter 2) and the assessment of integration of social aspects and civil society involvement (chapter 5). The following chapter gives a small introduction on the general challenges around permitting and licensing in the EU (7.1), an overview of MinLand cases that address Good Practice Aspects of permitting and licensing (7.2) and a summary of the main themes addressed in the Good Practice Aspects and suggestions for transferability (7.3).

#### 7.1 Introduction

Permitting is a public authorisation process that is decisive for granting or denying mineral raw materials exploration or extraction of a specific area. The process is performed according to pre-set public procedures that vary among EU MS. The mining industry's capital-intensive investments, long start-up times, or the complex development of commodity markets requires stable legal framework conditions and efficient public administration. In this regard, permitting procedures for licensing of exploration and extraction are of significant importance for the sector.

From a company perspective, permitting is essential for starting or continuing mineral development, and companies evaluate and assess the internal and external factors that may represent potential risks for their investment (exploration or exploitation activity). Such assessments often have to consider dynamically changing and multi-variant factors such as economic geology, ore resources and grade, operational costs, metal market conditions, etc. Permitting addressing well-documented (e.g. high quality of geological and mineral data, proven resource figures, fully controlled operational costs) exploration and mining investments, often depends on external factors such as government strategy or policy, authority approval and public acceptance. When the permitting process is less transparent and predictive or public acceptance and social licence to operate is lacking, permitting becomes a risk activity for the company. Moreover, addressing unclarified aspects in the authority's expectations in cases of exploration and mining projects can increase the risk for refusal of a permit due to inconsistencies in documentation.

According to EIP SIP (Action area n° II.) (European Commission, 2013), the MINLEX study (European Commission et al., 2016) and MIN-GUIDE (Endl et al., 2018b), the European Union faces a number of





challenges pertaining to permitting. These challenges can also be discussed in relation to public sector and company internal factors, as well as characteristics of the area for minerals development.

#### Public sector challenges include:

- unclear or low-quality guidance for companies by public authorities
- un-defined, often very long-lasting, timeframes for decision-making or approval
- absence of coordination and remit integration among public authorities
- lack of qualified personnel or insufficient resources allocated

#### Company challenges include:

- Lack of know-how in producing permit documentation
- Low responsibility and transparency in providing permitting data
- Access to geological data is not provided by public authorities, while quality of data is generally considered high within EU MS
- Security of tenure and the perception of mining in the EU
- The complexity of the process and the non-transparent or unavailable information about the process often create a barrier for applicants and investors.
- Create a sound and open basis for a long-term communication and cooperation with local communities.

To address these challenges, studies indicated the importance of e.g. processes led by one competent authority (one-stop-shop) and minimal parallel processes e.g. Environmental Impact Assessments (EIA) to streamline permitting processes. Examples and cases from EU MS indicate good practice in:

- The use of standardised application forms and easy access to transparent, coherent, multi-lingual information on websites, precise check lists for permit applications;
- Undertaking parallel assessments: an authorisation process taking place at the same time as both the environmental permitting process and the health and safety assessment;
- Providing a 'one-stop-shop' to avoid hierarchical applications: authorities involved in the permitting process (e.g. the licencing authority, the environmental agency, etc.) are joined together at one location or process step. This enables the applicant to gain the information needed;
- A holistic process coupling geological data through land use into permitting and after use.
- No automatic exclusion of raw material extraction activities in and around Natura 2000.

MinLand also complements abovementioned good practices by investigating several Good Practice Stream Topics across Minland cases affecting permitting aspects. One example is *Data management in policy and land-use planning* (chapter 1), in which cases show that availability of geological and mineral data improves quality of permit applications. None withstanding the legal requirement of consultation, aspects related to social acceptance (chapter 6) and company's commitment to involve stakeholders (chapter 4) are key elements for the development of the activities and affect the results of the permitting process.

#### 7.2 Good Practice Aspects

The following section aims at identifying good practice aspects and transferability suggestions related to permitting and licensing in the MinLand cases. The table gives the reader an overview of some of the success, challenge and contextual factors related to a specific Good Practice Aspect, as well as the case owners own suggestion for transferability. Readers should always consult the full Good Practice Template (found in Annex II) of the case for more in-depth information and suggestions.





#### D6.2: Final Manual for Good Practice Guidance

Table 7 Good Practice Aspects of Permitting and Licensing

Good Practice Aspect	Description and Element(s)	Suggestions for Transferability
Linked mining and land use policy (SE case 1)	The project depicts how from available previous exploration and geological information, including stored drill cores at and around the projected future mining site, the current mining policy and land-use forms a made-to-fit mining permitting and land use system, <b>combining the land-use planning system of areas 'of</b> <b>national interest' and the permitting system</b> . The project was initiated with an exploration permit, thereafter followed by a concession in 2016 after location of a feasible mineral resource. In the final step the environmental permit is applied for, which contains the, within EU, necessary EIA.	Mineral extraction and exploration activities are linked to the land use planning system. Consequences are analysed before implementation. Highly important is that active decisions by policy makers and authorised public services are being taken that mining activities are integrated into the land use planning system. This needs a high degree and durable cooperation between the different involved parts in the land use planning and permitting authorisation systems. Particularly important is not only capacity within the system but also competence to formulate and implement the policy to provide the right decision.
(Metallic; Aggregates; Industrial)	After an exploration permit, which is handled by the mining inspectorate, a <b>mining concession</b> gives the company <b>exclusive right to extraction</b> and secures land for the deposit. The exploration and concession permits are handled by the Swedish Mining Inspectorate.	There must be a point before and during the exploration activities when land is made available for the company so that it can proceed to the final mining applications. Important is that there is enough land made available for related facilities and infrastructure.
	appeals. This allows for the inclusion of regional and local knowledge and engagement in the determination of environmental issues.	is a need to ensure capacity of regional authorities and knowledge regarding environment, land-use planning as well as related national level regulations.
Exploration is an activity that can coexist with neighbouring land uses (SE case 1) (Metallic; Aggregates; Industrial)	An <b>open view of exploration has led to an increase of successful permitting</b> in Sweden. In the past ten years the number of permits granted for exploration have been between 700-1000 (and up to 200 in one year). During a ten-year period one or two new mines are being established so less than a handful lead to a mine (metallic and concession minerals). Hence, it is important to open up for efficient exploration on large areas, otherwise the probability for successful and prospective operation is extremely low.	Exploration can be performed in parallel with existing land uses. This improves upon possibility for successful mining. Drilling should generally be allowed if not too large impact on existing activities. Necessary that all costs for impact and mitigation of impact has been done.
Weighting of different <u>land-uses</u> (SE case 3) (Metallic; CRMs)	In the final permit (environmental permit) of the process described in MinLand case 3, land uses such as infrastructure development, nature protection, forestry, reindeer herding, were evaluated according to all pillars of sustainability and optimal use, addressing multiply and complementary beneficial values. This decision forms the <b>final land-use since the land use for mining was weighted</b>	The permitting and decision process included tools (the system of National Interest) and decisions (the granting or denial of the permits) on how to weigh the value of different land uses which contributed to a weighed process.







	<i>higher than the other land uses</i> though with some provisions, e.g., based on a holistic view of weighting different land uses.	
Carefully planned and early interaction with stakeholders (SE case 3) (Metallic; CRMs)	<b>Early involvement</b> was mentioned as a success strategy even during the EIA process for the final permit (environmental permit) in this case. Moreover, this case further describes the <b>importance of making documents public</b> within the permitting and land-use process as this increased transparency but also shed clarity of the permitting procedures.	Consider early involvement of stakeholders also for permitting procedures. Having documents related to permitting and land-use processes public has also increased transparency of the processes.
Well planned industrial and mining area (SE case 3) (Metallic; CRMs)	Having a careful planning of the construction and industrial site is a necessary part in achieving a positive verdict. Such plans have shown to minimise impact upon e.g., sensitive nature. Careful planning is essential in order to have <b>acceptance of</b> <b>an infringement and minimise impact</b> and compensation measures upon other land uses, in this case sensitive nature.	Careful land-use planning of the industrial area leads to improved environmental performance and will lead to easier approval of the environmental permit. Early stakeholder engagement is critical to successful land use planning and management in terms pf identifying possible synergies or conflicts.
Development of tools and procedures for the assessment of actual and potential land uses in order to reduce conflicts within extractives industries (ES case 4) (Aggregates)	The Mining-environmental planning map described in this case is a cartographic <b>zoning proposal</b> whose main aim is to <b>select the best location for the mining activity</b> having had previously taken into account the Potentially Exploitable Resources Maps as well as all the socio-environmental and legal (environmental, mining and land-use planning) constraints. Categorising "non-exploitable zones" and "exploitable zones" consistent with mineral resources, environmental and land-use planning regulations is described in this case as a potential starting point for a mineral and mining strategy and could help simplify the mining and environmental permitting processes.	The zoning works must be performed attending to strictly objective criteria. The results must be endorsed by authorities. Stakeholder's perception regarding the results must be considered to the extent possible. It would be also important to consult regional and local associations. Designing such a planning map could be a way to simplify environmental permitting processes.
Effective and time- efficient permitting and licensing integration (IE case 6) (Metallic)	The Environmental Protection Agency is responsible for the assessment of the Integrated Pollution Prevention License in Ireland, and has an <b>independent role in</b> <b>the permitting process</b> . Its works independently in its assessment of environmental impacts regardless of whether planning permission has been granted for a mine. If environmental impacts cannot be prevented or mitigated, economic (mining) interests will be deemed secondary and permission will be refused, or licenses will not be granted/renewed.	An agency responsible for environmental protection that works independently of all other parties reduces potential political (or other) pressures and ensures that environmental and ecological impacts remain the overarching considerations for planning authorities. This ensures public confidence in the independence of the environmental assessments from the economic potential of any development and objective decision-making.





	Three <b>separate permits ensure that the specific technical proposals are evaluated</b> <b>independently</b> by experts in the relevant fields at a national and local level. This ensures that permits are assessed by the most qualified authority to ensure adequate assessment of all aspects.	The three separate procedures for permitting ensures that the permission and licensing is done by the appropriate body with relevant expertise in the subject, it also allows for proper considerations of all aspects and possible impacts of the mining activities.
	The Closure and Remediation Management Plan (CRAMP) are a compulsory as part of the IPPC license process and updated annually. They allow for appropriate and timely considerations of the options for the mine site upon closure of the mine. As part of the process, mining Companies must legally ring-fence funds in consultation with the State (e.g. a bond) which can only be used in agreement with the State towards rehabilitation. CRAMPs are very important documents which are reviewed every year and with the interested parties, including the planning authorities. They are a blueprint for the closure of a mine site and include solutions for affected communities and former employees.	Having plans for closure, restoration and aftercare management that are compulsory gives companies a clear blueprint for the closure of a mine site, what should be done and include solutions for affected communities and previous employees. Ring-fenced rehabilitation funds are a compulsory part of a license process which further provides a guarantee and funds for rehabilitation of the mine site post operations.
<u>Public Participation and</u> <u>Transparency</u> (IE case 6) (Metallic)	Opportunities to get involved in forward planning arise at all levels of the planning hierarchy from national to local level. <b>Public consultation in both forward</b> <b>planning and development management is rooted in planning legislation and is</b> <b>statutory.</b> This is also applicable to decision-making, where any person or body can make a submission on a planning application, on a prospecting license application, a State mining lease application or an integrated pollution control application.	Statutory public consultation in forward planning and decision- making, in IPC and mining licensing ensures the right of the public to have a say in plan or decision-making. All comments made on a plan or an application should be made publicly available, including how these are addressed as it promotes transparency in plan- making and decision-making. Public consultations should be included as statutory requirements for minerals developments to ensure that the public are included in the decision-making process.
Efficient and short permitting & licensing process in relation to obtaining new mining license (PL case 7) (Industrial)	In the case from Poland, obtaining a new license required the preparation of several documents and carrying out procedures in several different institutions (e.g. State Forests, regional authorities, local authorities, Regional Director of Environmental Protection). Good organisation of work inside the company allowed for several procedures to be carried out in parallel. A special team for the new concession was created in the company and various people were responsible for the special aspect of obtaining a new mining license.	Obtaining a new mining concession is a long-term and multithreaded process (especially if the mining operation will be carried out within the boundaries /in the neighbourhood of valuable natural areas). Each mining company should plan work organisation (related to obtain a license) appropriately and set a time frame (taking into account especially the legal conditions of country and/or region).
Flexible integration of mineral resources in LUP (PT case 10)	According to Land-Use Planning legislation, municipal authorities should delimit the land use category called Spaces for the Exploitation of Geological Resources (if applicable). The main objective of the land-use planning methodology for mineral resources (LUP-MR) is minerals safeguarding by introducing subcategories of land	The integration of mineral resources in land-use planning should be done according to the level of knowledge about them. For example, unknown deposit versus known deposit, deposit being exploited versus not being exploited, deposit bigger than actual





D6.2: Final Manual for Good Practice Guidance

(Aggregates; Metallic; Industrial; CRMs)	into policy-making that cover the whole minerals value chain, from undiscovered/potential mineral resources to exploration, extraction and exploitation. The municipal authorities make a <b>direct correspondence between</b> <b>that category and the mining permits</b> regulated by the mining legislation, this also includes a mandatory public consultation for 30 working days prior to issuing permits/licenses.	concession, etc. and how this level influences the role that should be attributed to the use of the land, and not only depending on the type of mining activity ruled by legislation.
Devising an integrated policy tool to secure/safeguard aggregates extraction from conflict free extraction areas (GR case 11) (Aggregates)	The facilitation of exploration licensing and exploitation permitting of mineral raw materials through the creation of a framework that will clearly establish the areas of existing exploitable deposits on national level as well as the broader areas for minerals prospecting. Consequently, this will reduce the time and the current bureaucratic permitting processes, especially in relation to important investment initiatives. <b>Integration of conflict free aggregates extraction areas:</b> The extraction of aggregates from quarries located within QA constitutes an example of how a policy tool could contribute to the rational and secure exploitation of a mineral resource since it is an area assigned exclusively for their exploitation and incorporated in the regional spatial plans.	Mining and Spatial Planning authorities on the national and/or regional scale responsible for policy and regulatory framework design as well as industry, are identified as the main group of stakeholders that could contribute to the development of this tool and benefit from such an approach.





#### 7.3 Central themes of Good Practice Aspects and transferability

As discussed in the introduction of this chapter, the permitting and licensing systems in EU Member States are quite diverse and characterised by many challenges. The cases touch upon most of the outlined challenges, such as access to geological data, different levels of government involved in the permitting process, transparency of the process and public access to relevant documents (and data), the view on exploration, as well as the relation between stakeholder involvement and granted permits. Following the challenges outlined in the introduction, this part summarises case-specific aspects and suggestions according to (1) public sector challenges and examples, and; (2) company challenges and examples. For a complete understanding, readers are advised to consult the individual Good Practice Templates of cases of interest found in <u>Annex II</u>.

#### Public Sector examples

These examples below respond to the challenges of availability and access to data as well as challenges related to permitting encompassing multiple legal provisions and requirements. Permitting, being a phase that address a specific use of an area of land, is also affected by the way the use of the land is regulated by the authorities.

#### Permitting spanning over multiple legal provisions and requirements

The challenge of involving different authorities on different levels of government is addressed by several cases. The expertise of the authorities at different levels, their possibility to have in house or on project external experts, the way the authorities exchange expertise on different aspects affecting permitting are some aspects addressed in the case descriptions D3.2 and D3.3. Relatively to the Good Practice Aspects few cases bring up the focus on two main ways of answering the expertise need in permitting process. The Swedish case (case 1), the Norwegian case indirectly, the Spanish case (case 4), the Irish (case 6), the Portuguese case (case 10), and to some extent the proposed methodology in the case from Greece (case 11) include solutions related to introduction of minerals into LUP and their relation/impact on permitting. For example, the Irish case (case 6) addresses the importance of independency and internal expertise within and between authorities to conduct impact assessments.

#### Minerals linked to Land-Use Plans - capacity and knowledge affecting permitting.

The Swedish cases outline permitting processes linked to land-use planning tools and systems (case 1 and 3) where the permitting and decision processes considered the "areas of national interest" and different land-uses were evaluated according to their impact on the pillars of sustainability in the final permitting stage. Case 1 (SE) mentions how the 'final permit' (environmental permit) was always handled on a regional level, which allowed for inclusion of regional and local interests and knowledge in the process. However, the suggestion for transferability in this case states that such a mandate also should be coupled with appropriate staff capacity and expertise in the authority. Interestingly, this case (SE case 1) also outlines the significance of having a view of exploration as being 'non-invasive', as this allowed for co-existence of an exploration permit with other existent land-uses.

Case 4 (ES) addresses the development of a national procedure (mining-environmental planning map: a territorial zoning proposal based on the aptitude for aggregate extraction and the carrying capacity of the territory) which could be used by relevant authorities (national, regional and local) to simplify the mining and environmental permitting process. The work involved also cooperation between authorities in order to compile the base information. Similarly, case 10 (PT) describes a planning methodology for municipal land-use planning authorities, which focuses on the different levels





information about national mineral resources cover the whole minerals value chain (undiscovered or potential mineral resources to exploration, extraction and exploitation). Case 11 (GR) is different from the above mentioned cases as it describes an integrated policy tool (Quarrying Areas classification) with the objective of facilitating licensing for exploration and exploitation of aggregates: a framework that clearly establishes areas of existing deposits for aggregates production on a national level that reduces time and increases efficiency of current permitting process.

#### Independency and expertise of authority affecting permitting

In the case from Ireland (case 6) the division of responsibility between different authorities in the permitting process is highlighted as an important element for ensuring an effective and efficient process. The division of responsibility allows independent evaluation by the most qualified authority to ensure adequate assessment of all aspects. Furthermore, the independent role of the Environmental Protection Agency is described as having a positive impact both on maintaining high environmental standards, but also for public confidence in the evaluation (IE case 6). Moreover, the requirement of compulsory closure plans are perceived as beneficial for the industry. The Finnish case (case 8) is shows the expert based ability of the permitting authority to affect uptake of technological development and the supporting tools in act.

#### Transparency and public participation

A common aspect mentioned in both the Swedish and Irish case (case 3 and 6) is ensuring that documents within the permitting and land-use process were publicly accessible (chapter 4). In the Irish case (case 6) public participation and transparency in decision-making in the licensing process is described as positive for inclusion of public opinions and increased trust in the system. The Portuguese example (case 10) further highlights the importance of a mandatory consultation period (30 days) in ensuring inclusion of public opinions and interests in the process of permitting and licensing.

#### Company examples

Four Good Practice Aspects from three cases (SE case 1 and 3, PL case 7) outline examples of industry activities when acquiring a permit and/or a license. This ranges from the company being able to utilise existing information from previous exploration and geological information (SE case 1) to carefully plan for the construction and industrial site in the permitting application to minimise potential impact (SE case 3). Case 7 (PL) outlines how the company set up a specific team internally to deal with different aspects of legal requirements and the involved authorities (regional, local, national). The case (PL case 7) offers insights into how internal processes can be structured to, for example, increase efficiency in obtaining a mining concession, stakeholder involvement and environmental impacts mitigation voluntary actions. Case 3 (SE) indicates how early stakeholder involvement (before the Environmental Impact Assessment) became a 'success strategy' during the EIA and the final environmental permit. This case links permitting and licensing to social aspects described in chapter 5, as well as transparency in the processes outlined in chapter 5.





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## ANNEX I: Methodological Notes

The MinLand project selected a set of cases (pre-defined and identified by the project's scope) based on outlined challenges, analysed them through a framework of analytical criteria in deliverable 3.1 *Framework for Case Studies* (Carvalho et al., 2018). The aim of the case compilation was to identify case Good Practice Aspects of mineral and land use policy integration in a wider sense, as well as understand legislation, public authority procedures and mechanisms, as well as company practices that contributed to the "success" of the cases to resolve important challenges within the scope of the project. Against this backdrop, Deliverable 6.1 *Minland Common Approach for Peer Learning and Good Practice* provides a conceptual understanding of 'good practice' as practices that find solutions for mineral extraction when several land uses are present, in an efficient and timely order, minimising time for permitting and allowing extraction, whilst considering other land-uses and stakeholders, with the end-goal of achieving sustainable land-use (Carvalho et al., 2018). The process of synthesising good practice examples was presented in deliverable 6.1.

The project divides Good Practice Aspects thematically according to MinLand Good Practice Topics (see figure 4) in order to bring a better structure to the understanding of Good Practice Aspects in the MinLand case studies. The chapters of this deliverable relate to the MinLand Good Practice Topics of data assessment, identification of actual and potential land uses, assessment of minerals and land-uses on equal footing, integration between minerals and land-use policies, transparency in land-use planning, INSPIRE compliance, integration of social aspects and civil society involvement, and consideration of safeguarding.



Figure 6 MinLand Good Practice Topics

The MinLand cases are central to WP6, a work package tasked with synthesising good practice examples, and provide guidance on good practice learning for practitioners in public policy, land-use planning, geological surveys, industry or other interested stakeholder groups. This deliverable harmonises and streamlines good practice information stemming from the MinLand case studies, and, thus, fosters cross-sectoral and international stakeholder learning at the 8 MinLand Local Workshops through a designed peer learning process.

The outcome of that process is summarised in this Manual (D6.2) that is based on the Good Practice Templates of 14 MinLand cases, which have been elaborated by representatives from geological





surveys, academia, civil servants and industry from 10 European countries. An overview of the cases utilised for this deliverable can be found in table 1 below.

Table 8 MinLand cases, resource group and Authors

MinLand Case	Mineral Resources Group	Author(s)
Fäbodtjärn Gold Project, Sweden	Metallic, Aggregates, Industrial	Ronald Arvidsson, Geological Survey of Sweden (SGU)
Boliden Area Operations at Skellefteå Field, Sweden	Metallic, Critical Raw Materials	Anders Forsgren, Boliden
Mertainen Kiruna, Iron Ore Mining Project, Sweden	Metallic, Critical Raw Materials	Ronald Arvidsson, Geological Survey of Sweden (SGU)
Mining-Environmental Planning in West Ribera del Ebro, Spain	Aggregates	Virginia Rodríguez, Francisco Javier Fernández Naranjo, Julio César Arranz, Geological Survey of Spain (IGME ES)
Nordland County – Integration and Valuation of Mineral Deposits and Prospects in Land Use Planning and Management, Norway	Aggregates, Metallic, Industrial, Critical Raw Materials	Agnes Raaness, Henrik Schiellerup, Geological Survey of Norway (NGU)
Mineral Planning for Lead and Zinc, Ireland	Metallic	Sybil Berne, Jerry Barnes, MacCabe Durney Barnes (MDB), Eoin McGrath, Geological Survey Ireland (GSI)
Czatkowice Limestone Mine – Mining Activity in Complicated Environmental and Spatial Conditions, Poland	Industrial Minerals	Alicja Kot-Niewiadomska, Krzysztof Galos, MEERI-PAS
Kevitsa Mine – a Case of Integrated Land Use Planning, Environmental Commitment and SLO, Finland	Metallic, Critical Raw Materials	Nike Luodes, Geological Survey of Finland (GTK)
Basio – a Study of a Mineral and Landscape Route for the Touristic Development of the Region (Italy)	Aggregates, Industrial Minerals	Christian Marasmi, Regione Emilia Romagna
Land Use Planning Methodology for Mineral Resources (LUP-MR) (Portugal)	Aggregates, Metallic, Industrial, Critical Raw Materials	Jorge Carvalho, Vitor Lisboa, National Laboratory of Energy and Geology (LNEG), Maria João Figueira, Paula Castanheira Dinis, Directorate General for Energy and Geology (DGEG)





Integration of Mineral Resources into Spatial Planning: best practice examples of aggregate resources exploitation (Greece)	Aggregates	Kiki Hatzilazaridou, Institute of Geology & Mineral Exploration (IGME Greece)
Fokis Bauxite Mining: a Case Reconciliation and Co-existence of Different Land Uses (Greece)	Metallic Minerals	Chrysa Panagiotopoulou, National Technical University of Athens (NTUA)
Co-existence of Somincor Neves-Corvo Polymetallic Underground in a Natura 2000 area (Portugal)	Metallic Minerals	Paula Castanheira Dinis, Maria João Figueira, Directorate General for Energy and Geology (DGEG), Jorge Carvalho, Vitor Lisboa, National Laboratory of Energy and Geology (LNEG)
The Austrian Mineral Resources Plan (AMRP) – a Safeguarding Tool for Mineral Resources and its Implementation on Different Levels of Governance (Austria)	Aggregates	Katharina Gugerell, Michael Tost, Montanuniversität Leoben (MUL), Andreas Endl, Sara Gottenhuber, Wirtschaftsuniversität (WU)

In elaborating and structuring good practice information, *Deliverable 6.1 Minland Common Approach for Peer Learning and Good Practice*, provided a 'Good Practice Template' provided a basis for case authors to present their cases. The template of elaborating good practice was based on a rigorous desk research of existing and influential good practice manuals. The template was then filled out by MinLand case authors. It was reworked in a second round utilising input and conclusions from the 8 MinLand Local Workshops where such were available and relevant. The Good Practice Templates of the 14 MinLand cases build the foundation of the Manual. The authors are responsible for the content of the good practice

#### Good Practice Template

Part 1. Case Overview	1.1 Executive summary 1.2 Key Good Practice Aspects
Part 2. Case Description	2.1 Case description 2.2 Responsible institutions 2.3 Case stakeholders 2.4 Context
Part 3. Case Evaluation	3.1 Impact 3.2 Elements of a Good Practice Aspect 3.3 Recommendations for transferability

Figure 7 Structure of the Good Practice Template

templates and the information included has been analysed in deliverables *3.2 Case Studies Summary* and *3.3 Synthesis of Case Studies,* as well as, in some instances, during the local workshops (Work Package 7). The purpose of developing the cases in such a structure is to identify certain success-factors and challenges addressing a specific topic, to contribute to a solution-oriented 'case-learning' approach (Shapiro, 1984). The deliverables addressing the cases should further be consulted to understand the linkages to mineral resources groups, in the MinLand project, different mineral resources are classified accordingly to type of mineral raw material (metal, aggregates, industrial minerals) but also accordingly to type of legislation followed, namely state owned or controlled by state or owned and controlled by the land owner. The different mineral resource groups are:





- Metals
- Industrial Minerals
- Aggregates and construction minerals (will be called aggregates)

In addition there are critical raw materials following the EU Criticality List, the critical raw materials are considered as strategically important for Europe's future, e.g. with respect to battery value, electric vehicles, robotics and high-tech industry throughout Europe. The deliverables addressing the cases further shed light on the important aspects of legislation in the context of the cases, e.g. the difference of:

- 1. State owned or controlled raw materials metals and certain industrial minerals
- 2. Privately owned and controlled raw materials typically aggregates
- 3. Also depending upon jurisdiction because the legislations are built into a chain of interlinked policies and associated legislations covering e.g., mining, environment, all different land uses, which their practices and form depend in its turn upon history of the development and form of the countries own constitutions.

For a complete overview of all the relevant MinLand deliverables, readers should consult the webpage: minland.eu/project-results/

#### **Minland Good Practice Stream Topics**

- A Data assessment and use in policy formulation and land use planning;
- B Identification of actual and potential land uses;
- C Assessment of minerals and other land uses on par;
- D Integration of minerals and land use policy;
- *E Transparency in land use planning processes;*
- F Inspire directive compliance;
- G Integration of Social and SLO aspects;
- H Protection of mineral resources and safeguarding;
- Permitting



## ANNEX II: Minland Case Templates

The Annex contains the filled out Good Practice Templates (GPTs), which have formed the basis of deliverable 6.2. For an overview of the cases, in which chapters they appear, the mineral types as well as the MinLand Good Practice Streams they correspond to can be seen in the table below.

A – Data assessment and use in policy formulation and land use planning; B – Identification of actual and potential land uses; C – Assessment of minerals and other land uses on par; D – Integration of minerals and land use policy; E – Transparency in land use planning processes; F – Inspire directive compliance; G – Integration of Social and SLO aspects; H – Protection of mineral resources and safeguarding; Permitting

Case 1: Fäbodtjärn Gold Project	100
Case 2: Boliden Area Operations at Skellefteå field in Sweden	110
Case 3: Mertainen, Kiruna, Iron Ore Mining Project	119
Case 4: Mining-environmental planning in the West Ribera del Ebro	128
Case 5: Nordland County – integration and valuation of mineral deposits and prospects in land use plann and management	i <b>ng</b> 139
Case 7: CZATKOWICE LIMESTONE MINE – mining activity in complicated environmental and spatial condition	t <b>ions</b> 157
Case 8: Kevitsa mine – a case of integrated land use planning, environmental commitment and SLO	163
Case 9: Baiso – a study of a mineral and landscape route for the touristic development of the region	170
Case 10: Portugal land use planning methodology for mineral resources (LUP-MR)	175
Case 11: Integration of Mineral Resources into Spatial Planning: The best practice example of aggregate resources' exploitation	185
Case 12: Fokis Bauxite Mining: A case of reconciliation and co-existence of different land uses	192
Case 13: Co-existence of Somincor Neves-Corvo polymetallic underground in a Natura 2000 area	196
Case 14: The Austrian Mineral Resources Plan (Österreichischer Rohstoffplan, AMRP) – a safeguarding to mineral resources and its implementation on different levels of governance	<b>ol for</b> 206





Case	MinLand Cases	Chapters	Mineral type	Minland Good Practice Streams
1	Fäbodtjärn Gold Project	<ul> <li>1: Data</li> <li>2: Land use assessment</li> <li>3: Safeguarding</li> <li>4: Policy Integration</li> <li>5: Transparency in Minerals exploitation</li> <li>7: Permitting</li> </ul>	Metallic, Aggregates, Industrial	A, C, D & Permitting
2	Boliden Area Operations at Skellefteå field, Sweden	<ul> <li>5: Transparency in Minerals exploitation</li> <li>6: Social License to Operate</li> </ul>	Metallic, Critical Raw Materials	G
3	Mertainen Kiruna, Iron Ore Mining Project	<ul> <li>2: Land use assessment</li> <li>6: Social License to Operate</li> <li>7: Permitting</li> </ul>	Metallic, Critical Raw Materials	C, G
4	Mining-Environmental Planning in West Ribera del Ebro	<ul> <li>1: Data Management</li> <li>2: Land use assessment</li> <li>3: Safeguarding</li> <li>4: Policy integration</li> <li>5: Transparency in Minerals exploitation</li> <li>7: Permitting</li> </ul>	Aggregates	A, B, C, D, H & permitting
5	Nordland County – Integration and Valuation of Mineral Deposits and Prospects in Land Use Planning and Management	<ul> <li>1: Data Management</li> <li>2: Land use assessment</li> <li>3: Safeguarding</li> <li>4: Policy Integration</li> </ul>	Aggregates, Metallic, Industrial, Critical Raw Materials	A, B, D, F, H
6	Mineral Planning for Lead and Zinc in Ireland	<ul> <li>4: Policy integration</li> <li>5: Transparency in Minerals exploitation</li> <li>6: Social license to operate</li> <li>7: Permitting</li> </ul>	Metallic	D, E, G & permitting
7	Czatkowice Limestone Mine – Mining Activity in Complicated Environmental and Spatial Conditions	<ul> <li>5: Transparency in Minerals exploitation</li> <li>6: Social license to operate</li> <li>7: Permitting</li> </ul>	Industrial Minerals	G
8	Kevitsa Mine – a Case of Integrated Land Use Planning, Environmental Commitment and SLO	<ul> <li>2: Land use assessment</li> <li>3: Safeguarding</li> <li>4: Policy integration</li> <li>5: Transparency in Minerals exploitation</li> <li>6: Social license to operate</li> </ul>	Metallic, Critical Raw Materials	B, C, D, E, G, H

Minl	_and			
D6.2: Final Manual for Good Practice Guidance				
9	and Landscape Route for the Touristic Development of the Region	<ul> <li>1: Data Management</li> <li>5: Transparency in Minerals exploitation</li> <li>6: Social license to operate</li> </ul>	Aggregates, Industrial Minerals	А, В, G
10	Portugal Land Use Planning Methodology for Mineral Resources (LUP-MR)	<ul> <li>1: Data Management</li> <li>2: Land use assessment</li> <li>3: Safeguarding</li> <li>4: Policy integration</li> <li>7: Permitting</li> </ul>	Aggregates, Metallic, Industrial, Critical Raw Materials	B, C, D, H & permitting
11	Integration of Mineral Resources into Spatial Planning: best practice examples of aggregate resources exploitation	<ul> <li>2: Land use assessment</li> <li>3: Safeguarding</li> <li>4: Policy Integration</li> <li>7: Permitting</li> </ul>	Aggregates	B, C, D, H & permitting
12	Fokis Bauxite Mining: a Case Reconciliation and Co- existence of Different Land Uses	<ul> <li>2: Land use assessment</li> <li>3: Safeguarding</li> </ul>	Metallic Minerals	С, Н
13	Co-existence of Somincor Neves-Corvo Polymetallic Underground in a Natura 2000 area	<ul> <li>2: Land use assessment</li> <li>5: Transparency in Minerals exploitation</li> <li>6: Social license to operate</li> </ul>	Metallic Minerals	C, G
14	The Austrian Mineral Resources Plan (AMRP) – a Safeguarding Tool for Mineral Resources and its Implementation on Different Levels of Governance	<ul> <li>1: Data Management</li> <li>2: Land use assessment</li> <li>3: Safeguarding</li> <li>4: Policy integration</li> </ul>	Aggregates	D, H





## Case 1: Fäbodtjärn Gold Project

# This good practice case responds to access to data, assessment of minerals and other land uses in policy and permitting

Minland Good Practice Stream Topic:

A – Data assessment and use in policy formulation and land use planning

#### C – Assessment of whether minerals and other land uses have been introduced on equal footing

D – Assessment and extent of integration between minerals and land use policies

Permitting

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# Part 1: Case Overview

#### 1.1 Executive summary

The case is about a small-scale future underground mining operation (including all aspects from prospecting, to test mining to application) that has successfully achieved a concession and is in the final application phase for an environmental permit. The case is located in the north western part of the Västerbotten County, Sweden. It is geologically part of the Skellefte mining district where currently 5 mines are in operation. The County of Västerbotten is one of two regions within Sweden with the largest experience of handling application for new mines with the last established mine in 2012. Among the local population mining has since a long time often been perceived as positive bringing jobs and representing progress for parts of society. The case describes how land use issues and conflicts are resolved and determined where exploration and mining is an integrated part of the land use system. Further, it is highlighted the importance of an early company involvement with affected stakeholders. The involvement of affected stakeholders at an early stage has defused the potential conflicts.

#### 1.2 Overview of Key Good Practice Aspects and suggestions

#### Good practice aspect 1: Linked mining and land use policy

Element 1: Linking of mining and land use: All components in the permitting and land use process are made for purpose and are connected. The Road to mining goes from background information including the so-called areas of national Interest. The permitting is connected also to the land use system so that the final permits are connected to the land-use planning.

Element 2: Areas of National Interest: The tool areas of national interest which includes all types of mineral resources is one of the corner stones in the overall land use process. All sources of mineral resources are included.

Element 3 Exploration is an activity that can take place on existing land uses and causes usually very small or no real conflict. The exploration and concession permits are handled by the Swedish Mining Inspectorate.

Element 5 Environmental permit]: This is always treated on a regional level except in cases of appeals. Therefore, larger local knowledge regarding environment and land uses such as the instrument of Areas of National Interests

#### Good practice aspect 2: Available high quality geological information

Element 1: Archived open exploration information: Geological information and data has been archived by the Geological Survey of Sweden, official government authority for geological matters. Within the survey one division, mining and mineral information has been particularly tasked with providing , storing and advice upon geological





information. This has been perceived as a very important aspect from the industry in order to start new mining projects.

Element 2: Active support mechanism for use of geological data: The geological data is provided to industry and also other authorities with experienced expertise provided by the geological survey.

Element 4: Geological data and land use: The geological data is also being used for land use planning and forms the bases for determining if a deposit should be considered as an area of national interest.

#### Good practice aspect 3: Local Stakeholder interaction

Element 1: Early involvement with stakeholders]: Early and meticulous and cautions work with stakeholders has from other cases shown to be productive and has been adopted in this case.

#### Good practice aspect 4: Test mining

Element 1: Archived open exploration information]: Geological information and data has been archived by the Geological Survey of Sweden, official government authority for geological matters. Within the survey one division, mining and mineral information has been particularly tasked with providing, storing and advice upon geological information

Element 2: Active support mechanism for use of geological data: The geological data is provided to industry and also other authorities with experienced expertise provided by the geological survey.

Element 3: Geological data and land use: The geological data is also being used for land use planning and forms the bases for determining if a deposit should be considered as an area of national interest.

#### Good practice aspect 4: Exploration is an activity that can coexist with existing land uses

Element 2 Small invasiveness: Exploration has generally a small invasiveness upon existing land uses and can be done with relatively small impact. This important since it improves upon number of exploration permits which leads to increased success rate for new mines.

Element 3 Transparency: The exploration companies need to establish a work plan that is approved with minimum necessary impact on other land uses and affected parties. The work plan and need to be communicated with affected parties. In certain cases agreements must be established also with land owners and affected parties.

#### **1.2 Mineral resource groups:**

X METALLIC MINERALS; Au (primary to case)

X Aggregates - (secondary to case) in land use policy description

X Industrial minerals – (secondary to case) in land use system policy description

# Part 2: Case description

#### 2.1 Case description

#### **Development of project**

The mining project is about a gold deposit located at the edge of Skellefteå mining field but also in connection of the larger so-called Gold line. There are currently two operating Gold mines within the district and two are being applied for final permits for mining. If finalised the Fäbodliden project will be developed into a small-scale mine, one of two such metal mines in Sweden in terms of size, with a few tens of employee's. Generally, acceptance for mining is high in the region. The project is localised close to one major river (nature conservation area) and within the areas of movements of reindeer herds (reindeer husbandry).

The project depicts how from available old exploration and geological information, including stored drill cores at and around the projected future mining site, the current mining and land-use policy forms a made-to

-fit mining permitting and land use system. All the different land-use aspects are weaved in different land use aspects, including the Swedish land use system with the permitting system. The case also describes how a weighted assessment of the different land uses has been conducted, and by law choose the most appropriate from the three sustainability pillars. The system has lead to the current 14 metal mines in Sweden and introduction of all mineral







resources into the land use system, i.e., metals, aggregates and industrial minerals. The steps described here are about the necessary conditions for the case which connect to:

- available geological information (reuse of old data)
- the system of National Interests
- exploration permit
- mining concession permit (where the land use is partly approved for mining and the deposit is safeguarded)
- to application for environmental permit. At this final stag stage a weighted assessment of mining versus other land uses is being made.

The use the system of National Interests is being described as it is always used also in the application stages. If a deposit has been appointed as of national interest it means it gets a strong position in the land use but it will in the end be weighted against other land uses. Here what is presented from the company to the permitting authority for the Environmental permit is important. The current case has been filed for a decision at the Environmental Court but no decision is yet as of August 30, 2019, been decided.

Exploration is in this context of land use considered an activity that can take place within an appointed area for exploration, so-called area of prospecting. The case includes in addition to the description of the different stages in exploration and mining and the role of authorities including the county administrative board (CAB). The case also relates to the discussions regarding land use and minerals in the Minland Scandinavian Local Workshop in Umeå.

The project was initialised with an exploration permit, thereafter followed by a concession in 2016 after determination of mineral resource. The mineral resource has been determined according to the FRB (similar to JORC) by a Qualified Person. The project used available, public data from the SGU, as a beginning for the prospecting. Among the data were drill cores within what is now the concession area and surroundings. Currently the project has filed an application for the environmental permit which under processing by the Environmental Court. Given a positive decision mining can be commenced. For details see below.

The present case, similar to many other mining projects in Sweden, had support from mining and related policies. The authorities involved in the case have several roles – the Geological Survey of Sweden has the role from the government to support the industry and other authorities (and public) with data and guidelines regarding mining.

Similarly to other companies involved in mining in Sweden today, stakeholder involvement have been perceived as an important aspect early in the process.

Below a description of land-use issues come into play in the different stages of the mining project.

#### **Exploration permit**

The initial stage in mining is to find out whether there are minerals worth mining. The company applies for an exploration permit, which grants them solitary rights to explore the minerals. The mining licence inspectorate leaves the permit and consults the CAB in the process. The CAB informs the mining licence inspectorate about areas of national interest, protected areas etc. in the applied area. Applications for an exploration permit have a high rate of approval.

Before actual exploration work can be done a valid plan of operations (work plan) needs to exist, the validation of a work plan is a process with the holder of the exploration permit, the landowners and holders of special rights to the land.

If the exploration investigations might affect the natural environment significantly (e.g. drilling) the company should consult with the CAB, which in most cases stipulate terms for the exploration to minimize the impact on nature values. Granted exploration permits can also be seen as a test that land is made available for the mining activities.

#### Land use - national interests



Well known deposit which are deemed important for Sweden can be achieved a status of protection in the system of National Interests which is descried here below. This deposit is not necessarily exploited or under exploitation.

The Environmental Code contains special provisions on the management of land and water areas (Chapters 3 and 4). These provisions are designed to promote a reasonable use of natural resources in both the long and short-term from a comprehensive societal perspective. Accommodation of both preservation interests and exploitation opportunities is to be made possible. Large virgin areas of land and water, ecologically sensitive areas, and agriculture and forestry of national importance are always to be protected to the maximum extent possible. The same applies to areas of importance, e.g., for reindeer husbandry, natural beauty, cultural interest, outdoor recreation, valuable substances they contain or for purposes of national defence. These areas can also constitute national interests, in which case they must always be protected.

When an area is of national interest for several incompatible purposes, priority must be given to the purpose best conducive to long-term management of the land, except where defence interests of outstanding importance are involved. Various national governmental agencies are required to furnish particulars of areas judged to be of national interest. The Geological Survey of Sweden, for example, is responsible for the assessment of national interests in areas containing valuable substances such as minerals (i.e. mineral deposits of national interest). In addition, the Environmental Code specifies certain geographical areas that come under direct protection and are regarded as national interests for purposes of tourism and outdoor recreation. These areas are designated along the coasts, rivers and in certain mountain regions. The area protection described above, national interests included, is safeguarded insofar as palpable damage can be prevented. Measures, e.g. mineral extraction, which palpably harm a national interest are an absolute impediment to mining operations, unless the deposit in itself also constitutes a major national interest. In summary, the management provisions in the Environmental Code can be seen as a planning instrument preceding decisions on changed land use. It is also implemented and used during the permitting stages for mining.

The instrument for National Interests is a tool so that the most appropriate land use can be achieved which in some instances is mining whereas in other cases denials have been the result of the application process. Several such denials are no up on the table of the government to decide upon as the final instance for decision after appeals.

#### **Exploitation concession**

Next step is an application for an **exploitation concession** which is granted by the Mining Inspectorate. An EIA is needed, but with focus on land-use issues. In the process the CAB is consulted and obliged to leave a statement whether the CAB approves of the application or not. The CAB must decide if mining is the best land use in the area. Central aspects of the judgement is if there are areas of national interest (NI:S) that are affected by mining practise. In the decision land use that promotes sustainable development should be given priority if there are NI:s that can't co-exist. The system with NI:s is regulated in the environmental code, (national legislation) (Bergsstatens bedömning).

If the CAB and the Mining Inspectorate comes to different conclusions if an exploration concession should be granted or not the application must be handled by the government for final decision.

If an exploration concession is granted, the company can go on with an application for an environmental permit, either for full scale mining or for a test mine. A full EIA is needed. A test mine can be licensed before or after exploitation concession is granted. This is also the case for a full-scale mine, although the possibility is almost never used.

An application for a **test mine** is sent to and handled by the CAB. The Swedish name for the licensing authority that decides on the matter at the CAB is Miljöprövningsdelegationen (MPD). The MPD is composed of a chairman and a person with expert knowledge in the environmental matters. The chairman is a legal expert with court experience and with a special experience from environmental matters and all issues related to the environmental code. The person with expert knowledge in environmental matters has an education in the field of technology and science, and has particularly good experience in matters related to damage and detriment to human health and the





environment. The MPD is a licensing authority within the CAB and not part of the authority's ordinary chain of command.

A license for a test mine is restricted in terms of the purpose of the activity. The only allowed objective for a test mine is to more thoroughly examine the properties of the ore.

#### **Environmental permit**

Environmental permit for a full-scale mine is granted by the Land and Environmental court. In the whole process of opening a new mine legal practice states that an exploitation concession states that a mining operation is permissible. This means that the object of the environmental permit is to set the conditions for the mine in terms of levels of outlets, transportation, working hours etc. In the court process the CAB represents the state and public interest.

#### Designation of land (access to land)

The Chief Mining Inspector together with two trustees makes decisions on designation of land needed for a mining activity if not an agreement is reached between the concession holder and the landowners and the holders of special rights. If the concession holder agrees with the landowners and the holders of special rights, land or other space shall be designated in accordance with that agreement. Insofar as an agreement has not been reached, the land or space that is needed shall be designated.

#### **Building permit**

In the last step the a building permit according to the Swedish Planning and Building Act for facilities etc. is sought and usually granted since all aspects of the industrial area location has been overviewed and accepted from environmental perspective in the Environmental permit.

#### **Mining Operations**

After the mining operations start the CAB (in some cases also the municipality) supervises the operations. The supervision aims at minimizing the environmentally negative effects the mining causes. All mines are obliged to leave an annual environment report, describing how they fulfil the terms set by the environmental court.

The CAB is also supervising authority for the remediation of the mining area when the exploitation is finished. Normally the remediation is carried out by the responsible company under supervision by the CAB. The company is obliged to set up a financial guarantee so that there are resources for the remediation if the company will go bankrupt.

#### Development of legal practise concerning exploitation concessions

Until 2016 the CAB only assessed the impact on other interests within the applied area for an exploitation concession and did not consider the effects of the mining infrastructure necessary for full scale mining of the deposit. The positive side of this method was that the company only had to describe and make an EIA for the actual planned pit. The negative side was that when it came to the application for an environmental permit there might be unexpected terms set by the environmental court that result in difficulties in planned operations. For the CAB this process created an uncertainty concerning the total area needed for a future mine and the impacts on other forms of land-use in the vicinity. In some cases, the CAB stated that an exploitation concession was permissible, but that the CAB might change opinion when the company applied for an environmental permit, depending on what information that came in the full-scale EIA.

In February 2016 the supreme administrative court passed a ruling that states that the entire mining area, including infrastructure, must be considered in the exploitation concession process. This meant that many exploitation concession applications had to start from the beginning again, creating a delay of several years.

#### 2.2 Responsible institutions

• Institution 1: Geological Survey of Sweden, responsible for minerals in the National Areas of Interest and for provider of geological information







- Institution 2: County Administrative Board of Västerbotten, responsible for environmental issues in land use planning
- Institution 3: Swedish Mining Inspectorate, responsible for exploration and mining concession permits
- Institution 4: The regional Environmental Court responsible for approving or declining the Environmental permit.

#### 2.3 Case stakeholders

- Botnia Exploration AB The company that has submitted application for mining, industry.
- Local stakeholders local community citizens affected by the project.
- Lycksele Municipality land use authority at municipal level responsible for building permits and detailed land use planning
- SGU responsible land use authority for mineral raw materials in the system for Areas of National Interest and archiver and provider of geological and geophysical information used in exploration.
- Västerbotten County Board responsible land use authority for certain Areas of National Interest.
- Local stakeholders of the Vindelgransele village affected by impact on land and infrastructure.

#### 2.4 Context

An exploration target that has been first submitted for exploration permit, than for concession, and the for final permit, the so-called environmental permit. Use has been made of earlier exploration data to initiate and also part of data used in valuation of concession through JORC instrument and finally by using PERC code.

Stakeholder have been interviewed for the case and contains the whole chain from local community, municipality, land use authorities and industry.

# Part 3: Case Evaluation

#### 3.1 Impact achieved

- IMPACT 1: Achieved application for final mining permit the application for environmental permit has been filed. This shows how the case illustrates how an integrated mining policy functions with a step-wise decision in land-use coupled to permitting can lead to a mining permit and project. The open policy for exploration allows exploration in most areas. Exploration is considered to be a activity and that after approval in permitting can occur without any significant impact on existing land-use. The permitting is coupled to the land use process further in such a way that the second step is the so-called mining concession, at that stage the concession will "protect" the deposit and become an official land-use. The final stage in the land-use process is when the environmental permit has been filed and approved. At that stage the full land use including space for industrial facilities are endorsed and all land-use aspects are treated and will be approved including.
- IMPACT 2: Re-use of **High quality geological information** The project has made use of available geological information including previously drilled and archive drill cores at the geological survey of Sweden. Thus, exemplifying the importance of high quality geological information made available by the Geological Survey of Sweden as a driver for new exploration and mining projects. Geological information, including drill cores and geophysical measurements are being made available to exploration companies and as this case illustrates is one important driver for exploration and extraction projects.

IMPACT 3: Local Stakeholder interaction The project has been able to engage stakeholders at an early stage.
 2 Good Practice Aspects: Elements and their transforability.

**3.2 Good Practice Aspects: Elements and their transferability** 

### **GOOD PRACTICE ASPECT 1:**

### Linked mining and land use policy





Key elements (of Good Practice Aspect	Suggestions for Transferability (of Key Elements)
Element 1: Linking of mining and land use: All components in the permitting and land use process are made for purpose and are connected. The Road to mining goes from background information including the so-called areas of national Interest. After that comes the first part performed by the industry, exploration which needs an exploration permit. During the exploration, when the project is sufficiently mature a mining concession can be applied for and granted. In the final step the environmental permit is applied for which contains the within EU, necessary EIA. In each step due care is taken of the linkage to the land use system.	Mineral extraction and exploration activities are linked to the land use system. Consequences are analysed before implementation. Highly important is that active decisions by policy makers are being taken that mining activities are integrated into the land use system. This needs a high degree of cooperation between the different involved parts in the land use and permitting system. Particularly important is not only capacity within the system but also competence to formulate and execute the policy.
<b>Element 2 Areas of National Interest</b> : The tool areas of national interest which includes all types of mineral resources is one of the corner stones in the overall land use process. It forms the government's tool to affect the land use planning and contains eleven different categories of strategic land use aspects. The land use planning is made at municipal level. The instrument for National Interests is a tool so that the most appropriate land use can be achieved which in some instances is mining whereas in other cases denials have been the result of the application process.	Minerals is one of the key aspects of land use to be considered for land use and safeguarding. Need for mineral raw materials are at different levels from local to European scale. Therefore having a strategic tool improves possibilities for long term planning. The establishment of minerals as areas of national interest must be executed by professionals knowledgeable on mineral deposits and their valuation.
<b>Element 3 Mining Concession</b> : After exploration permit, which is handled by the mining inspectorate, a mining concession gives the company exclusive right to extraction and secures land for the deposit and a safeguarding for the deposit. The exploration and concession permits are handled by the Swedish Mining Inspectorate.	There must be a point in the exploration activities when land is made available for the company so that it can pull through to the final mining applications. What is important here is that enough of land is made available so that the industrial facilities for the mine also will have a place. Otherwise no mining will be achieved.
<b>Element 4 Environmental permit:</b> This is always treated on a regional level except in cases of appeals. Therefore, larger local knowledge regarding environment and land uses such as the instrument of Areas of National Interests.	Use of regional and local knowledge in the determination of environmental issues.

## **GOOD PRACTICE ASPECT 2:**





Available High Quality Geological Information		
Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)	
<b>Element</b> 1: Archived open exploration information]: Geological information and data has been archived by the Geological Survey of Sweden, official government authority for geological matters. Within the survey one division, mining and mineral information has been particularly tasked with providing, storing and advice upon geological information. The information and data consists of geophysical data (gravity, magnetics, electromagnetic measurements,) base geological information including gathered data from the field. Prospecting information from exploration permits, shall also be given to the survey upon closing down of prospecting. Thus, information from these projects are saved and made available for the next exploration company increasing the possibility for success as well as adding information that is used by the academia for basic research.	Availability of open geological and geophysical information including reuse of previous exploration data, like stored drill cores, and making these available ensures a sustainable use of all exploration activities as well as improves upon possibility for success. It is seen as an important factor among the European companies pushing for mining. It is also one of the factors the companies judge possibility for exploration in the yearly Frazier report on mining activities.	
One important aspect of the gathered geological data is the storage of drill cores from earlier exploration drill holes. This is being done in the surveys localities at the northern Malå office. This contains today close to 19000 drill holes with more than 3 million meters of drilled core. These drill cores are made available for future studies and exploration activities. In the current project these were used together with indications of a deposit to initiate and facilitate exploration. More than 150 unique visitors days for studying and analysing these drill cores are hosted at the Malå office every year.		
<b>Element 2:</b> Active support mechanism for use of geological data: The geological data is provided to industry and also other authorities with experienced expertise provided by the geological survey.	A support mechanism both for advice upon geological data	
<b>Element 3:</b> Geological data and land use: The geological data is also being used for land use planning and forms the bases for determining if a deposit should be considered as an area of national interest.	High quality geological information is necessary for determining if a deposit is of sufficient value for being introduced as a part of the general land use and thus receive a form of protection in the land use system.	

# **GOOD PRACTICE ASPECT 3:**

## Local Stakeholder Interaction







Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
<b>Element 1 Early involvement with stakeholders:</b> Early and meticulous and cautions work with stakeholders has from other cases shown to be productive and has been adopted inn this case. It is also part of the EIA presented in the application to Environmental Court. The company has had public meetings with the stakeholders as well as worked preventively with some affected reindeer herders. It has been shown from other cases that a poorly conducted stakeholder engagement has created conflicts which has been difficult to resolve therefore early and careful stakeholder contacts are necessary.	Early stakeholder contact and engagement.

GOOD PRACTICE ASPECT 4:		
Test Mining		
Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)	
<ul> <li>Element 1 Test mining of deposit]: The test mining of the deposit make it possible to 1. Evaluate the economy of the mining because sometimes it is necessary to test procedures in the extraction, sorting and ore processing.</li> <li>Assessment of needs to meet environmental standards. Often the extraction involves environmentally hazardous materials that must be treated correctly in order to not This can be used as a quality assessment of the process which is used in the Environmental Application to the Environmental Court.</li> </ul>	Allow test mining during the prospecting phase however with needs to meet necessary environmental standards of course.	

### **GOOD PRACTICE ASPECT 5:**

# **Exploration is an Activity That Can Coexist With Existing Land Uses**






Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
<b>Element 1 Small invasiveness:</b> Exploration has generally a small invasiveness upon existing land uses and can be done with relatively small impact. The only activity that has some impact is really the drilling. This can be performed with minimum impact upon other land uses and also upon other activities and events such as nesting of threatened bird species or impact upon husbandry, reindeers and agricultural activities by choosing the time of the year for the drilling. Therefore drilling is often done during parts of the year where impact upon other parties is minimal.	Exploration can be performed in parallel with existing land uses. This improves upon possibility for successful mining. Drilling should generally be allowed if not too large impact on existing activities. Necessary that all costs for impact and mitigation of impact has been done.
A open view to allow exploration has been shown to lead to success. There is in Sweden during the past ten years, in any given year somewhere between 700- 1000 permits for exploration. During a ten year period one or two new mines are being established so less than a handful lead to a mine (metallic and concession minerals) so no more than about one out of a thousand permits result in a mine. Therefore, it is important to open up for exploration on large areas, otherwise the probability for success is extremely low.	
<b>Element 2 Transparency:</b> The exploration companies need to establish a work plan that is approved with minimum necessary impact on other land uses and affected parties. The work plan and need to be communicated with affected parties. In certain cases agreements must be established also with land owners and affected parties.	Transparency of when the company is active towards the affected local parties.





### Case 2: Boliden Area Operations at Skellefteå field in Sweden

# This good practice case responds to different tools to use to retain a Social Licence to Operate

### Minland Good Practice Stream Topic:

### **G** – Assessment of integration of social aspects and civil society involvement

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# Part 1: Case Overview

### 1.1 Executive summary

This case involves the Boliden company and its SLO strategy, which is dealing with remediation of a mining area in Boliden town and stakeholder dialogues and consultations. The Boliden Area is located in the mineral-rich Skellefte field in Västerbotten, northern Sweden, operated by Boliden since the 1920s. The area currently comprises of the Renström, Kristineberg and Kankberg underground mines and the Maurliden open-pit mine. All of the mines in the area, with the exception of Kankberg, produce complex polymetallic ores that contain zinc, copper, lead, gold and silver. The mines supply ore to the concentrator at Boliden, which is also home to leaching plants for gold and tellurium production. The company is active in all stages of mining from early exploration, project development, active mining extraction, remediation and long-term use of land. Mining is done both underground as well as in open pit. The scale of mining effects is from local to regional. Mining has always a local aspect in terms of land use and environmental issues due to the size of operations. The regional aspect is that the operating mines are spread out over a larger area and has effects upon use or construction of infrastructure.

This case is about the company strategy of interacting, consulting and involving with different interests to use of land. The stakeholder interaction involves landowners, hunters, local community, reindeer herders (several local indigenous Sami villages) etc. Particularly the case is about stakeholder consultations and dialogues and how the project is affected and evolved as a response. Presented are good examples on strategies on how to work and coexist together with other interests. Other examples of company projects are coordination of exploration, transports of ore, changes in construction of new mines. New measures and expansions need a good coordination and relation to other interests, which is in Boliden's focus.

### 1.2 Overview of Key Good Practice Aspects and suggestions

GOOD PRACTICE ASPECT 1: An extensive and collaborative civic engagement process developing a rehabilitation plan

**Independent agency facilitating the process: A** landscape design agency led the process for the planning of the rehabilitation plan. A professional design and facilitation team that works as an independent agency guarantees transparency, trust and an un-biased process of the company activity. **(Strategic Choice)** 

### Application of multi-method participatory design approach:

Using different methods for feeding results into the design process provide broad opportunities for inhabitants with different user and engagement needs (e.g. elderly people, schoolchildren etc.) requires experienced and professional teams. **(SUCCESS FACTOR)** 





**Early and long-term involvement in the process:** The participatory approach started early in the project and lasted for more than one year with several consecutive phases that allowed to understand local community interests and build up trust for company action **(SUCCESS FACTOR)** 

### Involving a wide range of stakeholders in the design process

The participatory design engaged a wide range of stakeholders such as local inhabitants, employees, authorities, and paid particular attention to the involvement of underrepresented groups such as schoolchildren and indigenous communities. (SUCCESS FACTOR)

### Wide-spread media coverage and public outreach

The stakeholder dialogue as public and participatory events drew more media attention as expected that generated supportive framework conditions in a way that it "spread the word" about the project.

### Company principles for SLO – the Boliden Approach

Company operating principles that lend credibility to the civil society engagement process provide positive framework conditions for its success. (CONTEXTUAL FACTOR)

GOOD PRACTICE ASPECT 2: Establishing and Managing Sami relations facilitating SLO and co-existence of land us

**Re-establishment of reindeer grazing areas in rehabilitated mining areas:** Research projects and monitoring activities will create better conditions for reindeer herding and grazing.

### (STRATEGIC CHOICE)

### Innovative ICT applications reduce conflict with reindeer herding

Innovative ICT and web applications enable better monitoring of reindeer movement, and, thus less road accidents and improved information on environmental pollution.

### (SUCCESS FACTOR)

#### **1.2 Mineral resource groups:**

X METALLIC MINERALS

X CRITICAL RAW MATERIALS

# Part 2: Case description

#### 2.1 Case description

#### Boliden Area (Skellefteå field)

Boliden made the first gold discovery, in the mineral rich Skellefteå field in Västerbotten in northern Sweden, which laid the foundation for the business. Since starting production in the 1920s, Boliden has mined ore in almost 30 mines. Further exploration is ongoing as well as a number of rehabilitation projects. The area currently comprises of the Renström, Kristineberg and Kankberg underground mines and the Maurliden open-pit mine. All of the mines in the area, with the exception of Kankberg, produce complex polymetallic ores that contain zinc, copper, lead, gold and silver. The mines supply ore to the concentrator at Boliden, which is also home to leaching plants for gold and tellurium production.







In this area Boliden has a long history of how to work and coexist with different types of stakeholders such as land owners, hunters, local community, and reindeer herders (Sami). Examples range from coordination of exploration, transports of ore, projects development in construction of new mines, rehabilitation and long term land use.

The company Boliden is operational in the area for almost 100 years and is planning to be operative for a several more decades. This means that there has to be a strong focus on sustainability and local understanding. The communities in the area are dependent on the mining industry and the city of Skellefteå is perceived as the "Gold town".

Land-use planning and stakeholder involvement is one of Bolidens most important focus areas. Both issues have to be present in all stages of operations from early exploration through operations and into rehabilitation and long-term planning for future land use.

Some of Boliden's activities on land-use planning and stakeholder involvement encompasses:

- Set aside time and make a personal commitment
- Adapt to the location and stakeholders
- Identify stakeholders and get to know each other
- Talk to each other early on and throughout the project
- Establish meeting places and informal contacts
- Arrange visits to operations
- Participating in community planning
- Annual meetings with all types of stakeholders
- Open, credible talks
- 2.2 Responsible institutions
  - Boliden Mineral AB
  - Cederwall Architects
  - Swedish University of Agricultural Sciences

### 2.3 Case stakeholders

- Local Residents
  - Communities of Interest
  - Racial, Ethnic and Cultural Groups
  - Local Community and Voluntary Groups
  - Web Based or Virtual Groups
  - Sami villages
  - Public Authorities

#### 2.4 Context

Boliden area operations are situated within traditional Sami land (Sapmi).







Bolidens strives to have an open dialogue with relevant Sami villages at all mines and development projects within Sapmi. When we conduct exploration or mining operations in northern Sweden, we always encounter the Sami community, and our interests overlap each other. Then it is important to have an open dialogue and to cooperate. Then we can build trust and find solutions that are beneficial for both sides. The ambition is that both reindeer husbandry and mining operations can be run side by side in the long term. Boliden are working together with different Sami groups in different development projects.

# Part 3: Case Evaluation

### 3.1 Impact achieved

- IMPACT 1: Increased SLO (mining remediation): Remediation plans that have acquired support by local community via participatory design process.
- IMPACT 2: SLO and improved Sami relations (co-existence of other land uses): Company projects (mining impacts on Reindeer herding) to reduce land use conflicts with nearby stakeholders dependent on reindeer herding (pollution effects on reindeer grazing and local livelihood reindeer herding)
   IMPACT 3: Increased SLO for future mining projects in the regions due to extensive and participatory community engagement in current mining operations

**3.2 Good Practice Aspects: Elements and their transferability** 

### **GOOD PRACTICE ASPECT 1:**

An Extensive and Collaborative Civic Engagement Process Developing A Rehabilitation Plan

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Independent agency facilitating the process:	A professional design and facilitation team that works as
Boliden choose a landscape design agency to facilitate a participatory design process for the planning of the	an independent agency guarantees transparency, trust and an un-biased process of the company activity.



# MinLand



rehabilitation plan. The professional design and facilitation team was able to apply a wide array of methods for participatory design. The design team was responsible to translate the stakeholder ideas, needs and civic design proposal into professional plans. However, the design team ensured transparency: They responding to the civil society on how the feedback was considered and implemented in the plans, and how they intended to continue with the design contribution of the local community and its inhabitants. (STRATEGIC CHOICE)	
Application of multi-method participatory design approach: The case illustrates, that the co-design process was consciously designed, facilitating different, suitable methods for different stakeholder groups. The Boliden engagement process was developed as a planning for real consultation. A planning tool for a real consultation approach is where the design team literally plans for real: A design studio is set up in a particular community over several days and local citizens are invited to participate in the consultation through different methods. The application of different methods provides more opportunities for inhabitants to engage, and if one type of action does not fit with personal preferences (e.g. people who do not want to speak in front of groups) or personal needs (e.g. different time slots are necessary to open participation for different groups, e.g. care activities for elderly people, children, or shift work, etc.), also including an evaluation method. The professional design and facilitation team prepared the action in both designing and facilitating the participation process as well as complementing the process with site visits/fieldwork about the Boliden mining project on local context and technical aspects concerning the post-operation treatment, a spatial analysis in order to ensure the local and technical conditions are clear. (SUCCESS FACTOR)	Use multiple methods for information and consultation with stakeholders. Specifically designed for the different categories of stakeholders and personal needs. The involvement of citizens with different backgrounds into the design process of the project, in this case remediation of old mining activities.
Early and long-term involvement of stakeholders in the process	Early and long-term involvement of stakeholders in the project



### MinLand



The participatory approach started early in the project, aiming to engage residents and create an active collaborative setting. After the initial planning phase, the whole participatory design process comprised of one year with different steps: 1. The process started with stakeholder identification and continued with information meetings, stakeholder involvement in planning and a three days event that ended up in a feedback session. Rooms were prepared with information, questionnaires and maps on the walls on which feedback could be posted.	
2. Online questionnaires were translated into six different languages to make sure to get involvement from inhabitants with different background.	
3. In addition, different events for politicians, Sami groups, NGOs and other stakeholder groups were held.	
4. A few months after these events a public meeting was held were a plan for the next steps was presented. There were additional opportunities to give feedback at the annual Boliden days.	
(SUCCESS FACTOR)	
Involving a wide range of stakeholders in the design process The participatory design process engaged local inhabitants, employees, authorities, interested parties and concerned stakeholders and payed particular	Involve a broad range of stakeholders, local inhabitants, employee's, authorities, interested parties, indigenous communities, schoolchildren. This gives the affected stakeholders a chance to voice their concerns and contribute to the project.
attention to the involvement of target groups (underrepresented groups) such as school children and indigenous communities. The co-design workshops involved 482 participants, which was complemented by 139 participants that contributed digitally (via Social Media and approx. 1400 visits of the Social Media page). For example, one of the events involved a number of activities in which that younger schoolchildren produced trees with their wishes and dreams; older schoolchildren and the inhabitants in the town Boliden were invited through different channels to a hearing process with active involvement.	



and plans showing how their ideas can be translated



into physical realities. These sketches and plans then form the basis for an ongoing conversation with the community. The community can provide immediate feedback on the plans and sketches. Such a two-way communication approach is a critical component during the planning phase. (SUCCESS FACTOR)	
Wide-spread media coverage and public outreach The participatory design project has generated a big engagement from the school kids, Boliden employees, the municipality and other residents in the society Boliden and the closest villages. The stakeholder dialogue held in November 2017 generated supportive framework conditions in a way that it "spread the word" about the project. Therefore, a lot more feedback-meetings, seminars and dialogue meetings with different stakeholders have been organised late in the project. This also led to a big interest from media (the project has been mentioned a couple of times in the local newspaper) and the municipality. (CONTEXTUAL FACTOR)	A successful stakeholder dialogue led to spreading of positive news about the project in the media
<ul> <li>Company principles for SLO – the Boliden Approach</li> <li>These are the general underlying company principles applied for the abovementioned participatory design approach: <ul> <li>Set aside time and make a personal commitment</li> <li>Adapt to the location and stakeholders</li> <li>Identify stakeholders and get to know each other</li> <li>Talk to each other early on and throughout the project</li> <li>Establish meeting places and informal contacts</li> <li>Arrange visits to operations</li> <li>Participating in community planning</li> <li>Annual meetings with all types of stakeholders</li> </ul> </li> </ul>	A process for communication and consultations has been specified before the project start – necessary with a well planned strategy from the company for a successful stakeholder dialogue



### **GOOD PRACTICE ASPECT 2:**

# Establishing and Managing Sami Relations Facilitating SLO and Co-Existence of Land Uses

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Co-existence of different land uses: re- establishment of reindeer grazing areas in rehabilitated mining areas	<b>Re-establishment of reindeer grazing areas in</b> <b>rehabilitated mining areas:</b> Research projects and monitoring activities will create better conditions for reindeer berding and grazing
Together with researchers at the Swedish University of Agricultural Sciences and the relevant Sami villages Boliden is taking new steps to learn more about re- establishing reindeer grazing areas - an important step in being able to carry out rehabilitation with added value.	
The collaboration with SLU aims to scientifically demonstrate to reestablish, for example, lichens, but also to investigate which method is best suited. Since we use land for mining areas, we also have to show that we are able to give it back as pasture land for reindeer.	
(STRATEGIC CHOICE)	
Innovative ICT applications reduce conflict with reindeer herding In collaboration with a Finnish company Porokello), Renfors Åkeri and the relevant Sami villages, Boliden will introduce a cellphone app in the Boliden area in the spring of 2019. Through the project, road safety is improved and hopefully we can reduce the number of traffic accidents where reindeer are involved. The idea is to test the system in the Boliden area and to seek partners so that the app can be made available to the public.	Innovative ICT applications reduce conflict with reindeer herding Innovative ICT and web applications enable better monitoring of reindeer movement, and, thus less road accidents and improved information on environmental pollution.
The application has been used in Finland for several years. The goal is to reduce the number of reindeer incidents on the roads by half. The service is that professional drivers and other frequent drivers register warnings about reindeer that they have observed along the roads. The warning remains for half an hour and others using the application receive the warning in real time as they approach the area.	
Boliden, in collaboration with SLU (Swedish Agricultural University) and the affected Sami	



villages, initiated a project where to find out how

### MinLand



mining operations affect reindeer and reindeer husbandry use of the pasture. The aim is to evaluate how large the disturbance zone around a mine is and how the grazing path is affected.

Since 2017, Boliden has funded GPS necklaces for participating Sami villages and SLU follows the coordinate records of the reindeer movement patterns. The long-term goal of the project is to gather new knowledge about the mining operations' impact on reindeer husbandry in a landscape where there are other land use such as forestry, wind, and hydro power, roads and infrastructure. At the same time, the method wants to give the Sami villages the opportunity to work with improved reindeer husbandry plans with the help of the reindeer herders' own knowledge and GPS positions.

### (SUCCESS FACTOR)





### **Case 3: Mertainen, Kiruna, Iron Ore Mining Project**

### This good practice case responds to Minland Good Practice Stream Topics:

C – Assessment of whether minerals and other land uses have been introduced on equal footing G – Assessment of integration of social aspects and civil society involvement

#### Permitting

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# Part 1: Case Overview

#### **1.1 Executive summary**

This case deals with an iron ore project part of the LKAB companies iron ore mining operations in northern Sweden. Particularly, aspects of competing land uses and solutions to infringement of mining operation upon other land uses.

The project was successfully granted an environmental permit, the so-called final mining permit. As such this cases focuses upon the infringement of sensitive nature, solutions to competing land uses and stakeholder interactions.

#### 1.2 Overview of Key Good Practice Aspects and suggestions

#### Good Practice Aspect 1:Weighting different land uses

- **Element 1**: Weighted the different land uses against each other in the final application for environmental permit.
- **Element 2**: The system of National Interests partly ensures the process of evaluating the different land uses against each other for optimal use.

#### Good Practice Aspect 2: Compensation measures for infringement upon areas of valuable nature





• Element 1: New practice for infringement upon areas of valuable land An important aspect here is compensation plan which includes restoration, protection and management measures for forest land and wetlands

### Good Practice Aspect 3: Carefully planned and early interaction with stakeholders

- **Element 1:** Early involvement of stakeholders prevented conflict of land use:
- **Element 2:** Public documents within the permitting and land use process: Documents handed in to the environmental Court for the basis of EIA, in Sweden are public.
- •

### Good Practice Aspect 4: Well planned industrial and mining area

• Element 1: Careful planning of construction and industrial sites: Well planned areas for location of industrial construction and industrial sites within the mining area. This is necessary for approval of environmental permit. Transferability: Necessary for future well functioning and environmentally acceptable mining.

**Element 2: High competence and capacity**. At all levels both on company scale as well on the authority side there is a high need for capacity and competence Need for capacity and competence both within the company as well as the authorities. Coupled also to environmental performance of the mine

### **1.3 Mineral resource groups:**

### X METALLIC MINERALS

X CRITICAL RAW MATERIALS – CURRENT LIST OF EU CRM 2018; Critical Raw Materials (according to EU 2017 list of CRMs)<sup>8</sup>; Iron Ore of apatite type. Biproduct apatite which also may contain small amounts of REE.

# Part 2: Case description

### 2.1 Case description

The Mertainen Iron Ore Mining project is about potential extraction of apatite type iron ore with the possibility of apatite as a biproduct. Mertainen is located in Kiruna municipality about 12 km northwest of the village Svappavaara, where LKAB has an existing mine and in pelletizing plant. The project covers an area of about 720 Ha and is owned and managed by the company LKAB that is also responsible for the Kiruna, Malmberget and Gruvberget mining sites. The LKAB iron ore production covers a lion share of the European iron ore extraction. LKAB holds three exploitation concessions concerning iron in Mertainen. An exploitation concession gives the holder the "ownership" of a proven, extractable mineral deposit for a period of 25 years, which may be prolonged.

The mineral deposit of magnetite in Mertainen was discovered in 1897. Mining concessions, according to elderly mining law, was granted in the early 1900's. In 1956-1958 about 400 000 tonnes of iron ore was mined in an openpit. A major drilling programme was performed by the Swedish geological survey in 1959-1963. In year 2000 the old mining concessions were transformed into exploitation concessions (named Mertainen K nr 1-3) according to the Minerals Act (1991:45). Further exploration work has been done by LKAB since year 2000, including a test mining of 380 000 tonnes in 2011. The Geological Survey of Sweden (SGU) declared Mertainen as a mineral deposit of national interest in 2011. Having the deposit declared as an Area of National Interest strengthens the position of the project in the general land use process as well as the permitting processes. The environmental permit required for mineral extraction under the Swedish Environmental Code was issued by the regional Land and Environmental Court of Appeal in 2014. Mining activity in Mertainen is right now on standby due to metallurgical research to obtain a high-quality iron ore product.

The location of the mineral resource is geographically beneficial in relation to LKAB's already existing processing plants in Svappavaara. Ore occurrence is large and the mineral resource is easily accessible and located near existing





<sup>&</sup>lt;sup>8</sup> <u>https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52017DC0490&from=EN</u>

road and rail infrastructure. There are no residential areas close to the planned mining site, which is also an advantage. Thus, the direct disturbance to people in the form of noise, dust and vibrations etc. is limited. Mining operations will have impacts on reindeer husbandry since the area is important in terms of providing winter grazing for reindeers. Two Sami villages are affected by the mining site; Gabna and Laevas. Mining in Mertainen will also affect areas with high nature values (being considered as important from preservation of valuable nature) and recreational opportunities in the area, such as berry picking and hunting.

The mining operations at Mertainen will use approximately 720 hectares of land for an industrial area, storehouses and auxiliary operations, but also impact wetlands, coniferous forests and mixed forests in the surroundings. Following the Land and Environment Courts approval of LKAB's compensation plan for its operations at the Mertainen mine, the company will be required to compensate for its impact on the nature values identified in an area located to the north of the mine. The ruling states that LKAB has signed an agreement to protect an area at least equal in size to the impacted area of 1220 hectares. The company's compensation plan includes restoration, protection and management measures for forest land and wetlands in an area which, without formal protection, risks being used for forestry purposes. The compensation proposal is based on the idea that the company will help create new nature values, rather than simply protecting a particular area. Among other steps, dead wood will be moved from the exploited area to the compensation area.

The Mertainen project was used as a case in a pilot project to develop a methodology for calculating losses and gains of biodiversity. A full project report "Biodiversity Offset Design – the Mertainen case study" can be found at: http://www.enetjarnnatur.se/site\_specific/uploaded\_files/55404/biodiversity-offset-design\_20140707\_final-with-front-page.pdf

http://www.euromines.org/news/newsletters/3-2016/lkabs-work-with-compensation-of-natural-resources-for-the-mertainen-site

The project has impact on national, regional and local scale: On the national level the Mertainen area is indicated as an area of national interest regarding mineral resources and as such part of the comprehensive land use system in Sweden; Regional scale, Mertainen is important for retaining future mining industry in the Svappavaara region; Local scale, mining in Mertainen impacts other alternative land use like reindeer husbandry, high nature values, recreational opportunities and forestry.

Mertainen, like all mining projects are affected the system of areas of national Interest, which includes not only minerals but also other strategic important aspects like sensitive nature, infrastructure, reindeer husbandry etc. This is always included into the decisions by the environmental court where as a result after a positive or negative decision the final land uses will be established. Below follow a short description of the system excluding the exploration part. Observe that for Mertainen, concession was granted on older practice.

#### Land use - national interests

Well known deposit which are deemed important for Sweden can be achieved a status of protection in the system of National Interests which is descried here below. This deposit is not necessarily exploited or under exploitation.

The Environmental Code contains special provisions on the management of land and water areas (Chapters 3 and 4). These provisions are designed to promote a reasonable use of natural resources in both the long and short-term from a comprehensive societal perspective. Accommodation of both preservation interests and exploitation opportunities is to be made possible. Large virgin areas of land and water, ecologically sensitive areas, and agriculture and forestry of national importance are always to be protected to the maximum extent possible. The same applies to areas of importance, e.g., for reindeer husbandry, natural beauty, cultural interest, outdoor recreation, valuable substances they contain or for purposes of national defence. These areas can also constitute national interests, in which case they must always be protected.

When an area is of national interest for several incompatible purposes, priority must be given to the purpose best conducive to long-term management of the land, except where defence interests of outstanding importance are involved. Various national governmental agencies are required to specify particulars of areas judged to be of





national interest. The Geological Survey of Sweden, for example, is responsible for the assessment of national interests in areas containing valuable substances such as minerals (i.e. mineral deposits of national interest). In addition, the Environmental Code specifies certain geographical areas that come under direct protection and are regarded as national interests for purposes of tourism and outdoor recreation. These areas are designated along the coasts, rivers and in certain mountain regions. The area protection described above, national interests included, is safeguarded insofar as palpable damage can be prevented. Measures, e.g. mineral extraction, which palpably harm a national interest are an absolute impediment to mining operations, unless the deposit in itself also constitutes a major national interest. In summary, the management provisions in the Environmental Code can be seen as a planning instrument preceding decisions on changed land use. It is also implemented and used during the permitting stages for mining.

The instrument for National Interests is a tool so that the most appropriate land use can be achieved which in some instances is mining whereas in other cases denials have been the result of the application process. Several such denials are no up on the table of the government to decide upon as the final instance for decision after appeals.

### **Exploitation concession**

Next step is an application for an **exploitation concession** which is granted by the Mining Inspectorate. An EIA is needed, but with focus on land-use issues. In the process the CAB is consulted and obliged to leave a statement whether the CAB approves of the application or not. The CAB must decide if mining is the best land use in the area. Central aspects of the judgement is if there are areas of national interest (NI:S) that are affected by mining practise. In the decision land use that promotes sustainable development should be given priority if there are NI:s that can't co-exist. The system with NI:s is regulated in the environmental code, (national legislation).

If the CAB and the Mining Inspectorate comes to different conclusions if an exploration concession should be granted or not the application must be handled by the government for final decision.

If an exploration concession is granted, the company can go on with an application for an environmental permit, either for full scale mining or for a test mine. A full EIA is needed. A test mine can be licensed before or after exploitation concession is granted. This is also the case for a full-scale mine, although the possibility is almost never used.

An application for a **test mine** is sent to and handled by the CAB. The Swedish name for the licensing authority that decides on the matter at the CAB is Miljöprövningsdelegationen (MPD). The MPD is composed of a chairman and a person with expert knowledge in the environmental matters. The chairman is a legal expert with court experience and with a special experience from environmental matters and all issues related to the environmental code. The person with expert knowledge in environmental matters has an education in the field of technology and science, and has particularly good experience in matters related to damage and detriment to human health and the environment. The MPD is a licensing authority within the CAB and not part of the authority's ordinary chain of command.

A license for a test mine is restricted in terms of the purpose of the activity. The only allowed objective for a test mine is to more thoroughly examine the properties of the ore.

### **Environmental permit**

Environmental permit for a full-scale mine is granted by the Land and Environmental court. In the whole process of opening a new mine legal practice states that an exploitation concession states that a mining operation is permissible. This means that the object of the environmental permit is to set the conditions for the mine in terms of levels of outlets, transportation, working hours etc. In the court process the CAB represents the state and public interest.

#### Designation of land (access to land)

The Chief Mining Inspector together with two trustees makes decisions on designation of land needed for a mining activity if not an agreement is reached between the concession holder and the landowners and the holders of special rights. If the concession holder agrees with the landowners and the holders of special rights, land or other space shall be designated in accordance with that agreement. Insofar as an agreement has not been reached, the land or space that is needed shall be designated.





#### **Building permit**

In the last step the a building permit according to the Swedish Planning and Building Act for facilities etc. is sought and usually granted since all aspects of the industrial area location has been overviewed and accepted from environmental perspective in the Environmental permit. Mining Operations

### 2.2 Responsible institutions

Institution 1: The Swedish Mining Inspectorate – grants prospecting rights for concession minerals and concession for mining.

Institution 2: The County Board of Norrbotten – responsible for nature protection and Sami land use issues.

Institution 3: Swedish Environmental Protective Agency – responsible for nature protection.

Institution 4: The Environmental Court – rules upon the environmental permit and as a consequence of the EIA in practice decides upon final land uses also

Institution 5: Municipality of Kiruna – grants building permits, responsible for land use planning

Institution 6: National Board of Housing, Building and Planning coordinates all areas of national interest Institution 7: Swedish Transport Administration – responsible for roads in the Areas of National Interest (the project is located next to a major highway).

Institution 8: Geological Survey of Sweden – responsible for Minerals as Area of National Interest and expert authority on ground water.

### 2.3 Case stakeholders

LKAB – Mining Company – the company responsible for the project.

Local community- local people affected by the mining in the area.

Naturskyddsföreningen I Kiruna - Environmental NGO focused upon conservation of nature and habitats.

### 2.4 Context

The Mertainen mining project can partly be seen as a case illustrating Swedish mining policy and practice. Particularly the part regarding the so-called final mining permit, i.e., the environmental permit. Here the land use aspects are one of the decisive factors so therefore the project directly couples to the system of National Interests, e.g., reindeer herding, valuable nature, infra structure (major highway E10), and valuable minerals. The different elements can be seen as separate but are in practice part of a system, a holistic system in fact. Wherefore, a change in the functionality of a single part of this complex system may interrupt the way from finding , prospecting, a mineral deposit, to exploration, to all necessary mining permits. Impacts from European Directives, e.g., habitats and species and Natura2000, could impact the system since land affected by these may have a stronger position the determination of which land aspects should be valued since the value these have are often higher than any other land uses. The Swedish system has two levels of land use.

- One the so-called comprehensive land use, is a strategic land use which is covers the Area of National Interests including minerals.
- The other is the detailed land use which is the final land use. The Natura2000 areas are often considered equal to the detailed land use planning whereas the minerals are not in the system of national Interests. The mining can after being granted permits reach this level of land use.

The value of the minerals is raised in several stages, firstly with the prospecting license which gives the permit holder right to explore, secondly with the concession, which is the first stage toward a mining permit, which give the deposit an even stronger position, often with a an area of national interest, thirdly after the being granted the environmental permit, which in effect ensures the land use for mining and also will lead to being granted a building permit.





Value chain: The context of the value chain shows the importance of the LKAB iron ore mines. The current project covers a number of steps in the value Chain analysis:

- 1. Firstly, policy how the mining permit is achieved.
- 2. Secondly if mining commence the mine will produce ore that will support both economical, from the profit, Sweden as country, large part of the turnover stays in Sweden from national to local level and part of the product is being used by companies at regional level. In all the mining supports a significant portion of the economy as well as employment of the local work force.
- 3. Thirdly, part of an ecosystem for mining: The Swedish mining companies have easy access to the mining industry equipment providers like Sandvik and Epiroc leading to use of equipment that can be used in extreme environments such as Kiruna which is situated at the edge of the tundra of northern Europe's Caledonian mountain chain with winters normally about seven months long with extreme cold at the surface. The Kiruna Iron ore products are today mostly sold abroad and part of the produce is sold to the local steel mill SSAB in Luleå. Part of the produce is also supplied to Europe. The Kiruna town is also one of the wealthiest northern cities in Sweden with the largest population of any municipality outside of the Baltic Coast in Norrbotten and Västerbotten Counties. A close connection to the local technical University of Luleå helps to keep a high level of education among the work force as well for development necessary covering diverse areas from technology to social acceptance.

# Part 3: Case Evaluation

### 3.1 Impact achieved

Impact 1: All necessary permits granted in order to start mining.

Impact 2: **Mining activity weighted as the major land-use** since the mining activity as a form of land-use was weighted high in the final decision from Environmental Court in comparison to infrastructure (major road), valuable nature and areas for recreation. The area is also a reindeer herding area for which resolution was reached with the stakeholders before application to environmental court.

Impact 2: Methodology for compensation measures for infringement upon sensitive areas. The case presents a new practice in compensation of infringement upon areas of high nature values and water protection areas. Areas are established to replace areas affected by the mining.

Impact 3: Prevention of stakeholder conflict: Stakeholder conflicts avoided due to a strategy of early involvement.

### **3.2 Good Practice Aspects: Elements and their transferability**

GOOD PRACTICE ASPECT 1:	
Weighting of Different Land-Uses	
Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Element 1: Weighted the different land uses in the permitting process. In decision for the final mining permit, the environmental permit. land uses such as infrastructure development, nature protection, forestry, reindeer herding, were evaluated according to all pillars of sustainability and optimal use. This decision forms the final land-use since the land use for mining was weighted higher than the other land uses though with some provisions, e.g., based on a holistic view of weighting different land uses (	A the decision process, here within the permitting, are including tools (the system of National Interest) and decisions (the granting or denial of the permits) on how to weight different land uses. The Swedish process is that the final permitting, the environmental permit, is decided at the environmental court as the formal part of last step of the process. As a supporting tool the system of National Interests is being used.



Element 2. The system of National Interests partly ensures the process of evaluating the different land uses against each other for optimal use. However, built into the system is that certain land uses such as Natura 2000, due to EU directives, have a very strong position. In order to weigh the different land uses a holistic approach to the use and consequences need to be taken. Here it is presented how impacts are minimised and compensated for. This is also heavily coupled to the stakeholder engagement (see Good Practice Aspect 3). The impacts of all land uses was considered and important was that impacts on other land uses were minimised to an acceptable level. See infringement upon sensitive nature and stakeholder interactions (Good Practice Aspect 2). In this view the whole planning of the industrial complex as well as remediation was considered.

### **GOOD PRACTICE ASPECT 2:**

### **Compensation Measures for Infringement Upon Areas of Valuable Nature**

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Element 1: New practice for infringement upon areas of valuable land: Compensation measures, within the economy of the future mining project, can be a solution for mining when impacting on other land uses such as sensitive nature. Particularly in this case other land that used by the mining operation has been supported and set aside for nature conservation purposes.	In case of infringement upon other land uses or land aspects like sensitive nature, other land can be set aside as a compensation measure.

### **GOOD PRACTICE ASPECT 3:**

### **Carefully Planned and Early Interaction With Stakeholders**

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Element 1: Early involvement of stakeholders prevented conflict of land use: The stakeholder interactions should be started as early as possible with relevant information in order to minimise conflicts or solve conflicts as well as for building	Early in the project, stakeholder interactions should be initiated.



### MinLand



<ul> <li>solid stakeholder interaction used in the EIA as always positive. However, in current practice form the mining companies certain stakeholder interactions are done outside of the EIA and some stakeholders. Like the SAMI the mining companies are often in continuous contact also after granted mining permits since the operation of the mines may affect the stakeholders.</li> <li>The company worked preventive in seeking solutions with land use from reindeer herding leading to no conflict in the final application part at the environmental court. Impacts were carefully detailed and suggestions and solutions to these were a part of the work and contact. Early involvement with stakeholders in a well weighted procedure. There are two parts here: <ol> <li>Stakeholder interaction necessary for the EIA.</li> <li>Additional stakeholder contacts for building trust and acceptance.</li> </ol> </li> </ul>	
<b>Element 2: Public documents within the permitting</b> <b>and land use process:</b> Documents handed in to the environmental Court for the basis of EIA, in Sweden are public.	All documents pertaining to land use and permitting should be made public.

# **GOOD PRACTICE ASPECT 4:**

# Well Planned Industrial and Mining Area

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Element 1. Careful planning of construction and industrial sites: Well planned areas for location of industrial construction and industrial sites within the mining area . This is a necessary part in achieving a positive verdict is a very carefully planned mining area that is shown to minimise impact upon e.g., sensitive nature. Careful planning is essential in order to have acceptance for infringement and minimise impact and compensation measures upon other land uses, in this case sensitive nature. It is important for environmental perspective that the location of the industrial facilities, particularly the tailings pond, is constructed and put into the land so as to minimise environmental consequences.	Careful land-use planning of the industrial area leads to improved environmental performance and will lead to easier approval of the environmental permit.







**Element 2: High competence and capacity**. At all levels both on company scale as well on the authority side there is a high need for capacity and competence both within the company as well as the authorities. Coupled also to environmental performance of the mine.

Sufficient competence and capacity is necessary for qualified planning of the industrial area. This was also one part within the local WS where it was deemed equally important at authorities also.







# Case 4: Mining-environmental planning in the West Ribera del Ebro This good practice case responds to the integration of minerals and land use planning policy

### MinLand Good Practice Stream Topics:

### A – Data assessment and use in policy formulation and land use planning B – Identification of actual and potential land uses

C – Assessment of whether minerals and other land uses have been introduced on equal footing

### D – Assessment and extent of integration between minerals and land use policies

### H – Assessment of strategic consideration of safeguarding

### Permitting

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# Part 1: Case Overview

### 1.1 Executive summary

This case is mainly addressed to the following MinLand Good Practices Topics (defined in deliverable 6.1): A. Data assessment and use in policy formulation and land use planning; B. Identification of actual and potential land uses; D. Assessment and extent of integration between minerals and land-uses policies; H. Assessment of strategic aspect consideration (protecting mineral resources/safeguarding).

The case study is located in the area of Ribera del Ebro (Navarra, North-East Spain), being one of the European regions which have highest aggregates consumption (it is the only Spanish region with an aggregate consumption above the European average). Thus, pressures on the environment due to aggregates exploitation are high as well as the occurrence of conflicts with agriculture and transport infrastructures.

The **mapping of potentially exploitable mineral resources** is the starting point for the integration of mineral resources in Land-Use Planning. Its main objective consists is the establishment of a balance between the environmental sensitivity to mining, and the potential for the development of this activity. The result of this assessment is the **Mining-Environmental Planning Maps**, which show categorized areas of exploitable resources (with different levels of priority) as well as environmental protection areas.

### 1.2 Overview of Key Good Practice Aspects and suggestions

### Good Practice Aspect 1:

• Enhancing mineral resources knowledge for land use planning and use in policy formulation. Main key elements for transferability: impress on mining authorities the importance of developing their own mining strategies. Availability of professionals with appropriate training and experience.

### Good Practice Aspect 2:

• Development of tools and procedures for the assessment of actual and potential land uses in order to reduce conflicts within extractives industries. Development of the Mining-environmental planning map which includes a territorial zoning proposal (based on the aptitude for aggregate extraction and the carrying capacity of the territory). Key elements for transferability: enhancement of the involvement of





responsible institutions and other stakeholders (environmental authorities and land-use planning authorities); Inclusion of regional and local associations in this process as consulting entities. Good Practice Aspect 3:

• Integration of mineral resources into land-use planning for mineral resources safeguarding. The development of the Mining-environmental Planning Map, with the definition of a territorial zoning proposal (consistent with the mineral resources, environmental and land-use planning regulations and policies), would improve the decision making process related to the integration of mining activity and other land uses. Key elements for transferability: enhancement of the coordination among responsible institutions and other stakeholders; Inclusion of mining authorities in the development of regional and Local Land Use Plans (similarly to what happens with other sectors).

### **1.2** Mineral resource groups:

X AGGREGATES;

# Part 2: Case description

### 2.1 Case description

The case study is located in the area of Ribera del Ebro (Navarra, North-East Spain). Navarra is one of the European regions which have the highest aggregates consumption in Spain. This Spanish autonomous region is a net importer of aggregates; currently, it is the only Spanish region with an aggregate consumption above the European average (despite the crisis in the construction sector). Thus, pressures on the environment due to aggregates exploitation are high. Due to the proximity of the exploitation areas to the rivers (a common concern in many parts of the world), the occurrence of land-use conflicts with agriculture and transport-infrastructure is very likely. In addition, in Navarra, the agri-food sector is one of the most important engines of the economic development of the region, both in terms of agricultural production (origin-protected vegetables), as in weight of the industrial sector oriented to the packaging and transformation of agricultural production, and the wine industry.

In the early phase of the environmental mining land use assessment in Ribera del Ebro, a territorial analysis was performed, including an environmental inventory (geology, geomorphology, physiography, hydrology, hydrogeology, climate, soils, vegetation, fauna, land uses), an inventory of the exploitable resources, an analysis of the visual incidence and the impacts on landscape, and a socio-economic and cultural heritage studies. Mining activity was also assessed by means of a technical and environmental characterization, including an inventory of the mining operations. A territorial diagnosis was also carried out. The final results included: a territorial zoning proposal, a mining and environmental planning map, and the definition of exploitation and restoration criteria and models.

The mapping of potentially exploitable mineral resources can be a valuable tool as a starting point for the integration of mineral resources in the Land-Use Planning process. However, there are other important variables that should be considered, in order to select an appropriate location for mining. The principal work consisted of: the establishment of a balance between the environmental sensitivity to mining, and the potential for the development of this activity. The main objective was to perform Mining-Environmental Planning Maps. The aforementioned maps show areas with different categories of exploitable resources and environmental protection zones in which mining is not recommended and exploitable areas with different levels of priority. For the realization of the Mining-Environmental Planning Map the following activities were required:

- An environmental inventory: study of the physical and socioeconomic environment.
- An analysis of the mining activity: collection of data from active and abandoned quarries in field templates.
- A geological-mining research and a Territorial diagnosis



The information and thematic cartographies generated constituted the so-called "environmental inventory". Also geological and mining characterization of the potentially exploitable resources, together with their geographical delimitation in a "resources map", is obviously important. A technical and environmental characterization of the mining operations (active, inactive and abandoned), called "analysis of the mining activity" was also carried out in order to identify the environmental problems that these activities induced.

Finally, a model of Mining-Environmental Planning of the territory was developed. This model includes the mapping of zones and the definition of suitability categories for mining. These zones were defined on the basis of criteria such as the capability of the territory to accept the mining activity, and other considerations such as the legal status of the land, applicable sectorial regulation, protection of the population and the norms that protect exceptional environmental and cultural elements, as well as the possibilities for the recovery of the foreseeable degradations. All of them were grouped into "exclusion criteria" and "conditions for extractive activity", respectively. This was done using Geographical Information System (GIS), having a systematic and easily reproducible character.

### **Environmental inventory**

The first step of the work consisted of the collection of environmental information in order to configure the environmental inventory.

The abundant graphic information (orthoimages), cartographic and written information available was compiled and analysed, selecting the most interesting and useful criteria for the environmental inventory. The collaboration between the Geology and Geotechnical Service of the General Directorate of Public Works of the Government of Navarra, the Soils and Climatology Section of the Agricultural Structures Service of the Department of Agrarian Resources of the Government of Navarra, as well as the Hydrographic Confederation of the Ebro was an important factor in enabling a successful process of establishing the environmental inventory. The collaboration of the Prince of Viana Institution, attached to the Department of Culture and Tourism of the Government of Navarra, was also of great value for the process.

From the cartographic information, a series of maps created ad hoc for the assessment and diagnosis, were performed: Map of Potentially Exploitable Mineral Resources, Hydrogeological Map, Map of Floodplains, Map of Soils, Map of Land Uses and Map of Territorial Affections.

### Analysis of the mining activity

Additionally, an analysis of the mining activities was developed in pursuit of characterise specific intrinsic features of the mining sector in the target area.

All the quarries recognized in the area, with one exception, were located on the fluvial terraces of the Ebro and Ega rivers, except one. From the lithological point of view, were located over heterometric gravels of well-rolled limestone and, to a lesser extent, quartzite, sandstone and microconglomerate, with variable contents in sandy and sandy-silty matrix. The thickness of the terrace levels was of the order of metric to decametric and the gravel pits had exploitation fronts with heights between 2 and 30 meters.

As the materials are generally poorly consolidated and lightly or not cemented, the extraction is done by a front loader or backhoe loader. The use of the extracted materials as aggregates usually required only a sieving at the quarry, with washing being carried out on rare occasions to raise the appropriate quality and value of the materials.

Most of the active quarries in the exploitation areas did not have aggregate treatment facilities beyond screens. The extracted aggregate was taken to facilities that companies had in a nearby place, often occupying old exploitation pits.

A map of surfaces affected by aggregate exploitations was made. This map showed zones of different status of the land affected, depending on whether the exploited area was simply abandoned or was rehabilitated and a new use of the land after abandonment was implemented.

### **Geological-mining research**

The main objective of the Geological-Mining research was to perform the geological characterization and to assess the exploitability of the resources, defining different types or varieties of potentially exploitable resources, as well



as their geographical delimitation. The cartographic result of this research was the Map of Potentially Exploitable Resources. In this territory a high quality geological and geomorphological cartography existed on a very detailed scale (1:25,000). This map was obtained in a simple way, by means of the simple selection of suitable geological formations.

It is common to consider that the mining potential of a deposit of natural aggregates depends on the following factors: thickness and variability of the overburden; thickness and extension of the resources; physical, chemical and mineralogical properties of the resources; accessibility of the deposit; availability of sufficient quantity of water, and depth of the water table. The factors referring to the physical, chemical and mineralogical properties of the resource of the resource and to the availability of water cannot be considered with the information available at the scale 1:25,000.

The aggregate extraction sites were almost always separated from the places where the treatment facilities were located, which eliminated the problem of water availability at the points where the gravel pits were located, while centralizing in more favourable points, the water supply. Finally, the accessibility was not an element that allowed discerning different classes in the work area. In addition, the concentration of aggregate treatment facilities at generally very accessible points minimizes the importance of this factor in the work area. In addition, the concentration of aggregate treatment facilities at, generally, very accessible points minimized the importance of this factor in the work area.

It was judged that the most determining factors from the point of view of the analysis of the potential or aptitude of the territory for the production of natural aggregates in the work zone were:

a) Quality or parameters of the material (size, degree of cementing and content of fines).

b) Thickness and extension, which defined the form and the volume of the resource.

c) Water table position. In addition to the constrains for the exploitation, an environmental imperative stipulates that the exploitation is only feasible up to one meter above the water table. Thus, where the position was higher, the exploitable power decreases in practice.

These parameters were deducted from the geological and hydrogeological cartographies, the existing geophysical data, observations made in the field and from the data collected in the visits to the active and inactive quarries.

Through the joint consideration of all the elements mentioned above, and their geographical distribution, four categories of aptitude for the extraction of aggregates were established and mapped: low aptitude, medium aptitude, high aptitude and very high aptitude.

### Territorial diagnosis and mining-environmental planning map

Once the abovementioned information had been compiled, the territorial diagnosis conducted as a starting point for establishing **mining-environmental planning map**. The ultimate purpose of the territorial diagnosis was to determine the capacity of the territory to support the exploitation of aggregates (carrying capacity for aggregates mining). For this purpose, an analytical type assessment was carried out, consisting of an individualized evaluation of the most relevant elements of the environment: mining geology, fluvial systems (including river beds and banks), flood areas, groundwater, soils, current vegetation, wetlands, fauna, land uses, settlements and infrastructures, archaeological sites and other territorial factors. Regarding the visual impact, given the soft relief of the area especially in the areas of greatest interest, the scale of work was insufficiently detailed to highlight the unevenness of the terrain with clear effects on the visuals that could be established between points with high visualization potential and areas of interest for the exploitation. Therefore, it was not possible to incorporate more criteria for zoning, on the basis of visual incidence.

One of the main objectives of the territorial diagnosis was the identification of the most valuable or vulnerable environmental elements, in order to guarantee their preservation or to minimize a foreseeable impact. Within the study area, the following elements were analysed, in risk terms, due to their high conservation value or to their high vulnerability in the face of a future mining exploitation: Points of Geological Interest, Groundwater, Channels and banks of the rivers, wet areas, Flooding areas, Best soils, Vegetation and fauna, Cultural heritage, Urban areas and road and agricultural infrastructures.





The aptitude was rated as "Very high" in certain places in the work area. Formally, and to handle homogeneous scales, it was considered that the aptitude was "Very low" in all those geological formations that were not considered as possessing potentially exploitable resources, as well as in all those elements of the natural and cultural heritage of unquestionable value, often already protected.

Finally, the capacity of the territory to receive the mining activity was determined by applying an impact/aptitude model, that is, a balance between the vulnerability or the fragility of the environment before the extraction of natural aggregates and the aptitude or potential of the territory to support this activity.

The criterion adopted by consensus among the members of the drafting team was to exclude for the exploitation of natural aggregates those surfaces in which the carrying capacity was qualified as "Very low". Also, many of the areas to which this carrying capacity was assigned were already protected by legislation or planning normative. These surfaces were designated as "Non-Exploitable Zones" in the Mining-Environmental Planning Map, and were detailed in the Map of Excluded Surfaces for the Exploitation of Natural Aggregates.

Among the excluded areas were those that represented infrastructures or surfaces in which the current use of the land is basic for the normal development of the activities of the population, that is to say, housing zones and productive areas (roads, industrial areas, towns and irrigation infrastructures). In addition, the zones for the protection of the cultural or natural heritage were also determined as not exploitable. The areas referred to the protection of riverbeds and riverside vegetation were also excluded. All the surfaces excluded with cartographic representation were grouped in Environmental Protection Areas (areas were the capacity for the extraction of aggregates was considered very low). Low and medium aptitude surfaces with strong environmental limitations were also added.

In addition to the areas excluded for exploitation described above, the following land use planning categories were defined:

- Priority 1 Areas: surfaces with high or very high aptitude for the extraction of aggregates, in which no valuable or protected environmental elements were detected, nor basic elements for the normal development of the activities of the general population, nor located in flood zones for a return period of 50 years. These areas had a "High" or "Very high" reception capacity.

- Priority 2 Areas: surfaces with a "medium" aptitude for the extraction of aggregates, in which no valuable or protected environmental elements were detected, nor basic elements for the normal development of the activities of the general population, nor located in flood zones for a return period of 50 years. These were surfaces with high or very high aptitude, fulfilling all the previous constrains except that they held soils with high agrological value. These areas were determined to have an "Average" reception capacity. The extractive use could be considered compatible with conditions.

- Priority 3 Areas: surfaces with low aptitude for the extraction of aggregates, in which no valuable or protected environmental elements have been detected, nor basic elements for the normal development of the activities of the general population, nor located in flood zones for a return period of 50 years; surfaces with medium, high or very high aptitude, fulfilling all the previous constrains except that they were located in flood zones for a return period of 50 years, and might affect soils with high agrological capacity; surfaces with high or very high aptitude located within the delimitation of habitats of Community Interest. These areas were determined to have a "Low" reception capacity. The extractive use could be considered compatible with strong environmental constrains.

At the date on which the case study was being performed, the Regional Land-Use Planning of the Ribera del Ebro Zone (POT5) was being changing and developed. It was a great opportunity to include the results achieved in the case study in the Land-Use Planning and this was the final objective of the case study. The results of the project and the zoning proposal were directly applicable to the Regional Land-Use Planning as all the land-use categories and protection figures were consistent. Nevertheless, unfortunately, this did not occur, due to a lack of coordination between the institution that commissioned the case study to the IGME and the Regional Land-Use Planning authority. The real impact achieved was limited due to the lack of consideration of the results of the case study on the part of the Land-Use Planning authority and, finally the results were not included in the Land-Use Planning of





the Ribera del Ebro Zone. Nevertheless, the results of the case study are a useful tool for the Mining Services in the permitting process of new mining projects in the study area.

### **2.2** Responsible institutions

- Department of Innovation, Enterprise and Employment of the Government of Navarra (the Mining Service specifically). It is the regional mining authority. It is the responsible for granting mining permits in its territory (except for mining projects located in two or more Autonomous Communities. The Regional mining authority has competence in the development of legislation and enforcement of the mining regime and the power for establishing mining policies and performing regional mining strategies (that is not the case of Navarra, which does not have adopted a Regional Mining Strategy). This institution ordered the elaboration of the Mining-environmental planning in the West Ribera del Ebro to the Spanish Geological Survey. Furthermore, this Mining Service helped in the elaboration of the environmental inventory providing valuable information as well as requesting the involvement of stakeholders in this regard. It shall also be responsible for applying and/or disseminate the results obtained.
- Spanish Geological Survey (IGME SP). National Public Research Institution. In the project, it was responsible for performing the assessment of potentially exploitable mineral resources, the mining-environmental planning and the zoning proposal with different levels of priority for the mining activity. The main objective for institution was the elaboration of the Mining-Environmental Planning Maps, being in charge of the execution of the mining land use planning tasks related.

#### 2.3 Case stakeholders

In addition to the above institutions:

- Regional Land-Use Planning authorities. It is the responsible authority in land-use planning. On the regional level, Regional Plans and Guidelines are developed and implemented. Those plans are mostly strategic policies and guidelines that are coordinating the spatial development and land-use system on regional scale. Land-use planning also establishes land-use categories. For example, in the Autonomous Region of Navarra regional planning includes: the Territorial Strategy, Regional Land-use Plans and Territorial Action Master Plans. Theoretically this organism coordinates the land use planning policies at regional level, therefore must be the final recipient of the whole work.
- Regional Environmental Authority. It is responsible for granting environmental permits and establishes the Regulations of Natural Resources Plans. Its competences were focused in validating the final product regarding the environmental aspects.
- Local Land-Use Planning authorities. On municipal level, Municipal Urban Master Plans are guiding the spatial development. They are comprehensive plans that are regulating the land-use and setting the permitted land -use for the municipal territory that are legally binding for land-owners. Development Plans are detailed land-use plans. At the final stage (after mining and environmental permits are granted by the regional authorities), the mining operators must to obtain an Activity permit that is granted by the local Land-Use Planning authority. Since a legal land-use figure for mining activity does not exist, the local Land-Use Planning authority has got the final decision about changing (or not) the previous land-use category for allowing mineral extraction in areas which it was not possible previously. They role must be theoretically limited as consultative body but, due to the acquired competences, became the second main receiving agent of the final results.
- Mining companies. Considering the conflictive situation regarding mining activities they should be the main group of beneficiaries for the application of the Mining-environmental planning process. Additionally, they intensively collaborated providing information useful for the environmental inventory and for the analysis of the mining activities in the area
- Regional and local associations (mainly environmental NGOs and agricultural associations). They should be the second group of beneficiaries assuming that, despite they were in an advantageous position, their interest would be even more protected after the application of the Mining-environmental planning process.





#### 2.4 Context

As mentioned above, the high aggregates consumption resulted in pressures on the environment and the occurrence of conflicts with agriculture and transport infrastructures. Conflicts with the agri-food sector were extremely important for authorities due to its great importance as one of the most important engines of the economic development of the region.

The mining activity, and the mining operators, faces with a decentralised system, both in mining and land-use permitting processes. At the end, the permits are granted (or not) in a case-by-case basis.

The final decision about land-use falls on the municipalities. In general, safeguarding mechanisms for the protection of mineral deposits for the future do not exist and only few municipalities in Spain contemplate the mining use in their land-use planning. At the final stage of the permitting process (after mining and environmental permits are granted by the regional authorities), the mining operators must to obtain an Activity permit that is granted by the local Land-Use Planning authority. Since a legal safeguarding protection figure for the mining activity does not exist, the local Land-Use Planning authority has got the final decision about changing (or not) the previous land-use category for allowing mineral extraction in areas which it was not possible previously. This situation is aggravated by the lack of any Mineral and Mining Strategies. National and Regional Mineral Strategies become essential tools that establish the needs for mineral resources. Within the framework of Mineral Strategies, the integration of mining use in land-use planning makes sense.

Additionally, the Regional Mining Authority has competence in the development of legislation and enforcement of the mining regime and the power for establishing mining policies and strategies (but in the case of Navarra, a Regional Mining Strategy does not yet exist). Regional mining authority is also responsible for granting mining permits (in coordination with the regional Environmental Authority, responsible for granting the environmental permit).

Regarding land-use planning, the Autonomous Communities perform land-use planning laws and land-use planning policies and tools, establishing a land-use planning system for their territories. These include the implementation of restrictions and requirements on the municipal level (e.g. for implementation of protected areas). Most regions have established hierarchical, cascading planning systems based on compliance with up-streamed planning content. Due to the constitutional law, municipalities are the main actors and stakeholder in the Spanish land-use planning system. They are responsible for the preparation and adoption of local plans and strategies (with varying content and level of detail in different regions). Depending on the size, the municipalities adopt basic Master Plans that include land-use plans; it can happen that very small municipalities do not adopt Master Plans; hence their spatial development is governed by plans made on regional/provincial level (Subsidiary Regulations). Thus, decision making on land-use is mainly located on local and regional level.

In general, safeguarding mechanisms for the protection of mineral deposits for the future do not exist. The Municipal Urban Master Plans regulate the land-use and set the permitted land -use for the municipal territory that are legally binding and only few municipalities in Spain contemplate the mining use in their land-use planning. At the final stage (after mining and environmental permits are granted by the regional authorities), the mining operators must to obtain an Activity permit that is granted by the local Land-Use Planning authority. Since a legal safeguarding protection figure for the mining activity does not exist, the local Land-Use Planning authority has got the final decision about changing (or not) the previous land-use category for allowing mineral extraction in areas which it was not possible previously. In fact, the only link between the policy streams of mineral resources and land-use planning is the obligatory Activity Permit that is necessary to obtain a mining license. Activity Permits are issued on the municipal level and, usually, entails permitting a new land-use that is different to actual one. The Activity Permit is the final stage of the permit procedure, after having obtained the mining and environmental permit. That is the case of Navarra.

All these aspects show a complicate framework for the development of the mining activities. Thereby, mining authority resolved which it will be necessary to find a way to integrate the geological and mining interests in the established land use planning. The Spanish geological survey decided to perform a Mining-environmental planning



based on the mapping of potentially exploitable mineral resources as a starting point for the integration of mineral resources in the Land-Use Planning process (developing a line of work itself called Mining-Environmental Planning of mineral resources). The main objective was to perform Mining-Environmental Planning Maps, which must show areas with environmental protection figures (in which mining is not recommended) as well as exploitable areas with different levels of priority.

The case study represents an application of this line of work to the aggregates resources of the Ribera del Ebro in Navarra, as part of other works included in a Master Plan for Mining Activities of the Autonomous Community of Navarra. This kind of approach would enhance the development of mining strategies that integrate socioenvironmental and planning aspects and regulations, being completely consistent and easily implemented with the regional land-use planning categories. Furthermore, the option of choosing, at the very beginning, the best location for the mining activity (under this integrated approach) would enhance the environmental permitting process and the decision making process for the integration of mineral resources in land-use planning. Since the governance framework is similar for the rest of autonomous communities, this methodology could be completely extrapolated to any other part of the Spanish territory.

However, the lack of coordination and information exchange between responsible authorities (regional Mining Authority, Regional Land-use Authority and Municipal Land-Use authority) entails a real challenge, and it is the key point (together with and appropriate knowledge about the mineral resources and mining activity) in the way of establishing safeguarding figures for mineral resources.

# Part 3: Case Evaluation

### 3.1 Impact achieved

- High involvement of the institutions and mining companies implicated (specially providing useful information related to the case study
- Increased knowledge of the mineral resources of the area as well as better understanding of features of the mining sector and issues related for responsible institutions and stakeholders
- Development of the potentially exploitable mineral resources map as a starting point for the integration of mineral resources in the Land-Use Planning process
- Huge set of complete and valuable environmental information data (including soil quality at a detailed scale) which is available to institutions and to the general public after publishing the results of the mining-environmental land planning works
- Valorisation of cultural and environmental heritage (implied to the mining-environmental land-use planning) which was useful for the mining authority and very instructive for mining companies
- Establishment of safeguarded areas of mineral deposits (consistent with the mineral resources, environmental and land-use planning regulations) through the Mining and environmental Planning Map
- Knowledge about the aptitude for mineral resources extraction and the carrying capacity of the territory as starting point of the definition of Mineral and mining Strategies
- Establishment of a basis for simplification of the mining and environmental permitting processes
- A mining-environmental land use planning methodology directly exportable to the national territory
- Enhancing of decision making process related to the integration of mining activity and other land uses (balance between the environmental sensitivity to mining, and the potential for the development of mining activity). The "Mining and environmental Planning Map" becomes a tool that directly could lead to determining safeguarding categories for mineral resources.

3.2 Good Practice Aspects: Elements and their transferability



### **GOOD PRACTICE ASPECT 1:**

# Enhancing Mineral Resources Knowledge for Land Use Planning and Use in **Policy Formulation**

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Elaboration of Potentially Exploitable Resources Maps: The first step to involve regional authorities on the idea of integrating geological and mining aspects in the land use planning processes requires that they realize which geological resources are available in their territory. In that vein this element would be helpful in order to impress on mining authorities the importance of developing their own mining strategies. Map of Potentially Exploitable Resources is a helpful tool in order to transmit directly and clearly this point. Geological characterization and assessment of the exploitability of the mineral resources, defining different types or varieties of potentially exploitable resources, as well as their geographical delimitation is required. The cartographic expression of this research is the Map of Potentially Exploitable Resources. SUCCESS FACTOR	The works must be carried about by professionals with appropriate training and experience and based on scientific data. It would be necessary to implicate authorities, stakeholders and especially mining companies which usually have better knowledge regarding mineral resources on the area. The transferability could reach different levels of successful depending mainly on the previous existing geological and mining information and the willingness to cooperate by involved actors sharing information
<b>Availability of Information:</b> The elaboration of Mining-Environmental Planning Maps (including Maps of Potentially Exploitable Resources) is only feasible when enough information is available or can be acquired at the specific working map scale. The need for information and thematic cartographies of the different elements that make up the natural and socioeconomic environment, in order to acquire a greater knowledge of the characteristics of the territory, was noteworthy. <b>CONTEXTUAL FACTOR</b>	Key point for transferability would include: finance a mapping process to collect data (from various ministries and actors) and to group such data according to different land-uses (in order to avoid land-use conflicts).
Willingness to cooperation by involved actors: It is also important to consider the will of the stakeholders (and even the mining companies themselves) for sharing information which even may be sensitive in some cases (nesting areas, economically strategic outcrops, archaeological sites, etc.) which probably will be available to public.	The proposal for transferability would entail the development of a process of information exchange and collaboration. The working group should be set up by both mining and land-use planning authorities (they would be responsible for calling the stakeholders) which, additionally, should lead and manage the group. The mapping process needs to bring actors together.







### **GOOD PRACTICE ASPECT 2:**

# Development of Tools and Procedures for The Assessment of Actual And Potential Land Uses in Order to Reduce Conflicts Within Extractives Industries

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Development of the Mining-environmental planning map: The Mining-environmental planning map is a cartographic zoning proposal whose main aim is to select the best location for the mining activity having had previously into account the Potentially Exploitable Resources Maps as well as all the socio-environmental and legal (environmental, mining and land-use planning) constrains. This map includes different categories as "Non- Exploitable Zones" and "Exploitable Zones". These categories were performed based on prioritisation criteria attending to the aptitude for the extraction of aggregates and the carrying capacity. This categorization must be consistent with the mineral resources, environmental and land-use planning regulations. Thus, this methodology could be the starting point of the definition of Mineral and mining Strategies, and would help to simplify the mining and environmental permitting processes SUCCESS FACTOR	The zoning works must be performed attending to strictly objective criteria; The results must be necessarily endorsed by authorities. Stakeholder's perception regarding the results must be considered to the extent possible. It would be also important to consult regional and local associations Due to similarities in the governance framework, this aspect may be directly transferable to any other region of the Spanish territory by adapting specific issues to the socioeconomic, environmental and mineral resources reality
Issues regarding the zoning criteria employed: Since there are diverse actors involved (with different interests) in the assignment of land uses, pressures regarding the modification of the results may arise CHALLENGE ENCOUNTERED	It is necessary to point out again that zoning works must be performed attending to strictly objective technical criteria commonly-agreed by the actors involved in order to allocate specific weights to the different land uses. These criteria must be as clear as possible for every authority and stakeholder involved. Thus, an intense work of coaching, in this regard, would be likely necessary





### **GOOD PRACTICE ASPECT 3:**

# Integration of Mineral Resources into Land-Use Planning For Mineral Resources Safeguarding

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Integration of mineral resources in land-use planning policies: Results of the Mining-environmental map are based on a balance between the environmental sensitivity to mining and the potential for the development of mining. In addition, the zoning proposal is consistent with the mineral resources, environmental and land-use planning regulations and policies Thus, integration of mining activities in land use planning has been unquestionably improved in a framework of mineral resources safeguarding. The "Mining and environmental Planning Map" becomes a tool that directly could lead to determining safeguarding categories for mineral resources (provided that the generated product is finally used in land use planning proceedings) SUCCESS FACTOR	It would be important to include the mining sector (professionals from the mining authorities) in the development of regional and local Land-Use Plans similarly to what happen with other sectors (e.g. responsible institution for hydrologic planning or civil infrastructures) On the other hand, the perspective of authorities related (mining authorities, environmental authorities and local administration) should be taken into account in the process as well as be fully informed of results through periodically briefing, establishment of follow up commissions, etc.
Effective coordination and information exchange among responsible institutions: key element in this point is the enhancement of the coordination and information exchange among responsible institutions and other stakeholders (environmental authorities and land-use planning authorities), being also important to consult regional and local associations in the decision making process SUCCESS FACTOR	The results of all the previous work need to be transferred at the governance level. This fact necessarily requires understanding and consensus among all the organisms involved regarding the decision making process. Practically, inter-administrative commissions must be implemented in order to reach this objective Inasmuch the competences of local level in land uses issues it will be necessary have good feedback from local entities concerning the results, in particular from the local administration





Case 5: Nordland County – integration and valuation of mineral deposits and prospects in land use planning and management

This good practice case responds to "Data-assessment and use in policy formulation and land-use planning" and "Assessment and extent of integration between minerals and land-use policies"

MinLand Good Practice Stream Topics:

A – Data assessment and use in policy formulation and land use planning

**B** – Identification of actual and potential land uses

D – Assessment and extent of integration between minerals and land use policies

F – Assessment of INSPIRE directive compliance

H- Assessment of strategic consideration of safeguarding

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# Part 1: Case Overview

### 1.1 Executive summary

The Nordland County case study deals with the land use planning and management of mineral resources in Nordland County in Northern Norway. Mineral resources and prospective areas in Nordland County have been spatially defined and classified, and the data included in the county and national land use management tools. The introduction of classified deposits, mineral prospects and mineral provinces is used to better predict and mediate potential land use conflicts and safeguard mineral resources of possible current or future value. Nordland County has served as a system pilot for the national dataset on mineral resources, and the system is currently being deployed on a national scale.

### 1.2 Overview of Key Good Practice Aspects and suggestions

### Good Practice Aspect 1: Improved data on mineral resources

- **Data-availability:** Equal availability of data (polygons, valorisation and more) of mineral resources for all land use planners and government, ensures transparency and visibility and enable the consideration of mineral resources on equal terms with competing land use.
- **Criteria of valorisation:** Non-subjective semi-quantitative criteria are applied to well-documented deposits. Prospective areas (prospects) with indicated potential are not valorised but spatially delimited.
- **INSPIRE compatibility:** To ease the access of data at European level all introduced terms are INSPIRE compliant (mineral deposit, mineral prospect and mineral province).
- Lack of data and information exchange: One of the challenges encountered is survey access to latest data on examined deposits by private companies as well as detailed mineral statistics used for valorising deposits.
- **Requirements from the national mapping authority:** Data owners are encouraged to evolve data sets further to meet requirements of data quality, coverage, metadata and technical solutions to adapt data for land use planning.







### Good Practice Aspect 2: Integration of mineral resources in land use planning legislation

• **Mineral resources in land use planning legislation:** Mineral resources must be considered in Norwegian land use planning processes.

Good Practice Aspect 3: Policies and strategies concerning mineral resources in land use planning

- National and regional policies and strategies demanding better data on mineral resources.
- **Conflict reducing strategies:** Interdisciplinary meetings are being held to reduce the level of conflict in various land use planning cases.

#### **1.2 Mineral resource groups:**

AGGREGATES; METALLIC MINERALS; INDUSTRIAL MINERALS; CRITICAL RAW MATERIALS – CURRENT LIST OF EUS CRM 2018

# Part 2: Case description

### 2.1 Case description

Nordland County has served as a system pilot for visualising and integrating current knowledge on known mineral resources, and the potential for finding new mineral resources, into land use planning. The resources classification and identification scheme are currently being extended to the rest of the country. A new INSPIRE compatible framework has been developed, geological assessments are on-going, and extended datasets on mineral resources have been, and are currently being, made available for land use planners. In time, national standards on geospatial data for mineral resources are expected to be adjusted.

#### 2.2 Responsible institutions

• Geological Survey of Norway; Data owner of national datasets on mineral resources. Owner of case.

### 2.3 Case stakeholders

- Government bodies concerning land use planning; i.e. county management of Nordland county and the various municipalities
- County geologist of Nordland County
- Directorate of mining; Licensing and permits. The Directorate of Mining manages the exploitation for and extraction of mineral resources and ensures that mineral resources are properly considered in land use planning.
- Several exploration and mining companies are currently active within Nordland County
- Landowners and other land users (including reindeer herders)

#### 2.4 Context

The case study deals with the land use management of mineral resources in Nordland County in Northern Norway, a currently and historically important mining region and the second most important county in Norway in terms of extractive industry. The county includes 8 national parks as well as extensive reindeer herding activity. Current extraction includes iron, calcite and dolomite marbles, quartz and various construction raw materials, but within the last 50 years also nickel, copper, zinc and lead has been important commodities. The county is prospective for a range of metals and industrial minerals, including CRMs. Mineral resources and prospective areas in Nordland County have been classified and the data included in the county and national land use management tools. The introduction of classified deposits, mineral prospects and mineral provinces are used to better predict and mediate potential land use conflicts and safeguard mineral resources of possible current or future value.

Licensing and permitting for prospecting and mining are described by the Mineral Act.





Land use planning are described thoroughly in the Planning and building Act.

There are three levels of land use planning in Norway: National, regional and local. The responsibility for planning pursuant to the Planning and Building Act lies with municipal councils, regional planning authorities and the King (i.e. the constitutional monarch and the Council of State). Different levels of responsibility and tasks are described in the Planning and Building Act, sections 3-3 to 3-7. In general, the most detailed land use planning happens at local level (municipalities), but sometimes regional level (counties) may take over all or part of the functions of the municipal planning administration relating to the organisation of planning work and preparation of proposals. Planning policies/strategies for all administrative levels must be revised at least every 4th year. At national level, there is a policy called "Nasjonale forventninger" (National Expectations). Regional and local levels have planning strategies. The regional and local planning authorities prepare regional/local planning strategies in cooperation with municipalities/counties, central government bodies, and organisations and institutions that are affected by the planning work. Affected central government and regional bodies may object to proposals regarding the land-use element of the municipal master plan, as well as the zoning plan, on issues that are of national or significant regional importance (section 5).

In the case of all regional and municipal plans and zoning plans that may have significant impacts on the environment and society, a planning programme shall be drawn up, as part of a notification at the start of the planning, to serve as a basis for the planning work (section 4). Societal safety, risk and vulnerability assessments are an integrated part of the planning programme. The Directorate of Mining may object when the plans consider areas of quantifiable resources classified as national/international or regionally important. The most detailed part of the planning system are the zoning plans (Planning and Building Act, section 12). The zoning plan is a land-use plan map with appurtenant provisions specifying use, conservation and design of land and physical surroundings. A zoning plan is required for the implementation of major building and construction projects and other projects which may have substantial effects on the environment and society. Detailed zoning plans are used to follow up the land-use element of the municipal master plan and, in the event, any requirements established in an adopted area zoning plan. Detailed zoning plans may supplement or alter an adopted zoning plan.

Minerals are safeguarded through the local land use plans and the possibility for objections from the Directorate of Mining.

To have mineral extraction in an area, the area must be regulated for extraction, usually in the local area plan. Otherwise the regulation plan area must be changed (according to the Planning and Building Act). When applying for operational licences, current regulations must be presented and ideally the applicant should present an approved zoning plan for the area.

# Part 3: Case Evaluation

### 3.1 Impact achieved

The impact has so far been larger on national and regional scale than on local scale, but this is due to "late outcoming" data causing a delay in the application for the land use planners on local level. Nordland was used as a pilot, and the system developed here are currently being implemented for the rest for the country.

In general, the awareness of mineral safeguarding has increased on all levels of governance. Developing, assessing and adapting existing data in national databases to the needs of land use planners have eased the use of the data.

Most importantly, for the common land use planner, the transition of a point-based data set to a dataset with polygons have had the largest impact with highly increased visibility of the mineral resources data.

Secondly, the valorisation of mineral deposits has become a tool in the decision process. As an example, one of the most common competing land uses mentioned in the MinLand project is nature conservation and protection. When new areas have been suggested for nature protection and these areas have overlapped with valorised mineral





deposits, the valorised nature conservation area have in some cases been weighted toward the valorised mineral deposits. Previously, there were no weighting and areas of mineral deposits were not visible to the land use planners and decision makers unless an existing mine happened to be present in a given area. A possible effect of this new approach is that the likelihood of sterilisation of known mineral deposits has been reduced.

The valorisation of the mineral deposits has proved to be efficient in the planning process. If a deposit is valorised to be of regional, national or international significance, the Norwegian Directorate of Mining may intervene when competing uses are suggested. Because deposits of lesser importance as well as less documented deposits/prospective areas and mineral provinces also are available through the same dataset, the visibility of these also increases.

For other land uses, and particularly when it comes to start-up of new mines and quarries, impacts are longer-term and not currently assessable.

### 3.2 Good Practice Aspects: Elements and their transferability

GOOD PRACTICE ASPECT 1:		
Improved Data on Mineral Resources		
Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)	
Data-availability: [Success factor] Data on mineral resources are available for all; land use planners, consultants, private companies, etc. Data include polygons on well-documented and less documented resources ("prospects"), valorisation, assessments and various geological information. The fact that all players have availability to the same dataset ensures transparency regarding mineral resources in the area planning processes. The case ensures maximum visibility of documented and potential mineral resources and enable the consideration of mineral resources on equal terms with competing land use. Datasets on mineral resources are available both directly from the Geological Survey of Norway (data owner) and through a common portal for land-use- planning relevant datasets at geonorge.no	In contrast with point-data, polygons may be imported and used directly by land use planners. The system of polygonising indicated prospects, as well as known deposits with valorisation, should be deployed both on a national, regional and local scale. Ensure easy access of all stakeholders to datasets with polygons for mineral resources. In Norway this is done through the exchange of land use data between various governmental institutions. The Norwegian National Map Authority (Statens Kartverk) administer geonorge.no, which is the national website for map data and other spatial information in Norway covering a very wide range of applications. Users may search and access data through the portal. The data are open and free-for-use for all possible users both through web map services and by local download.	
<b>Criteria of valorisation:</b> [Success factor] Non-subjective, semi-quantitative criteria for valorisation of mineral deposits. Previously, deposits were assessed, but non-fixed and mainly quantitative criteria and usually highly dependent on the geologist assessing it.	Developing criteria and classes for valorisation in cooperation with various stakeholders (governmental organizations, industry and more) to make the valorisations easy to understand and use. It is important that the system is not too complex, but still expose the necessary information.	





Using a set of known criteria, originally developed in cooperation with the Norwegian Directorate of Mining, has made it easier for other than the original geologist assessing the deposit to understand why the deposit is considered to be of international, national, regional or local significance.	If the system is developed trans-nationally, comparison of mineral deposits across countries would become easier as well.
INSPIRE compliancy: [Contextual factor] Nomenclature of the national mineral resource databases have been updated from to some extent following an outdated national standard to be more or less compliant with INSPIRE. This will make transfer of data to European levels, such as Minerals4EU, easier. A challenge related to this element is the time- consuming work of updating the national standards to	Have responsible authorities to invest in and update the national standards to be INSPIRE compliant. The use of INSPIRE compliant nomenclature will reduce the work needed on re-mapping national datasets for harmonisation at European level.
be INSPIRE compliant as well. Lack of data and information exchange: [Challenge encountered] Access to the latest data on recently examined deposits, where private companies have done the work, as well as detailed mineral statistics used for valorising deposits in production related to life-time assessments.	Routines for transferring data between authorities should exist, particularly when exploration licences expire, or companies leave an exploration area. Establishing and maintaining a national database, or metadata-database telling who, what and where, for mineral resources may be a solution. In Norway such a database exists for geotechnical examinations ("NADAG"). This database started as a metadata- database, but lately more and more companies have realized that a joint platform is a good way to store these data, and that sharing information is useful for all parts.
Requirements from national mapping authority: [Contextual factor] The Planning and Building Act defines a broad set of data suitable for processes on land use planning etc (being a part of the Public Data Foundations – "Det Offentlige Kartgrunnlaget"). These data sets are assessed by the Norwegian Mapping Agency on a yearly basis. There are certain requirements that need to be met, relating to data quality, coverage, metadata and technical solutions. These requirements are pushing data owners to evolve their data sets further.	Clear and reasonable requirements should be established to ensure that data quality is as good as possible, including routines for assessments and developments. This could be done as an informal practice or incorporated into national/federal/regional legislation (laws, acts, regulations, codes, policies etc).





### **GOOD PRACTICE ASPECT 2:**

# Integration of Mineral Resources In Land Use Planning Legislation

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Mineral resources in land use planning legislation: [Contextual factor] Since July 2018 mineral resources have been included as a specific topic in the Norwegian land use planning legislation and must be considered in the land use planning process. Although the Mineral Act treat different commodities differently, the Planning and Building Act include all mineral resources in a similar way.	If not present and made mandatory in the planning process, mineral resources should be included in legislation and/or policies. In land use planning, there are several topics that need to be considered. Mandatory topics have been mentioned in the Planning and building Act. During the latest revision of this Act, it became mandatory to include mineral resources.

### **GOOD PRACTICE ASPECT 3:**

# Policies and Strategies Concerning Mineral Resources In Land Use Planning

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Policies and strategies demanding better data on mineral resources [Contextual factor] In Norway, there are national strategies/policies called "National Expectations" that are updated, maybe every second year or after each national election. The National Expectations state what themes the current (political) government expect to be addressed and improved (in general). Mineral resources in land use planning was specifically mentioned in 2011, 2015 and 2019. Improved quality and suitability for land use planning have been a requirement.	Implement or consider the implementation of a national strategy/policy regarding mineral resources in land use planning that is updated regularly and /or adaptive to new data.
Conflict reducing strategies: [Contextual factor] Some of the tools that are available to Norwegian land use planners to reduce possible conflicts are described in the Planning and Building Act and its related regulations. As a part of the planning process, there are meetings between different governmental institutions to	Mandatory meetings with different responsible government authorities and departments involved in land use planning provide way for conflict mitigating strategies.






reduce the level of conflicts for different land uses. The current valorisation and characterisation is an important tool in the aim to both identify areas of conflict early, and make decisions as to what land use should have priority. If two competing uses have a similar value, the final land use is decided through a political decision.







This good practice case responds to Good Practice Stream Topics:

# D – Assessment and extent of integration between minerals and land use policies E – Assessment of transparency in land use planning processes

## **G** – Assessment of integration of social aspects and civil society involvement

## Permitting

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## Part 1: Case Overview

## 1.1 Executive summary

Ireland was one of the largest producers of lead and zinc in the world. It is also the home of Europe largest lead and zinc mine, the Boliden Tara Mine, located in Navan, County Meath. Lead and zinc production was concentrated in three mines, Lisheen in County Tipperary, Galmoy in County Kilkenny and Tara in County Meath. The Lisheen and Galmoy mines have now closed, while Tara mine has been active for over forty years. At the time of preparing the case study, an application to re-open the Galmoy mine was being considered. This case study regards the life-cycle of lead and zinc mines from exploration to closure and remediation.

Irish mines are often located in rural areas and there is no right to carry out drilling for exploration activities in urbanised areas. There is currently one operating lead and zinc mine in Ireland along with other mines where other resources are extracted. To date, no mining project was ever refused planning permission in Ireland, although some associated infrastructure was refused planning permission to environmental considerations.

Licensing and permitting for exploration and development is broadly split amongst three authorities, each dealing with one or more aspects. The Department of Communications, Climate Action and the Environment assess permits for exploration and State Mining Leases; planning authorities and An Bord Pleanála assess the planning application and finally the Environmental Protection Agency looks after the Integrated Pollution Control Licence.

The Irish case study identifies three strands of good practice: policy integration; permitting and licensing; and public participation and transparency.

#### 1.2 Overview of Key Good Practice Aspects and suggestions

## **Good Practice Aspect 1: Permitting and Licensing Integration**

- Element 1: Independent Role of the Environmental Protection Agency (EPA): The EPA is a completely independent agency responsible for environmental protection and in the case of mine for Integrated Pollution Control. Its independence allows to reduce potential societal pressures and ensures that environmental and ecological impacts remain the overarching considerations of the permitting process.
- Element 2: Distinct independent permitting for specific technical aspects: Three separate permits are required to develop a mine, so each aspect is assessed by the most qualified/ appropriate body with relevant expertise in the subject.
- Element 3: Compulsory 'Closure, Restoration and Aftercare Management' Plans: Having compulsory plans for closure, restoration and aftercare gives companies, the competent authorities and the public, a clear





blueprint for the closure of a mine. It includes dynamic bonds paid to the State which can only be used for rehabilitation of the mine site post operations.

## **Good Practice Aspect 2: Policy Integration**

- Element 1: Central government support: The Government of Ireland, its departments and agencies are supportive of the mineral exploration and extraction. This is evidenced in the National Planning Framework 2040 which includes National Policy Objective 23 which provides direct support to the extractive industry.
- Element 2: Correct balance of policy relevant to development pressure: Currently, there are very few mines in Ireland and applications for such are far and few. It is therefore considered that existing policy is sufficient to deal with the existing levels of activity.
- Element 3: Hierarchy of policy is reflected throughout all levels of planning, allowing for cohesion between all scales of spatial planning: The top-bottom approach applied in spatial planning in Ireland ensures a streamlined approach where issues of national interests (i.e. mining) are translated to all levels of the planning system.
- Element 4: Land use conflict resolution: addressed on a case-by-case basis, allowing for flexibility and a range of options to be explored. The lack of spatial designations for mineral resources allows flexibility in the determination of appropriate yet unforeseen uses at application stage.

## **Good Practice Aspect 3: Public Participation and Transparency**

- Element 1: Public Engagement beyond statutory obligation: Public engagement should not be limited to statutory engagement as part of the planning process. Keeping an open-door policy with the public or other interested parties (e.g. engaging with local social or sporting activities) helps building a good reputation and supports good relationships.
- Element 2: Formal and informal communications channels: Using a variety of tools (both formal and informal, traditional and social media) to communicate with the public helps reach a larger public and is more inclusive.
- **Corporate Social Responsibility:** Mining companies get to choose how they contribute to community and local life which fosters good relationships between parties.
- Element 3: Statutory Planning Consultation Requirements in the Planning Process: Statutory public consultation in plan-making and decision-making, Integrated Pollution Control Licensing and prospective and mining licensing ensure that all parties are equal and allows for fairer decisions to be made in forward-planning and decision-making. This promotes a more transparent process.

#### **1.2** Mineral resource groups:

Metallic minerals: Zinc and Lead (Zn and Pb)

# Part 2: Case description

## 2.1 Case description

The case regards the life-cycle of three zinc and lead mines in Ireland, at different stages, from exploration to rehabilitation. These mines are:

## Galmoy: closed

Tara mine: currently active

Lisheen: closed

The sections hereafter include information extracted from a review of the planning process for the three abovementioned mines.

## 2.1.1 Types of Consents Required for Mineral Exploration and Development





Exploration: In order to 'search' for minerals, a company must obtain a prospecting licence for exploration from the Minister for Communications, Climate Action and Environment. The company will then undertake modelling to determine whether the resource available would be suitable to be converted to a reserve with a view to develop a potential mine. Exploration adjacent to any mine generally continues under the terms of the prospecting licence.

Development: Only licence holders can be considered for the development of mining facilities within the license area. The development of lead/zinc mines in Ireland is subject to three separate procedures:

- A state mining lease for minerals in State Ownership from the Minister for Communication, Climate Action and Environment (CCAE) is required to develop a mine.
- Planning permission in accordance with the Planning and Development Act, 2000 as amended, from the planning authority and/or An Bord Pleanála for the development of the surface and sub-surface mining infrastructure.
- An Integrated Pollution Prevention Control (IPPC) licence is required from the Environmental Protection Agency. A condition of the IPPC process is for companies to submit a Closure and Remediation Management Plan (CRAMP).

## 2.1.2 The Development Process

A planning application is made to the local planning authority and permission is either granted, partly granted both with conditions and reasons, or refused with reasons. If refused, the developer may take on board the reasons for refusal and amend the development proposal and resubmit the proposal to the Local Authority. Following the decision of the planning authority, the decision may be appealed to An Bord Pleanála, the independent national planning board. Appeals against the decision or conditions attached by the Planning Authority may be made by the developer or any person or body. Appeals were made in all three cases, with first and third-party appeals. The Board may decide to hold an oral hearing where all interested parties may present further evidence supporting or opposing the determination. The application is assessed by a planning inspector who makes recommendations on whether to grant (with conditions and reasons) or refuse (with reasons) planning permission. Planning permission is accompanied by a planning conditions, development contributions and sometimes special contributions. Development must be carried out in accordance with the conditions and can led to enforcement if these are not respected. Contributions are financial impositions for the use or the construction of public infrastructure (roads, public transports, etc.). The extension to Tara mine in 2016-2017 was the subject of an oral hearing.

## 2.1.3 Timeframe from application to decision

After lodging a planning application, the Planning Authority must issue a notification of a decision or seek additional informational within 8 weeks of the date received. Anyone wishing to make an observation must do so within 5 weeks of date application received. If additional information is sought, a decision will be issued within 4 weeks of receipt of that information (in most circumstances). One must provide further information within 6 months of request unless the applicant seeks and is granted additional time. If the additional information is deemed significant, the Planning Authority may require the development be re-advertised to the public. An appeal must be lodged within 28 days of date of notification. If no appeal is made, a final decision will be issued one month and 3 days after the appeal period expires. Third parties generally may only appeal if they had made an observation (there are exceptional circumstances) and first parties may appeal a condition. Once an appeal has been made, there is a statutory objective to process appeals within 18 weeks, but this is not mandatory. The Board may also seek revisions from the applicant during the appeal process. In summary, the planning process for a mine would take on average around 15 months. However, it may either be shorter or longer.

## 2.1.4 Evolution over Time: Extension of Mines

Planning permission for a period of 10 to 12 years was granted to the mines to cover the period of exploitation. However, during the exploitation period, a continuous programme of exploration was undertaken, and further





resources were identified. The exploration permitting process is a separate process which lies with the Minister for Communication, Climate Action and Environment (CCAE), who issues mineral exploration licenses.

Planning permission was then sought to extend the area and period of exploitation, which was usually granted subject to conditions. Development and extension of the mines and other associated development, such as tailings facilities were the subject of Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) in accordance with the relevant European Directives. However, two mines, Lisheen and Galmoy went through the planning process prior to the implementation of the Directives. However, some of their extensions and infrastructure were permitted according to those regimes as these were developed after the directives were transposed. Lisheen was active for 17 years, Galmoy was active for 15 years and Tara Mines has been active since 1977.

Rehabilitation of the mine site was considered at application stage and therefore was subjected to the planning process. Both the Galmoy and Lisheen mines have been successfully rehabilitated, with new uses planned or considered for the sites. Planning permission was sought in both cases to change the use of the former mine sites once the rehabilitation process was completed. Prior to seeking to reopen the mine in 2018, planning permission to use the Galmoy site as a bioenergy facility was granted in 2012. The Lisheen mine site has been rehabilitated and put on the market as a fully serviced industrial site due to its high quality infrastructure (roads, water, power etc.). Although not determined by the planning system, there are discussions considering the potential development of a bio-refinery on the site.

## 2.1.5 Public participation

Public consultation forms part of the prospecting licence procedure whereby the Minister must publish in a newspaper circulating in the vicinity his/her intention to renew/grant such licenses. Any person or body has 21 days to submit their objection.

In accordance with the Planning and Development Act 2000, as amended, any person or body may make a submission on a planning application once it has been submitted to a planning authority. To that effect, the developer must erect site notices and place an ad in a newspaper circulating in the vicinity. The developer may also opt to undertake separate public consultation and use other means of notification, but these are not mandatory. Once a planning application is lodged, any other person or body (Third Parties) may comment for or against the development on the application during a five-week period from the date of submission. In all cases, submissions were received from private citizens, prescribed bodies or private companies. Following the decision of the Planning Authority, any third party may make an appeal to An Bord Pleanála against the decision or any conditions attached to the grant of planning permission. The developer may decide to appeal the conditions of the grant or if the determination is against the development. An Bord Pleanála may decide to hold an oral hearing providing all parties with an opportunity to present their case and evidence.

## 2.1.6 Public Engagement in practice

A review of all cases has shown that all developments, and subsequent extensions, were subject to third party submissions. Many of these generally regarded the preservation of residential amenities and potential environmental impacts.

Tara Mine has been active in Navan since 1977 and is the town's biggest employer, with approximately 700 staff. In recent years, there has been some opposition to the development of a new tailing facility due to local concerns for possible environmental impacts, impacts on residential amenities and risks to human health. However, the local population appears generally supportive of the mining operations. During the planning process for the extension of the mine in 2016, Boliden engaged with the local population and organised public meetings and met with local politicians. A small number of residents opposed the development of the facilities. A review of submissions shows that in general people made submissions asking to consider the impacts and risks as perceived to be associated with the tailing facilities and the number of Heavy Goods Vehicles (HGV) which may result from the operation of the mine. In other words, concerns generally regards the environmental impacts which may be generated by the tailing facilities and the risks of water pollution. The number of HGVs is also an issue for residential amenities as these can





result in dust, vibration and noise. Similar concerns were raised for the other two mines. The newly proposed Galmoy mine resulted in two submissions, neither of which came from individual citizens. One of them came from an environmental NGO and the second one from another business.

## 2.1.7 The Role of AA and EIA in the Consenting Process

Appropriate assessment (AA) in accordance with the Habitats Directive is undertaken by the Minister for CCAE when determining whether a prospecting license should be granted or renewed. AA also forms part of the planning process if an area subject to a natural designation is located in the vicinity.

Planning applications for the development of mines must be accompanied by an Environmental Impact Assessment Report (EIAR) and undergo environmental impact assessment by the Local Authority. An AA may also be required if the development covers part of a Nature 2000 site. The former forms also part of the IPC process, under the jurisdiction of the EPA.

## 2.1.8 Level of expertise regarding geology and mining involved throughout the process

Much of the mining and geology expertise lies within the DCCAE, the Geological Survey of Ireland and the Environmental Protection Agency. The former delivers the mining exploration licenses and the mining lease/ licence, whereas the latter issues the IPC licence. The planning authority and An Bord Pleanála may require specific expertise on certain EIA topics, such as hydrogeology or water when undertaking EIA and AA. If such expertise is required, they may use external experts on an ad-hoc basis.

#### 2.2 Responsible institutions

A number of institutions play a key role in the development of lead and zinc mining in Ireland. These are:

- The **Minister (the Department) of Communications, Climate Action and Environment**, who grants and renew prospecting and state mining licenses. It can also provide support to local authorities during the assessment of planning application for mines.
- The **Environmental Protection Agency** (EPA) which is in charge of assessing applications for Integrated Pollution Prevention Control licenses and is completely independent from all other parties.
- The **Minister (the Department) for Planning, Housing and Local Government** (HPLG) who sets out the national policy for spatial planning in Ireland. The name of this policy is National Planning Framework 2040. All plans prepared by Regional Authorities and Planning Authorities must have regard to that policy.
- The local **Planning Authorities** are the principal institutions responsible for the assessment of planning applications for the development of mines. They undertake the assessment of environmental impacts and of effects on Natura 2000 sites. They also prepare their own Development Plans which set out the targets, objectives, policies and zoning for their area.
- An Bord Pleanála, the national independent appeals board, which makes a decision on the planning applications when a first or third party has been made on a decision by the Planning Authority to either grant or refuse planning permission.

In addition, Geological Survey Ireland may provide scientific and/or technical advice.

#### 2.3 Case stakeholders

Aside from the institutions stated in 2.2 above, there are four categories of stakeholders. These are:

- a) The prescribed bodies: these are set out by the Planning and Development Act 2000, as amended. They include a range of state agencies, bodies and departments and cover a number of interests, including archaeology, heritage, water, rail, etc. These are consulted with as part of the Environment Impact Assessment Process. They may either provide information, identify conflicts which may be arising and/or make recommendations for further information/survey to be collected and analysed. These are:
  - The Arts Council



## MinLand



- Fáilte Ireland (the national tourism board)
- An Taisce (the national trust for Ireland)
- Waterways Ireland
- Adjoining planning authorities
- Regional Fisheries Board
- Irish Aviation Authority
- Córas Iompair Éireann, the national public transport provider
- Transport Infrastructure Ireland
- EPA
- Minister for Culture, Heritage and the Gaeltacht
- Údarás na Gaeltacht, the regional state agency responsible for the economic, social and cultural development of Irish speaking regions.
- Minister for Rural and Community Development
- Minister for Justice, Equality and Law Reform
- Minister for Agriculture, Food and the Marine
- The Heritage Council
- Health Service Executive
- Minister for CCAE
- Commission for Energy Regulations
- Irish Water
- **b)** The Mining Companies: their role in the process of developing mine is evident, but perhaps less so in developing policy. Any body or person in Ireland is entitled to make a submission during the preparation of a plan (at any given level) or policy and during the preparation of its environmental assessment.
- c) Individuals: any person in Ireland is entitled to make a submission during the preparation of a plan and its environment assessment and can appeal the decision and conditions attached to a positive decision.
- d) The Non-Governmental Organisations that aim is to secure specific interests but which have the same role as the individuals.

#### 2.4 Context

## **Environmental and Ecological Impacts**

Environmental and ecological impacts are the overarching considerations for planning authorities due to European Directives. If those cannot be prevented or mitigated, economic (mining) interests will be deemed secondary and permission will be refused or licences will not be granted / renewed. This is also applicable to the Environmental Protection Agency and the Minister for Communications, Climate Action and Energy.

## Ireland's Position in the Survey of Mining Companies 2017

Ireland came fourth in the Fraser Institute's 2017 Survey of Mining Companies. The survey rates the attractiveness of countries where mining is undertaken. It looks at a number of factors including but not limited to:

- Administrative and environmental regulations certainty
- Regulatory framework and legal system
- Environmental and ecological designations
- Infrastructure
- Socioeconomic factors and access to social infrastructure
- Political stability
- Quality of geological database

Etc. The survey also ranked Ireland has having the best Policy Perception Index in the world. The index is composed of survey responses to policy factors that affect investment decisions.



# Part 3: Case Evaluation

## 3.1 Impact achieved

## **Local Employment Opportunities**

Given their location in predominantly rural areas, mines bring employment and economic opportunities for local rural communities. Along with the new infrastructure which might be developed for mining activities, they generally result in employment and training opportunities, as well as spin-off economic activities in the local area (equipment hire, transports, etc.). During the economic recession (c.2008-2013), rural Ireland particularly suffered economically. Although, the Irish economy has now recovered, the benefits of the upturn has not necessarily been felt by rural Ireland. Large infrastructure projects such as mines, can bring substantial opportunities when and where there is limited Foreign Direct Investments and general interest.

Employment and economic opportunities are particularly important for local communities as they are the prime receivers of any impacts which may arise from the operation of the mine.

### **Contributions to the Exchequer**

The development of a minerals resources results in contributions to the Exchequer in the form of taxes and royalties.

### **Contributions to Local Groups**

Mining companies are generally supportive and contributing to local community life and can offer financial support to local community groups. Mining companies settled in Ireland are known to fund local activities and clubs and are very involved in local life. Boliden Tara Mine in Meath often sponsors local events including, sports, charity or tourism events.

3.2 Good Practice Aspects: Elements and their transferability

## **GOOD PRACTICE ASPECT 1:**

## Effective and Time-Efficient Permitting and Licensing Integration

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Independent Role of the Environmental Protection Agency. The Environmental Protection Agency is responsible for the assessment of the Integrated Pollution Prevention License. Its works independently in its assessment of environmental impacts regardless of whether planning permission has been granted for a mine. If environmental and ecological impacts cannot be prevented or mitigated, economic (mining) interests will be deemed secondary and permission will be refused, or licenses will not be granted/renewed.	An agency responsible for environmental protection that works independently of all other parties reduces potential political (or other) pressures and ensures that environmental and ecological impacts remain the overarching considerations for planning authorities. This ensures public confidence in the independence of the environmental assessments from the economic potential of any development and objective decision-making





## (CONTEXTUAL FACTOR)

Permits assessed by the most qualified authority to ensure adequate assessment of all aspects. Three separate permits ensure that the specific technical proposals are evaluated independently by experts in the relevant fields at a national and local level.

Three different permits are required to develop a lead and zinc mine in Ireland: the State Mining License, the planning permission and the Integrated Pollution Prevention Control License. (1) A state mining lease for minerals in State Ownership from the Minister for Communication, Climate Action and Environment (CCAE) is required to develop a mine, (2) Planning permission in accordance with the Planning and Development Act, 2000 as amended, from the planning authority and/or An Bord Pleanála for the development of the surface and sub-surface mining infrastructure, (3) An Integrated Pollution Prevention Control (IPPC) licence is required from the Environmental Protection Agency. A condition of the IPPC process is for companies to submit a Closure and Remediation Management Plan (CRAMP).

The three separate procedures for permitting ensure that the permission and licensing is done by the appropriate body with relevant expertise in the subject, it also allows for proper considerations of all aspects and possible impacts of the mining activities.

### (SUCCESS FACTOR / STRATEGIC CHOICE)

**Compulsory 'Closure, Restoration and Aftercare Management' Plans (CRAMP).** These plans are a compulsory as part of the IPC licence process and updated annually. They allow for appropriate and timely considerations of the options for the mine site upon closure of the mine. As part of the process, mining Companies must legally ring-fence funds in consultation with the State (e.g. a bond) which can only be used in agreement with the State towards rehabilitation. CRAMP are very important documents which are reviewed every year and with the interested parties, including the planning authorities. They are a blueprint for the closure of a mine site and include solutions for affected communities and former employees.

management that are compulsory gives companies a clear blueprint for the closure of a mine site, what should be done and include solutions for affected communities and previous employees. Ring-fenced rehabilitation funds are a compulsory part of a license process which further provides a guarantee and funds for rehabilitation of the mine site post operations.

Having plans for closure, restoration and aftercare

#### (SUCCESS FACTOR / STRATEGIC CHOICE)

## **GOOD PRACTICE ASPECT 2:**

## **Policy Integration**





Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
<b>Central Government Support.</b> Government support through active policy choices encourages the entry of exploration companies to the Irish market and is reflected in the Fraser Institute rankings where Ireland regularly scores highly for policy perception and data availability. Minerals are now considered in the Government Climate Action Plan and the National Planning Framework 2040. The latter includes National Policy Objective 23 which provides direct support to the extractive industry. The presence of significant mining, exploration and geology expertise within government and the regulatory bodies adds to the confidence with which the government can support the industry.	Data availability can be a key driver of inward investment in the minerals industry which directly leads to a more visible presence and allows governments to vocally support the mining sector development. Expertise at a government level allows for informed decisions to be made about broad policy supports. Inclusion of minerals in national policies or strategies gives clear indication of government support;
Correct balance of policy relevant to the development pressure. Given their location in predominantly rural areas, mines bring employment, economic opportunities and development pressures for local rural communities. Along with the new infrastructure which might be developed for mining activities, they generally result in employment and training opportunities, as well as spin-off economic activities in the local area (equipment hire, transports, etc.). Large infrastructure projects such as mines, can bring substantial opportunities when and where there is limited Foreign Direct Investments and general interest. Employment and economic opportunities are particularly important for local communities as they are the prime receivers of any impacts which may arise from the operation of the mine. (CONTEXTUAL FACTOR)	It should be recognised at a strategic level that the extraction of mineral resources is spatially confined to the presence of those resources and may not occur within the areas specifically zoned for industry or development. Policies which mandate development within planned areas can are flexible / can be altered to allow for the presence of mineral development in more rural centres. By not predetermining areas that are more or less suitable for mineral exploitation, new and future deposits are protected from being inadvertently sterilised.
Land use conflicts resolution. No mines have been refused planning permission in Ireland in modern times however specific pieces of infrastructure have been amended or denied due to competing policy and legislative requirements, particularly environmental protection regulations. For instance, Tara Mines recently applied for a substantial expansion. While the principle of expanding the mining area and the provision of infrastructure were acceptable in economic, planning and ecological terms, not all infrastructure was deemed acceptable	It is important that the protection against the sterilisation of resources ensures that potential resources are not sterilised accidentally or inadvertently due to a lack of knowledge. A fair and balanced approach, which considers sustainable development and proper planning principles, to seemingly competing policy requirements is vital to ensure trust in the development process. Decision -making on a case-by-case basis allows for tailored conflict resolution.



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and some of it was refused as impacts on a Natura 2000 site could not be excluded. This would not prevent the company to proceed, but instead to reconsider <i>how</i> to proceed. <b>(SUCCESS FACTOR / STRATEGIC CHOICE)</b>	
<ul> <li>Hierarchy of PolicyThe importance of the raw materials industry is directly referenced in the National Planning Framework 2040, the strategic 20 year plan for the country. This feeds regional and local planning documents, specifically the Regional Spatial and Economic Strategies and County Development Plans which must take direction from the national spatial strategies.</li> <li>The importance of raw materials should be addressed at as broad a policy level as possible with more details added in at a decreasing spatial scale. This allows the overarching requirements of a society as a whole to be balanced with the local needs of individual communities.</li> <li>(SUCCESS FACTOR / STRATEGIC CHOICE)</li> </ul>	Policies formed at national level must be considered at regional and local level (i.e. the Planning and Development Act 2000, as amended, ensures that lower level plans are compliant with higher level plans, in a hierarchy manner)

## **GOOD PRACTICE ASPECT 3:**

# **Public Participation and Transparency**

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Public Engagement: Mining companies have an open-door policy with local communities, where information which is not commercially sensitive is shared with the public. To communicate with communities, they use a variety of means, including local radio and papers to give updates to local communities. Transparency is a key ingredient to a successful mining company in Ireland. By communicating with local groups, mining operators promote transparency and trust ('This is what we are doing'). It also helps in the planning process, particularly when mines seek planning permission to extend their facilities. (SUCCESS FACTOR / STRATEGIC CHOICE)	Mining and exploration companies should keep an open- door with the public and the planning authorities. For instance, organising public events, showing drill cores, making announcements on the radio or publish articles in the local papers can help the operation's integration with local groups.
Formal and Informal Communication channels Prospecting and mining companies keep the communities updated in relation to their activities in	Using a variety of tools to communicate with the public helps reach a larger public and prevents exclusion for certain persons. It is recommended that both traditional and social media be used so that all categories of the





the local area. They might use the local newspaper, the radio, social media, etc. and will communicate either in English or Irish if necessary. This <b>promotes</b> <b>confidence</b> in the mining operation and good relationship between the local community and the company. (SUCCESS FACTOR)	population are reached, particularly as rural communities, where mines are often located, can have a higher share of older persons who may not be as attuned to social media.
Corporate Social Responsibility	Attaching conditions to consent, whether financial or
Irish mining companies are very active with their <b>Corporate Social Responsibility</b> and as a result become very involved with the daily activities of local communities. To that effect, they provide funding towards social and community infrastructure (some of them imposed by the Planning Authorities) and sponsor events and local groups and club activities. It is important for mining companies to be seen to be involved with local groups as it helps them integrate with communities and gain trust.	infrastructural, ensures community gain. Providing support to communities outside of planning/consent parameters through Corporate Social Responsibility fosters good relationships between parties. It is not compulsory and up to mining companies to decide what sort of relationship they want with local communities.
(SUCCESS FACTOR / STRATEGIC CHOICE)	
Statutory Public Consultation Requirements in the planning process. The planning system also allows for local concerns to be heard and addressed during the planning process. There are several opportunities from forward planning to development management where the public and other stakeholders can get involved and formulate their concerns on development proposals. Opportunities to get involved in forward planning arise at all levels of the planning hierarchy from national to local level. Public consultation in both forward planning and development management is rooted in planning legislation and is statutory. This is also applicable to decision-making, where any person or body can make a submission on a planning application, on a prospecting license application, a State mining lease application or an integrated	Statutory public consultation in forward planning (plan- making) and development management (decision- making), IPC licensing and prospective and mining licensing ensures / guarantees the right of the public to have a say in plan or decision-making. It makes all parties equal and allows for fairer decisions to be made. All comments which are made on a plan or an application should be made publicly available, including how these have addressed as it promotes transparency in plan- making and decision-making. Public consultations should be included as statutory requirements for minerals developments to ensure that the public are included in the decision making process.

## (CONTEXTUAL FACTOR)

pollution control application.







# Case 7: CZATKOWICE LIMESTONE MINE – mining activity in complicated environmental and spatial conditions

# This good practice case responds mainly to Social Licence to Operate (SLO) and Permitting

## Minland Good Practice Stream Topics:

G – Assessment of integration of social aspects and civil society involvement

Permitting

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## Part 1: Case Overview

### 1.1 Executive summary

The Polish case study ("Czatkowice" Limestone Mine) address a good practice of smoothly and effective decisionmaking process in the field of obtaining a new mining licence and integration of social aspects and civil society involvement (SLO). In recent years works associated with the preparation of the area for mining (technical works related to forest clearing and removal of overburden) from a new deposit have been launched. The investment located across the area of approximately 50 hectares guarantees a possibility of extraction in the mine until 2060. Limestone products produced by Czatkowice Limestone Mine are mainly used by power plants and combined heat and power plants in modern flue gas purification technologies. The expansion of exploitation was related to the complicated environment and spatial conditions. Obtaining a new mining license required, among others: abolition of extraction ban in landscape park (the new part of deposit is located in park boundary), the changes of land use directions in local planning documents, conducting an environmental impact assessment and obtaining of decision on environmental conditions for conducting activities (environmental decision) and wide social consultations (SLO). The results from the case study suggest that with proper internal and external conditions, it is possible to conduct mining activities in very complicated environmental and spatial conditions and that local authorities and the local community played an important role in this process

1.2 Overview of Key Good Practice Aspects and suggestions

Good Practice Aspect 1: efficient and short permitting & licensing process in relation to obtaining new mining license

• Element 1: conducting several proceedings in parallel in various institutions and complete and accurate elaboration of documents necessary for issuing decisions / permits

Good Practice Aspect 2: integration of social aspects and civil society involvement (SLO) - positive Company image and related social acceptance

• Element 1: CSR policy of Company (continuous support for employees, local organizations and local authority)

- Element 2: good communication approach to stakeholders
- Element 3: successive reclamation of post-mining areas and minimization of the mining activities impact on the environment

#### 1.2 Mineral resource groups:

## INDUSTRIAL MINERALS



# Part 2: Case description

## 2.1 Case description

The Czatkowice deposit (Małoposka Voivodeship, southern Poland) was first extracted by the Germans in 1943. The extraction was resumed after the Second World War. In 1996, the Minister of Environmental Protection, Natural Resources and Forestry granted a mining licence for the extraction of carboniferous limestone from "Czatkowice" deposit (valid for 30 years). In 2002 Company launched actions (exploration works) aimed at expanding the limestone resources. The newly documented part of carboniferous limestone deposit extends to the north of the existing deposit and has area of 48 ha. In the Czatkowice Limestone Mine (now owned by the TAURON Group), works associated with the opening of new deposit took place in May 2015. The investment located across the area of 48 hectares guarantees a possibility of extraction until 2060. The limestone products (sorbents) produced by the mine are mainly used by power plants and combined heat and power plants in modern flue gas purification technologies. Currently, the Czatkowice Limestone Mine produces approximately 40% (available on the domestic market) of sorbents used for flue gas desulfurization. Extending the exploitation required solving many local environmental and spatial problems. They concerned the presence in the mine's surroundings: landscape park (the new part of the deposit is located at the park's boundary), natural reserve, Natura 2000 area, Monastery Complex and drinking water intakes. Landscape parks (together with national parks, nature reserves and Natura 2000 areas) are the most important surface forms of nature protection in Poland. The list of prohibitions, that can be established within each of them, is included in the Nature Conservation Act. However, detailed guidelines in this regard are determined by the regional assembly of province, in whose boundaries the given landscape park is located. Starting the mining activity by Czatkowice mine, required many activities related to: the abolition of extraction ban in the landscape park, obtaining an environmental decision (together with Enviornmental Impact Assessment) and changes of local spatial planning documents. The area of new documented deposit is 48 ha including: national forests (with a protective function) - 29 ha, private areas (agriculture) - 19 ha. Before obtaining the mining license the direction of land use should have been changed, which required a change of local land use documents (Study of Conditions and Directions of Spatial Development of the Town and Commune of Krzeszowice and Local Spatial Development Plan for the planned mining area). At present, the priority direction of land use is industrial activity and planned industrial activity related to extractive of Czatkowice deposit. Nevertheless, in boundary of mining area of the Czatkowice mine, there are areas with other use directions (sports and tourism areas, forest areas and areas intended for afforestation, agricultural areas, and areas of single-family housing). Obtaining a new mining license lasted only 4 years. Considering the complex environmental and spatial conditions of the mine and the Polish legal regulations, this is a record short time.

While implementing the investment, the company simultaneously mitigates the environmental impact. These activities included, among others, the creation of approximately 33 hectares of a protective belt in the form of plantings, around the north-eastern border of the deposit extension, and establishing migration corridors for bats. Following the completion of the investment in 2060, the whole area of the excavation (both the current exploited area and a new one), i.e. approximately 120 hectares, will be reclaimed (forest direction).

## 2.2 Responsible institutions

- regional/provincial government Marshal of Małopolskie Voivodeship issuing an exploration licence for a new part of deposit, issuing of mining license for new part of deposit, rescinding the ban of extraction of raw materials in this landscape park (amendment to Regulation of Kraków Valleys Landscape Park)
- **regional government** Regional Director of Environmental Protection in Kraków opinion of Environmental Impact Report (one of elements of environmental impact assessment and obligatory element in obtaining a decision of environmental conditions for mining activity)
- **local/community government** City Council of Municipality Krzeszowice amendment of local spatial planning documents: Study of Conditions and Directions of Spatial Development of City and Municipality of Krzeszowice and Local Development Plan (assignation of new direction of land use mining)
- local/community government Mayor of Municipality (Krzeszowice) issuing a decision on environmental conditions for new part of exploited deposit (obligatory element in obtaining a mining licence)
- regional government Regional Directorate of the State Forests consent to lease of forest areas

#### 2.3 Case stakeholders





- **local authority**: changes of local planning documents according to Polish law, local authorities are responsible for procedures to changing planning documents for commune)
- regional (province) authority: Amendment to Regulation of Kraków Valleys Landscape Park Marshal of Małopolskie Voivodeship rescinded the ban of extraction of raw materials in Kraków Valleys Landscape Park
- **local community**: according to Polish law, public participation is part of the planning procedure (everyone have opportunity to express the opinion of project of local planning documents) and obtaining an environmental decision)
- **general public**: before the planned change of land use directions, the Company's authorities held a conversation with the local community (during village meeting) presenting investment plans
- land owners: as part of the project, the Company had to acquire title to land having a total area of approx. 81 ha

#### 2.4 Context

- the lack of a new mining license means the end of the mine's operations in 2022;
- due to the fact that the exploitation of Czatkowice deposit has been going on for several decades, the local community (together with local authority) sees positive aspects related to mining activities in its commune; the mining activity allowed to obtain financial benefits, among others: from the sale of plots, taxes, fees for extracted minerals, as well as maintaining employment at the current level - employees are close neighbours (local benefits);
- use direction of raw materials: "Czatkowice" limestone quarry provides, among others, limestone products (sorbents) to several largest power plants in the south-western part of Poland; sorbents produced by mine are mainly used by power plants and combined heat and power plants in modern flue gas purification technologies. The benefits of using these sorbents have a national importance , owing to the mine products, it is possible, inter alia, to eliminate approximately 140 million of cubic metres of sulphuric acids. In this case the extraction of raw materials bring economic and environmental benefits for the country. In this case, the economic and environmental benefits of the country. And their value is greater than the directions of land use within the boundaries of the deposit (designated in the past in local planning documents).

# Part 3: Case Evaluation

## 3.1 Impact achieved

- actualisation of local spatial planning documents (providing access to the deposit protecting mineral resources) and abolition of the extraction ban in landscape park
- obtaining social acceptance for further mining activities (Social License to Operate SLO)
- extension of the mining license for the next 60 years
- maintaining current employment
- maintaining at the current level of production the most important product of the company (and important in the country level) on an annual basis, owing to the mine products, it is possible, inter alia, to eliminate approximately 140 million of cubic metres of sulphuric acids.

3.2 Good Practice Aspects: Elements and their transferability



## **GOOD PRACTICE ASPECT 1:**

# Efficient and Short Permitting & Licensing Process In Relation to Obtaining New Mining License

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
<ol> <li>the company's ability to process several cases in parallel and complete and accurate preparation of documents necessary for issuing decisions / permits.</li> <li>Obtaining a new license required the preparation of several documents and carrying out procedures in several different institutions (e.g. State Forests, regional authorities, local authorities, Regional Director of Environmental Protection). Good organization of work inside the Company allowed for several procedures to be carried out in parallel. A special team for the new concession was created in the company and various people were responsible for the special aspect of obtaining a new mining license. One sub-team was responsible for environment aspects - decision on the environmental conditions of mining operation (together with Environmental Impact Assessment), second sub-team was responsible for spatial aspects - purchase of land, changes in land use directions, changes in planning documents.</li> <li>Their task was to coordinate work and prepare appropriate documentation and contact the relevant institutions related to the case.</li> <li>This shortened the time of obtaining a license more than 12 months.</li> </ol>	Obtaining a new mining concession is a long-term and multithreaded process (especially if the mining operation will be carried out within the boundaries /in the neighbourhood of valuable natural areas). Each mining company should plan work organization (related to obtain a license) appropriately and set a time frame (taking into account especially the legal conditions of country and/or region). All activities in this area should start early enough (especially when the date of expiry of the old license is approaching) and should be preceded by a plan of preparation of all documents (plan well the sequence of formal and administrative activities (including the development of relevant documents). Persons responsible for the task (or appoint an appropriate team together with team leader) should be responsible for its results.



## **GOOD PRACTICE ASPECT 2:**

# Integration Of Social Aspects and Civil Society Involvement (SLO) - Positive Company Image and Related Social Acceptance

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
1. CSR policy of Company: the Company successfully combines business activities with all activities for the benefits of the local society. The company actively and responsibly participates in the local community life by engagement in solving the local problems and supporting many local initiatives (e.g. permanent support for orphanages, nursing homes and foundations for disabled people, organization (every year) of Children's Day and World Earth Day in Krzeszowice, occasional family picnics, repairs of local roads and numerous churches in the commune, organization of the "Good Neighbour" competition with financial prizes). Many years of experience and a number of initiatives have led the Company to be one of the most important entities acting for the benefit of the local community.	The guarantee of success for mining activities (in area with complicated environmental and spatial conditions) is constant support for local organizations, authorities and local community. It is also important to create good working conditions and professional development. This is especially important if the company's employees come from the local community (this is the case here). It is important that the pro-social activities of the Company are voluntary and carried out on their own initiative. They must be addressed to a wide group of recipients (e.g. women / men, adults / children, authority/community etc.)
2. Good communication approach to stakeholders (communication from early stages with different groups of stakeholders). Before the planned change of land use directions, the Company's authorities held a conversation with the local community (during village meeting) presenting investment plans. In the next steps, an external company (after obtaining corporate consent) held talks with proper owners of plots located in the boundaries of extended deposit. They were presented with financial proposals related to the purchase of plots. The negotiation process was successful - all owners agreed to the purchase of land by the Company. Talks and negotiations with local and regional institutions were conducted always with the participation of the Chairman of the Board (the highest representation). INTERNAL SUCCSSES FACTOR	Following this case, suggestions to obtain similar elements in other contexts should involve: properly and early on recognize the needs of the widest possible groups of stakeholders who may be involved in the case (local authorities, local community, prospective mine neighbours, landowners, etc.). Stakeholders should be made aware of and know in advance the benefits and costs related to starting mining/processing operations. Be open to discussions and proposals from individuals as well as groups / organizations / communities); meet representatives of all groups and do not avoid confrontation

**3. Reclamation of post-mining areas and minimization of the mining activities impact on the environment.** Various direction of land use in boundaries of mining area of Czatkowice Mine (and in Gradually carry out reclamation processes, especially if your activities cover vast area in the vicinity of areas with high potential and natural significance. Gradually minimize the negative effects of your activity (mining



## MinLand



his surroundings)(sports and tourism areas, forest or/and processing). This will avoid additional costs and areas and areas intended for afforestation, will have a good impact on the company's image. The agricultural areas, and areas of single-family housing) company will be better perceived by both the local require effective and integrated activities in the area community and local authorities as well as institutions of mining land reclamation and minimization of responsible for environmental issues in the region (and environmental impact. Reclamation of extraction at the same time taking part in the process of mining areas is successive and accordance with the accepted license obtaining) direction of the reclamation. The Company, in connection with mining and processing activities, takes actions to improve the These activities should be voluntary, not obligatory. quality of the environment in the mine boundaries and its surroundings, among others: 1. Limitation of dust emission as a result of highefficiency dust extraction installations 2. Building of sound absorbing panels along railway tracks and equipment of initial processing of raw materials 3. Sustainable water and wastewater management 4. Planting trees and shrubs acting as sound absorbing panels

5. The implementation of pro-ecological investments in accordance with the programs established for the Małopolska Voivodeship, mainly related to air protection.

These activities are not obligatory (they are not covered by the decision on environmental conditions of mining operation), their initiator is a Company. Activities are financed from own funds of the mine.

INTERNAL SUCCSSES FACTOR/ STARTEGIC CHOICE





# Case 8: Kevitsa mine – a case of integrated land use planning, environmental commitment and SLO

## This good practice case responds to:

## Minland Good Practice Stream Topics:

**B** – Identification of actual and potential land uses

C – Assessment of whether minerals and other land uses have been introduced on equal footing

D – Assessment and extent of integration between minerals and land use policies

E – Assessment of transparency in land use planning processes

G – Assessment of integration of social aspects and civil society involvement

H – Assessment of strategic consideration of safeguarding

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# Part 1: Case Overview

## 1.1 Executive summary

The case relates to the activity of a mine in Lapland and to the development of the Land use planning (LUP) towards inclusion of minerals into land use. Kevitsa mine is located in an area in Lapland Region that presents environmental, natural and cultural values. Mining activity is an important economical driver in Lapland together with tourism and forest utilization, aiming at a sustainable use of natural resources in a low urbanized, ecological rich environment. The mine has been able to find an agreement in land use conflict with reindeer herder associations. The development of the mine adapted and improved with the progress of legislation in term of environmental performance and social issues: The mine has been able to operate under a rigorous environmental permit not to damage the natural protected areas located nearby and has also engaged with the community by supporting socio-economic development of the area. Considering the economic and social importance of sustainable exploitation of natural resources, land use planning at regional level included mineral resources into land use planning activity. For example, the mineralization belt have been taken into consideration during discussion of the regional land use planning, and mine and deposits are visualized for state and private minerals in the land use plans. Moreover, larger areas for possible mine expansion was included (as opposed to previous plans which only contained deposits economically feasible for extraction in the next few years).

## 1.2 Overview of Key Good Practice Aspects and suggestions

## Good Practice Aspect 1: effective environmental and SLO performance

• Element 1: Communication approach between stakeholders since early stages + Guidelines to support mineral exploration and extractive activities. Early stage communication with diverse set of stakeholders as a success factor and strategic choice for mineral development: Stakeholders are involved in the activities related to land use for mineral utilization since early stages. It is required by the mining act, and it is a common procedure. Land owners, municipality's authority in charge of local land use plans, regional authorities in charge of regional land use plans and stakeholder's groups might be involved already at exploration stage. In Kevitsa's case communication with the stakeholders since early stages combined with slow development, from pre-exploration to mining and subsequently increased production, supported the acceptance of the mine. Guide has been created to support exploration activities in protected areas.



D6.2: Final Manual for Good Practice Guidance



**Success factor:** mining act refer to involvement of the stakeholders and in this way connect to the building code that rule the land use management. The guide supports in the practical organization in the early stages, during exploration

• Element 2: Higher environmental commitments build trust: Requirement for lower emissions and the commitment of the mining company to fulfil the requirements increasing environmental performance allows the activities to continue and builds trust.

**Success factor:** Controlling authorities developing requirements based on the best available technology drives the mining activity to improve its environmental performance and at the same time build trust with the stakeholders.

## Good Practice Aspect 2: Inclusion of mineral resources into land use planning

- **Element 1:** LUP that affects a specific area for a specific case and make changes to the zoning at this site only. Other areas within the same land use plan are not affected.
- **Success factors**: the LUP policy considers economical development with other values. This impedes preventive zoning unless the other values are much higher than the economical ones.
- **Element 2:** Evaluation of mineral resources during LU planning process. Included in the LU plan is the potential increase of mining area, and additional potential deposits to be developed. Communication at early stages with different stakeholders and involving them in the planning activity assists the work of the LUP authorities.
- **Success factor:** LUP process requires evaluation of economical development. The LUP authority involves the relevant state organization's responsible for mineral assessments and collects information on other developing economical activities during subsequent years.

**1.2 Mineral resource groups:** 

X METALLIC MINERALS;

X CRITICAL RAW MATERIALS - CURRENT LIST OF EU CRM 2018

# Part 2: Case description

## 2.1 Case description

The case of Kevitsa mine describes how mining activity is possible to develop in a land use conflict area and how minerals exploitation aspects are considered in LUP activities in difference lifecycle's phases. The exploitation of the deposit of Kevitsa Mine (Ni,Cu), operated by the company Boliden, has been developed since its discovery in 1987. Primary product are Nickel and Copper and sub-product Gold and two CRM: Platinum and Palladium. The company is now operated under Boliden, with a large mineral deposit, operation is planned for several years (166,2 millions tons: Ni 0,22 %, Cu 0,35 %, Au 0,07 g/t, palladium 0,07 g/t, Pt 0,12 g/t). The mine has developed slowly during the years and has been considered an economical resource for the area. The community has accepted the mining activity. Part of the area used by the mine has been addressed for reindeer husbandry and the mine has signed private agreements with the local reindeer association.

The company has been able to adapt to environmental limits not to damage the nearby protected area.

The activity is seen by the LUP authorities (local and regional) as a social economical resource. The municipality of Sodänkylä, where the mine is located, has produced a Mining program (see <u>home page</u> of Sodänkylä). From the program, that refer to Regina Project, where surveys have also been made to monitor the perception of the mine by the society: "According to the survey, the majority of respondents accept mining operations in Sodankylä. The most significant benefit is the employment in mining activity within the community", even though part of the respondent felt that mining activity has weakened the environment in the neighboring villages. The main positive



aspects recognized by the municipality have been: significant number of new jobs, housing market rise, increased mining activities, public and private house construction, increase in service needs in day care, in foreign-language services, to some extent also in social services, the need for additional resources in the municipal environmental services and control regarding permits, the need to develop other industries, the need to develop co-operation with the mining industry in relation to information exchange and community development and service provision.

The municipality refers to the effects of the mining activity on social and economic sustainability. Regarding social sustainability it is aimed to crate benefit to nearby villages from mining projects building employment and training paths, compensate and minimize the disadvantages developing different industries so that there is work for the whole family and increase training opportunities, have actions to support local culture, increase road safety promoting the construction of light traffic routes and roads renovations,... Ecological Biodiversity includes protecting nature values and bringing them up to the authorities and mining companies, assuring adequate resources for the municipal environmental protection authority, increase naturalization, involving volunteers and monitor reports from miners and authorities actively, develop cooperation and interaction on environmental impacts information, compensation actions from the mine.

The LUP authority at regional level has taken into account the enlargement of the mine in the LUP processes and it is forecasted in Land Use Plans.

In the specific, Lapland's LUP planning activity has included mineralization areas, since the regional authority considered sustainable mineral development a resource for the region and values it together with other land uses. In the final Land use plans only known deposits and areas that will go under development in the next recent years will be zoned but land use zoning for extractive activity can be applied by projects according to the needs.

### 2.2 Responsible institutions

- Mining company Boliden- interested in the specific case, has been taken over the mine implementing its activity fulfilling the environmental performance required by authority
- Stakeholders associations reindeer association as land users in specific areas in Lapland and Northern Finland.
- Land use planning at regional level is a process under Lapin Liitto Regional council of Lapland with the
  consultation of large number of stakeholders and authorities. The region is choosing which are regional
  socio-economical drivers for sustainable development, in this case the region consider mining activity an
  economical driver but at a regional land use planning stage respects the areas belonging to the Sami
  homeland, northern most areas, and Skoll community.
- Municipality- in charge of local LUP and development can affect to the establishment of a mine. In this
  case the municipality considers the activity important under several aspects and has supported it with a
  mining program.
- AVI in charge of environmental permits, discharge permits ELY center- monitor the emissions. The responsible authorities that increased the environmental performance requirements.
- Tukes the mining authority- in charge of granting mining permits. Is the national authority that is in charge to permit the establishment of a mine.
- The ministry of environment in charge of act that rules the LUP process and the environmental requirements. Ministry of environmental defined the acts for EIA and pollution control, as well several others that control the mining activity (see MINLAND <u>Deliverable 4.2 Land Use Policies and Valuation of</u> <u>Land</u>)
- Ministry of economic affairs and employment includes the mineral aspects as a social and economic factor through programs, mining acts, mineral policy. It is in charge of the mining act.

#### 2.3 Case stakeholders

The stakeholders involved in the case have an interest in use of the land as for example the reindeer herders associations that see in the mining activity a part of land previously used by reindeers utilized by an extractive activity. The area interested by reindeer herding is covering several regions, is more extended than the Sami homeland and Skoll community area. The effects of the establishment of a mine have been considered in a guide





for Environmental Impact Assessment. The community is interested for its social and economic development and for the values attributed to the environment. In the land use planning and mine establishment process, the permit is given by the mining authority Tukes (Finnish Safety and Chemicals Agency), and includes environment permits from the AVI. Construction of a mine needs also permits for land use from the local authority. The municipality can affect the establishment of a mine after due evaluation of the competing land uses and of the values they attribute to those. In this case the municipality has valued the benefits of the mining activity.

#### 2.4 Context

The mine has developed slowly allowing acceptance by the community. It is important involvement of the LUP authorities (regional and local) at early exploration stages.

The mine is located near natural protection areas already existing on land use maps before the inclusion into Natura 2000. The mine operates in an area that also present holiday cottages for which the environment is a value.

The mine started its operation with the old mining act but has been already performing EIA. The mining company has changed during the years. In recent times, under Boliden, developed to comply to new stricter water emission limit. The area did not belong to a Sami area, but there has been land use conflict with reindeer herding that found a solution into a private agreement before operation started. Reindeer associations' needs in Finland have been taken into consideration, within normative, as the mining act but also through cooperation between the stakeholders and the creation of a guide for EIA impacting reindeer herding activity. Their area is large but mining companies have reached agreement of land use.

The establishment of a mine requires a land use zoning for the purpose and the process can start during later stages of exploration. The area where the mine developed had already been zoned for mineral extraction and this made the process easier.

Economical deposits can already be considered into LUP. Sustainable exploitation of natural resources, including mineral resources, is an economical value for the region and the country and their evaluation for inclusion into LUP is a part of land use planning activity. Even if there is a possibility to include deposits and enlargement areas in the land use maps, the land use plans allows land use assignment case by case during time. They are flexible and allow assessments of the activities at the time when the activity can start.

# Part 3: Case Evaluation

## 3.1 Impact achieved

The process related to the development of the mine allowed acceptance of the extractive activity by other stakeholders, generated generally a positive image in the community and improved environmental performance. The mine has affected positively economically (job creation from several municipalities and for several activities) and socially (services, increased infrastructure) the community (Regina project results).

The land use planning is moving in the direction of considering beforehand possible expansion of the mine and including information of mineral resources.

Slow development with the involvement of the stakeholders, experts and LUP authorities at an early stage increase trust and understanding and at the same time improve LU planning that includes minerals extraction.

## 3.2 Good Practice Aspects: Elements and their transferability



#### **Effective Environmental and SLO Performance Key elements (of Good Practice Aspect)** Suggestions for Transferability (of Key **Elements**) **Element 1: Communication approach between** The policy on mineral development identify the stakeholders since early stages + Guidelines to interested stakeholders and require early engagement support mineral exploration and extractive activities. within the activities relevant for developing minerals Policy relevant for Mineral development refers to the (exploration, exploitation, closure, rehabilitation) need of early engagement. The mining act that rules Supporting tool: Guide created by relevant authorities the extraction activities refers to the need to and experts support the practical activities communicate at early stages (exploration phase) with the identified stakeholders. Land use planning authorities, land owners, Sami, reindeers herding associations are some listed by the act. Supporting tool: Guidelines for exploration in specific critical cultural, natural areas pointed out in the mining act have been written to support the activity in respect to the stakeholders and the protected areas (created under the ministry of economy by experts). **Element 2: Higher environmental commitments build** Ability (based on knowledge) of the permitting authority trust. Requirement for lower emissions and commitment of the mining company to increase considering the improvement of technology that the environmental performance allows the project to progress and adds trust. revision. The authority presents experts in the field that are able to update the emission limits requested by the activities, promoting technological uptake and better industry, experts and authorities environmental performances. The process happen following normal revision procedure of the activities.

**GOOD PRACTICE ASPECT 1:** 

Supporting tool (In Finland drafted by from Finnish Network for Sustainable Mining): Sustainable Mining Standard" with instructions for sustainable operations to mining companies.

to set adaptive and updated emission limits formulated industry can uptake. This can happen during periodical

Supporting tool for the companies to evaluate the best available technology: Guide created by cooperation of



## **GOOD PRACTICE ASPECT 2:**

## Land Use Plans That Allow Inclusion of Minerals Over Time

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Element 1: LUP that allows changing of zoning according to a project. Land use plans allowing change of zoning denomination that allows the land use to evolve with time. The land is either private or public owned. During preparation of the regional land use plan (no National land-use plan exists), consultation is conducted and, according to regional development strategies, updates to zoning is proposed. Certain areas enter land use plans by other regulations (conservations areas, cultural areas, Sami homeland and Skoll community area, etc.), or can be instigated by other procedures relating to development actions by e.g. the government, or impacted by EU directives (e.g. Natura 2000), or interested stakeholders. Not all land is zoned, zoning is done according to the needs with the ultimate objective to achieve sustainable development. The zoning for a certain activity is the faster and easier step to develop the activity in the certain area, but the non-existence of suitable zoning is not preclusive for its development. Zoning of areas that do not enter the LUP by other regulations means to evaluate the socio-economic effects and trade-off with alternative land-use. The possibility to zone or change zoning allows for flexibility and development of activities over time, including consideration of socio-economic evaluation (over time).	Land use planning process that allows re-evaluation of land use zoning according to new development possibilities (projects) outside the defined re-evaluation periods contributed to the flexibility and success of developing the Kevitsa mine. Normally land use plans go under a revision after 10-20 years, but given the possibility to evaluate new project possibilities in a flexible manner, and to allow the changes to land use plans (through the possibility of company finance), minerals, land-use planning and socio-economic factors are considered continuously given new demands and interests. The change of land use zoning outside the revision periods follow normal procedure for change of the land use plans at a local level, as this is regulated. In practice companies present own plans for the land use to the land use planning authority, follows authority and expert consultation and public consultation. Relatively to minerals the process can start as early as possible when planning to open a mine. Flexibility of LUP procedures and legislated involvement of stakeholders allows for changes over time, and frequent evaluation of land-use trade-offs as well as socio-economic effects.
Element 2: Inclusion and integration of mineral resources during LU planning process. LU plan includes the potential increase of the area of mining activities, and potential additional deposits to be developed. The upper level of land use planning is at regional level: the regional land use plans, that are renewed every 10-20 years, and are created by the regional councils after several cycles of consultations and public hearing, outline building and environmental development in the coming decades. The land use	Following the example of the Kevitsa case study, practitioners interested in the integration of minerals into the land use planning process and LUP maps should consider the following triggers that contributed to inclusion of minerals in to LUP processes: -National interest in mineral exploitation -policy (as part of sustainable development), -Regional interest in mineral exploitation (as part of sustainable development),



## MinLand



refers also to participation and expertise. Experts, authorities and stakeholders are involved in the process. The regional land use plans are built considering national land use guidelines and special needs of the regions. In Finland minerals are considered strategic important within the mineral policy and by certain regions where mining is more active. The regions have possibility to decide which are the main aspects to be stressed for own development. The regional council consult experts, in this case geological survey, to include minerals into land use planning. -participation /consultation of experts in the land use planning process.







Case 9: Baiso – a study of a mineral and landscape route for the touristic development of the region

This good practice case responds to Identification of actual and potential land use and on Assessment of the integration of social aspects, tourism and civil society involvement (SLO)

## Minland Good Practice Stream Topics:

## A – Data assessment and use in policy formulation and land use planning

**B** – Identification of actual and potential land uses

G – Assessment of integration of social aspects and civil society involvement

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# Part 1: Case Overview

## 1.1 Executive summary

The case study address to the identification of actual and potential land use in Baiso municipality with the aim of a new touristic development of the area. In the area, in fact, coexist several different land uses: closed quarry activities, MAB UNESCO site, geological heritage sites and agricultural area. All these different land uses are managed by the local and provincial land use plan, and, for the mining sector, by the local and provincial mining plan. The study for the development of landscape and mineral route in Baiso municipality, settled together with public authorities and civil society, has the objective to change actual land uses modifying the current planning instrument, in particular the municipality mining plan (PAE), proposing a new use of the mining areas connecting them with a touristic route.

## **1.2 Overview of Key Good Practice Aspects and suggestions**

## Study for a mineral and landscape route in Baiso municipality

Element 1: Mapping the geology of the area with references on potential geological heritage

Suggestion for transferability: Create a working group of local experts, university and public authorities' expert

Element 2: Mapping the flora and fauna of the area

Suggestion for transferability: create a working group of local experts, university and public authorities' expert

Element 3: Mapping the closed quarries area looking at their potential future touristic uses

Suggestion for transferability: Consider the restoration of single quarry has part of a more complex system

Element 4: Proposing a modification in the municipality mining plan

Suggestion for transferability: Involving relevant authority from the beginning will help the process of modification of legislation at the end.

## Stakeholder involvement

Element 1: Stakeholder involvement during the study development Suggestion for transferability: the stakeholder involvement has to start from the beginning of the study/project,







Element 2: Raising of public awareness of the touristic potential of the area Suggestion for transferability: raising awareness is a focal point to increase the social acceptance of the study/project

#### **1.2** Mineral resource groups:

X AGGREGATES;

X INDUSTRIAL MINERALS;

# Part 2: Case description

## 2.1 Case description

The municipality of Baiso, with regional funds coming from mineral exploitation fees (see chapter 2.4), has developed, together with the Emilia-Romagna Region, a study of a mineral and landscape route that will increase the attractiveness of the area proposing modification of the current planning instrument, in particular the municipality mining plan (see chapter 2.4).

The Minland case aim to increase the touristic attractiveness of the area and to finalize the restoration project of the closed quarries. The creation of a touristic route, in fact, has determined changes in land uses/access permit on land where the route is mapped. In particular, the route will pass on area defined by the current mining as potential suitable for mining activities. To let the route pass, these areas must be deleted from the municipality mining plan (see chapter 2.4) to bring them back to their previous land use. As for any other changes in a local plan, this process involves an institutional board composed by Region, Province and Municipality itself.

The mineral route study has been developed within a working group composed by the Emilia-Romagna Region, the Province of Reggio Emilia, the Regional Civil Protection Agency, the Baiso municipality, the University of Modena and Reggio Emilia, and with an external support of technical experts and stakeholders.

## 2.2 Responsible institutions

- Emilia-Romagna Region (financing partner, responsible for planning modification)
- Reggio Emilia Province (financing partner, responsible for planning modification)
- Baiso Municipality (Executive partner, responsible for the stakeholder involvement, responsible for the study working group)

## 2.3 Case stakeholders

Some partners, not directly involved in the modification of planning instruments, are getting involved for the development of the study, in particular the Regional Civil Protection Agency, the University of Modena and Reggio Emilia, local enterprises, citizens, experts

## 2.4 Context

Baiso municipality (Reggio Emilia Province) is in the northern part of Italy. Historically, Baiso area was one of the most important exploitation site for the ceramic industry of Sassuolo. The area is characterized by cretaceous clays ("Varicolori" clays) where, in the past, were established quarry activities for the ceramic industry of Sassuolo district. Due to a crisis of the market most quarries get closed. Moreover, this type of clays determines a spectacular landscape characterized by colored gullies and by natural environment of high value. This is the reason why the area is part of MAB Unesco site, a Regional park and a Landscape regional heritage.

Regarding the mining legislation, Italy has a decentralised regime and each region has its own relevant regional laws (RL) regulating extraction and environmental permitting procedures. The Emilia Romagna Region was one of the first region in Italy to implement a mining law and to develop a wide-area mining planning; some important regional laws are RL of 18 July 1991, n. 17: rules on mining activities, RL 3/99 delegating to the Province and Municipalities the authority for mines and quarries, RL 9/99 for EIA, and RL 20/2000 on Spatial Planning.

In Emilia-Romagna Region the principal mining planning is delegated to Province, which elaborates the Infraregional Plan for Extraction Activities (PIAE). PIAE, above all, defines the need for every specific material (clay, sand,



gravel, stone, ....) inside the province, this evaluation is based on the statistics concerning building activities and on the statistics concerning extraction activities in the past years. When the needs are calculated PIAE also defines the specific areas where all the materials should be recovered, allocating to every area the maximum amount of material that can be extracted. This area are chosen from a list of potential sites mainly by a Strategical Environmental Impact Assessment (VAS), that deeply evaluates all the impacts of the mining activities on the environment (land use planning, geology, underground water, pollution,...), in respect of the economic and social needs. PIAE also includes the general rules for the exploitation of the resources.

After PIAE is approved every municipality involved in the planning has to elaborate a local Plan for Extraction Activities (PAE). The PAE, which is part of the instruments of land use planning of the municipality, gives details about the areas and the rules defined by PIAE and can add further areas in a range assigned by PIAE.

The mining company pays a tax for the extracted material depending upon the material. 80% of the tax goes to the municipality, 15% to the Province and 5% to the Region, which, due to the regional law 17/91, uses this money for activities concerning recovery of abandoned quarries, studies and development of instruments for the management of data deriving from the mining activities. The Minland case study is financed by Region and Province using such kind of funds coming from exploitation taxes.

## Part 3: Case Evaluation

## 3.1 Impact achieved by the Baiso mineral and landscape route

The study of a mineral and landscaper route in Baiso municipality contributed to the Minland Good Practice Stream topic point B and G:

- Creating a local awareness on the touristic potential of the area
- Updating the description of geology, flora and fauna heritage of the area
- Proposing a new uses of closed quarries, both under restoration or not yet restored
- Proposing a change in the local mining plan, together with the involvement on public authorities and local stakeholders

## 3.2 Good Practice Aspects: Elements and their transferability

## **GOOD PRACTICE ASPECT 1:**

## **Study For A Mining And Landscape Route**

 Key elements (of Good Practice Aspect)
 Suggestions for Transferability (of Key Elements)

Mapping the geology of the area with particular references on potential geological heritage: the working group, set up by the Municipality together with the support of the Region, updating the geological knowledge, has found new geological heritage areas, sometimes revealed by the exploitation activities themselves. All this new layer of information has been implemented on a GIS as part of the regional geological database. The connection between these new areas is the core part of the new mineral route.

**Create a working group of local experts, university and public authorities' expert**. The creation a working group composed by experts coming from different sector was the first step to achieve the final goal of the project/study. Bringing together experts with different background, knowledge of the area, sensitivity in reference with some topics, will help to propose to the general public (if a stakeholder engagement is foreseen) whole comprehensive and interdisciplinary project/study. The working group shall combine desk activities with several number of field visits, in relation to the complexity of the





	study/project foresee. The working group must be composed by person coming from relevant authorities for the implementation of the project/study and from local expert individuated by the territorially competent local authority (in this case the municipality) with public tender.
Mapping the flora and fauna of the area. As done for the geology part the working group has some expert on flora vegetation and on fauna mapping. The study done has determined the discover of new elements of protected flora never individuated in this area. At the end a detailed map of flora was made on GIS to update MAB UNESCO heritage site characteristics.	Create a working group of local experts, university and public authorities' expert: see description above
Mapping the closed quarries area looking at their potential future touristic uses: together with the mapping of relevant natural aspects, the study has a particular focus on quarries areas not more exploited. Some of them area already under restoration (due to regional law 17/91), others, oldest than the law, are not yet recovered. A more comprehensive analysis of the final destination of those area has made at municipality level involving both owner of land and public authority. The new touristic route will be the link between closed quarry areas creating synergy between them and boosting the restoration where was not yet done.	Consider the restoration of single quarry has part of a more complex system. Where it is possible restoration must be an opportunity for the relevant authority to change land uses to improve the performance for the whole area targeting to a specific goal (touristic destination, natural destination etc.). Fundamental in this work is the local stakeholder engagement.
Proposing a modification in the municipality mining plan: the municipality mining plan, as part of more generic land use plan, defines some area for the exploitation, defining the amount of material can be extracted, the duration of the authorization and the final restoration. If some areas are returned to their original state, for example agricultural, the total amount of extractable material foreseen by the plan, can theoretically be moved to another area already planned. In this case, the new mineral route will pass in an area previously marked as area of potential extraction. Changing the state in the mining plan (erasing the area) will give this "potentiality" to another area, much more interesting from an economic point of view also for the private company working there.	All the relevant authorities have to get involved in the process. The working group that contributed to the success of the case, was composed by representative of authorities that will be responsible for the adoption of the plan modification. This constitutes a suggestion for similar cases with, as involving relevant authority from the beginning will help the process of modification of legislation throughout the process until the final step.
protection use area suitable for exploitation, on other hand we concentrate all the impact of exploitation	



activities in one single area.



## **GOOD PRACTICE ASPECT 2:**

## **Stakeholder Involvement**

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
<b>Stakeholder involvement during the study</b> <b>development</b> : the involvement of civil society during the study development let the final result share and accepted by the local population. First the working group has presented the background analysis of the area to the population, showing them the criticality and the enabling factors for increase the touristic awareness. In an open public discussion people were let to propose some idea in the framework of the general objectives presented by the municipality. A second meeting was finally made to present a first draft result of the mineral route. At the end, was printed and donated to the population a book that tell the beauties of the area and the results achieved during the mapping phases	The stakeholder involvement has to start from the beginning of the study/project, to have people motivated to participate. First step is to give them all the background analysis (maps, bibliography, etc.) made by the working group. This will help them to be confident and participative to the stakeholder involvement process. Be transparent give you the legitimation to work and to proceed in the study/project. Second step is to let them feel listened to by the public authorities, involving them in field visit, open meeting, web discussion. Finally, the results achieved by the project/study has to be share again to the population.
Raising of public awareness of the touristic potential of the area: several events in particular addressed to school and teachers help them to improve their knowledge of the territory, in particular on geology aspects and flora/fauna heritage	Raising awareness is a focal point to increase the social acceptance of the study/project. Involving children is the fast way to increase it. Teachers or environmental associations/NGOs often have different instruments and outreach activities to involve even young children, e.g. field geology laboratories, flora and fauna observations etc.





Case 10: Portugal land use planning methodology for mineral resources (LUP-MR)

This good practice case responds mainly to the challenge of safeguarding mineral resources taking into consideration the available knowledge on mineral resources and mining activity

## Minland Good Practice Stream Topics:

B – Identification of actual and potential land uses

C – Assessment of whether minerals and other land uses have been introduced on equal footing

D – Assessment and extent of integration between minerals and land use policies

H- Assessment of strategic consideration of safeguarding

Permitting

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# Part 1: Case Overview

### 1.1 Executive summary

The Portuguese land use planning methodology for mineral resources (LUP-MR) is a soft-policy instrument developed at national level to safeguard mineral resources (includes all the mineral resource groups), created in response to the first Portuguese Municipal Land Use Plans (1990), which did not consider minerals safeguarding. Acting at the municipality level, the main objective of the LUP-MR is minerals safeguarding by introducing subcategories of land into policy-making that cover the whole minerals value chain, from undiscovered/hypothetical mineral resources to extraction and exploitation. It is an approach focused on the level of knowledge about national mineral resources, regardless of their location and value.

The LUP-MR considers three primary roles for the use of land regarding mineral resources:

- Knowledge and Minerals Safeguarding
- Protection
- Valuing

To each one of these roles correspond land use subcategories to be outlined in the municipal LUP reviewing process:

- Exploration Areas and Potential Areas for the Knowledge and Minerals Safeguarding role;
- Geological and Mining Heritage Areas for the Protection role;
- Consolidated Activity Areas, Complementary Exploitation Areas, and Areas under Rehabilitation.

Despite being not legally binding, the LUP-MR has a clear impact on the land use planning of municipalities: Many municipalities adopted the LUP-MR by delineating these land subcategories in their municipal land use plans. Municipalities not adopting the LUP-MR, however, are made aware of the importance of minerals for society and the necessity for safeguarding. For this reason, municipalities that did not adopt the methodology and wished to include rules in the regulation associated with their LUP that prevented the development of mining activities in places where such activities were compatible with other uses, did not include those rules.

#### 1.2 Overview of Key Good Practice Aspects and suggestions





## PREVENTING STERILIZATION OF MINERALS IN LUP:

- **SUCCESS FACTOR / STRATEGIC CHOICE: Addressing the unknown/hypothetical mineral resources** requires land use practitioners to grant the access to the not yet discovered mineral deposits, i.e. by preventing the unnecessary occupation of areas where these deposits may occur by other land uses that would compromise their extraction.
- SUCCESS FACTOR / STRATEGIC CHOICE: An approach focused on mineral resources, regardless of their location and economic value. It requires that land use practitioners do not restrict the total amount of mineral resources available to the society based on their location or current economic value.
- SUCCESS FACTOR: Fostering the acquisition of knowledge on the existing and potential mineral resources at municipal level requires qualified human resources for the inventory and characterization of mineral resources at municipal level, which is a distinct issue of inventorying and characterizing the mining activities already established.
- **CHALLENGE ENCOUNTERED: Equal Footing evaluation of minerals.** To prevent minerals sterilization due to occupation of land by unnecessary uses that compromise their extraction implies a fair and equal footing evaluation about the need to sterilize minerals.

#### FLEXIBLE INTEGRATION OF MINERALS RESOURCES IN LUP:

- **SUCCESS FACTOR: LUP-MR is adaptable to changes in legislation** requires a methodology focused on the mineral resources themselves (on the degree of knowledge about them), allowing that the primary role of land assigned to mineral resources accommodates changes in minerals or LUP legislation.
- CHALLENGE ENCOUNTERED: Soft policy tool applicable at the municipal level no obligation to be implemented.
- CONTEXTUAL FACTOR/CHALLENGE ENCOUNTERED: Participation of the mining authority in the Advisory Committee for the review of Municipal Land Use Plans, allowing discussions for the implementation of mineral safeguarding areas.
- **CONTEXTUAL FACTOR**: Allowing the coexistence of compatible uses of land. The Portuguese LUP legislation promotes the coexistence of compatible land uses and specifies compatibility between mining, agricultural and forestry activities.

## **1.3 Mineral resource groups:**

- Aggregates
- Metallic Minerals
- o Industrial Minerals
- Critical Raw Materials (according to EU 2017 list of CRMs)

# Part 2: Case description

## 2.1 Case description

The land use planning methodology for mineral resources (LUP-MR) refers to the practice applied by the mining authority (DGEG) in Portugal when contributing to Land Use Planning review process of Municipal Land Use Plans, with the input of the Portuguese Geological Survey (LNEG). It addresses the topic H – Assessment of Strategic Aspect Consideration (protecting and safeguarding mineral resources).

According to the Portuguese legislative framework on land use planning, the definition of the spatial occupation model and the establishment of land use zoning and respective rules is made at municipal level. At this level, land is classified as urban or rural.







Land classified as rural is then categorised according to its current main use, being the "Spaces for the Exploitation of Geological Resources" one of the possible categories provided by LUP legislation.

The applied LUP-MR is an informal methodology (not mentioned in any law), that can be voluntarily used by the municipal land use planning authority.

Aiming safeguarding the access to mineral resources in LUP, the methodology is based on the existing knowledge about them, independently of their location or current economic value because their location is not controlled by man and their economic value changes with time. The methodology has evolved over the last decade and adapted to the changes that occurred in the mining and land use planning legislation. It considers the whole minerals value chain, from undiscovered/hypothetical mineral resources to extraction, exploitation, and rehabilitation.

LUP-MR foresees 3 primary roles for the spaces that should be categorized for mineral activities in land use planning:

- Knowledge & Safeguarding;
- Protection;
- Valuing.

To each one of these roles, different types of land subcategories can be assigned.

<u>Knowledge & Safeguarding</u> aims for the general assessment of national geological resources and their characterization through multiscale exploration surveys and R&D projects. It foresees the delimitation of <u>Exploration Areas</u> and <u>Potential Areas</u> in LUP. These areas are to be considered by land use practitioners as subcategories in the category Spaces for the Exploitation of Geological Resources.

- Exploration Areas: where surveys are undertaken to identify and characterise mineral resources until studies demonstrate their economic interest and feasibility. According to Portuguese mining law, these areas are temporary public easements that prevent the occupation of land by uses or activities that may compromise the future extraction of mineral resources.
- Potential Areas: those with demonstrated potential for the occurrence of mineral deposits, which is why they should not be occupied by uses that could unnecessarily compromise the extraction. These areas may be totally or partially placed in one of the Valuing categories, according to new data and/or results gathered in updated studies.

It should be noted that when speaking about the integration of mineral resources in land use planning, Minerals Safeguarding means to avoid the unnecessary sterilisation of mineral resources by uses or occupations of the land where they occur (or may occur) that could compromise their extraction (as agreed by the Minland Consortium).

**Protection** aims to guarantee the access to known mineral deposits which are considered by the Portuguese mining legislation as having special interest for the national or regional economy, and the protection of Geological and Mining Heritage Areas. LUP-MR does not foresee land use subcategories for these mineral deposits with relevant interest because their protection will be achieved through formal land use precautionary measures promoted by the mining authority, or legislative acts promoted by government members.

The <u>Valuing</u> role of the land relates to the use of resources (profitability). The following land subcategories may be considered:

- <u>Consolidated Activity Areas</u>: where a significant exploitation activity already exists, for which further development should be addressed according to good environmental standards, as well as the responsible use of the mineral resources. This subcategory includes the legally granted mining concessions (public domain resources) or exploitation licences (private domain resources), which are administrative public easements where there is a complete protection of the mineral resources.
- <u>Complementary Exploitation Areas</u>: where mineral resources with economic interest are known, contiguous, or not, to an area of consolidated activity, overcoming difficulties posed by the exhaustion of





- available reserves. In this land subcategory there should not be any activities or uses allowed that may unnecessarily prevent the extraction of minerals.
- <u>Areas under Rehabilitation</u>: already exploited and where ongoing or planned landscape recovery and/or other remediation actions will subsequently allow other land uses.

Each municipal land use planning reviewing process has an Advisory Committee that integrates public entities considered relevant for that process. The Portuguese mining authority (DGEG) is one of those entities and is responsible for feeding in the LUP-MR proposal, which includes the mining easements (mining concessions and licenses) as Consolidated Activity Areas or Exploration Areas (Exploration permits) and the minerals safeguarding areas (Potential Areas and Complementary Exploitation Areas), which are delineated by the Portuguese Geological Survey (LNEG).

## 2.2 Responsible institutions

- Portuguese Mining Authority (DGEG) is responsible for feeding in LUP-MR proposals in Municipal LUP review processes
- Portuguese Geological Survey (LNEG) is responsible for delineating minerals safeguarding areas
- Municipalities are responsible for the voluntary implementation of the LUP-MR proposal

## 2.3 Case stakeholders

- National, regional and municipal land use planning authorities are effected by the voluntary implementation of the LUP-MR
- All the entities being part of the Advisory Committee for each municipal land use planning process.

### 2.4 Context

The main Portuguese minerals legislation (Law 54/2015) qualifies mineral resources in two types: State owned and private owned mineral resources. State owned mineral resources are metallic ores and some industrial minerals (kaolin, quartz, feldspar, and others) considered to have strategic economic relevance for Portugal. Private owned minerals are all the others considered as not having strategic relevance (mostly construction minerals and ornamental stones).

The management of Portuguese mineral resources is made by the mining authority (DGEG - General Directorate for Energy and Geology) which issues and handles 3 main types of mining permits:

- Exploration permitting. Before issuing the permit, DGEG carries out a mandatory consultation with the municipal land use planning authority and other authorities (environment, forestry, etc.), which report on the existing restrictions to possible mining extraction, in order to provide the applicant with all the available information. If issued, the permitting has a validity of 5 years maximum. The space allocated to this exploration permit becomes a temporary land use administrative easement aiming the protection of the mineral deposits that may be discovered.
- Mining Concession (exploitation permit for state owned minerals). Only can be issued to whom asked the
  exploration permit. Before issuing the mining concession, DGEG must carry out consultations with other
  authorities, similarly to those carried out for the exploration permitting. The mining concession only can be
  issued if there is compatibility between the mining activity with land use planning and with the conditions
  imposed during the Environmental Impact Assessment. The mining concession becomes a land use public
  easement aiming to protect the issued exploitation rights.
- Exploitation License (exploitation permit for private owned minerals). Issued by the mining authority (most
  of the quarries) or by the municipality (small artisanal quarries). Only can be issued if there is compatibility
  between the mining activity with land use planning (through a formal consent from the municipal land use
  authority) and, when applicable, with conditions imposed by EIA (which also evaluates if the required area
  is included in a land use planning space compatible with the exploitation of geological resources).

Land use planning policy in Portugal considers 3 main hierarchy levels:





- a national level defining the strategy (National Program for the Land Use Policy) and main guidelines (land use legislative acts on the jurisdiction of the use of land, on the rules for classifying land, and on the implementation procedures framework)
- a regional level that adapts the national strategic approach and guidelines to the specificities of each region through Regional Land Use Programs.
- A municipal level (or inter-municipal) that defines the spatial occupation model and establishes land use zoning and respective rules through Municipal Land Use Plans that obey the higher-level strategies and guidelines.

The Portuguese national legislation on land use planning (main legal documents are Law31/2014 and Decree Law no. 80/2015) classifies the land in two types: urban land and rustic (rural) land. The rural land is the one that has recognized capacity for an ensemble of activities and economic or conservation uses and should be categorised as a function of its current main use. When having aptitude for the exploitation of geological resources it should be categorised accordingly – **Category Spaces for the Exploration of Geological Resources**. If more than one land use interest is present, planning should promote the coexistence of compatible uses, namely between agriculture, forestry and mining.

According to the aforementioned Decree-Law 80/2015, the municipal plans should identify, delimit and regulate the spaces allocated to the exploitation of geological resources.

The mineral resources value chain is not completely addressed in the legislative framework:

- LUP legislation only considers the spaces where mineral activities are already taking place or have occurred (rehabilitation of abandoned old mines), which, according to the Portuguese mining law, are the spaces already having one of the following mining permits: exploration permit, mining concession, and extraction licence. LUP legislation also considers areas for the rehabilitation of abandoned old mines as they are a kind of environmental concession not regulated by the mining law.
- It is somewhat contradictory because new mining permits only can be issued if located in those spaces (which, *a priori*, are already occupied), or if located in spaces for which it is foreseen the compatible coexistence.
- It does not refer to unknown/hypothetical mineral deposits or to the ones that are not covered by any type of mining permit.

Intended to effectively tackle minerals safeguarding, the Portuguese Mining Authority (DGEG), with the support of the Portuguese Geological Survey (LNEG), started to assist municipal land use planning review procedures in ensure accessibility to mineral resources. It has no legal status and therefore, its implementation is not mandatory. It has evolved since the elaboration of the first Municipal Land Use Plans in the 90's, adapting to the changes occurred in the mining and land use planning legislations.

The review process of each municipal land use plan is led by the municipal authority with the support of the corresponding regional authority. An Advisory Committee composed of a multidisciplinary team of technical specialists from various government agencies also supports the review process. Usually, DGEG is a member of this committee and consults the geological survey and other mining-related stakeholders prior to make its proposal or issuing its final opinion on safeguarding the access to mineral resources.

# Part 3: Case Evaluation

## 3.1 Impact achieved

So far, the results from the case study suggest a sound impact on minerals safeguarding in Municipal LUP because:

- Most of the Municipal LUP authorities (about 75%) adopted the LUP-MR by delineating (if applicable) the proposed subcategories of spaces for mineral safeguarding (e.g. potential area, complementary exploitation area);



D6.2: Final Manual for Good Practice Guidance



- Most municipal authorities, irrespective whether they delineate the subcategories in municipal land use plans, become aware of the importance of minerals for society and their necessary safeguarding. As a consequence, rules that prevent the designation of land for minerals activities were not implemented. This consequently affected the facilitation of coexistence between different but compatible land uses (e.g. agriculture, forestry, mining)

According to the Minland Local Workshop results on this case study, a more substantial impact of the LUP-MR methodology for safeguarding minerals requires:

- Its integration in LUP legislation.
- Awareness of the general public for the activities relating to mineral resources, which could be achieve through direct benefits for the local communities.
- A Mineral Resources Sectoral Plan

3.2 Good Practice Aspects: Elements and their transferability

GOOD PRACTICE ASPECT 1:	
Preventing Sterilization Of Minerals In LUP	
Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Addressing the unknown/hypothetical resources. LUP-MR provides for the delimitation of areas for mining activities that cover the entire value chain of mineral resources, i.e. Including mineral deposits not yet discovered, known mineral deposits not yet being exploited, deposits being exploited and areas under rehabilitation. Particularly regarding the mineral deposits not yet discovered (the so called Unknown/Hypothetical resources in the international reporting schemes for mineral resources), LUP-MR foresees the delimitation of Potential Areas, i.e. those with demonstrated potential for the occurrence of mineral deposits, on which depends the long-term supply of minerals to the society. This is why they should not be occupied by uses that could unnecessarily compromise their extraction.	Land use practitioners should grant the access to the not yet discovered mineral deposits, i.e. should not restrict the access to areas for mineral exploration activities and should prevent their occupation by uses that could unnecessarily compromise the extraction of minerals.
An approach focused on mineral resources, regardless of their location and economic value. During the initial steps of the municipal LUP review process, municipal authorities often establish rules that prohibit the exploitation of mineral resources in certain areas (e.g. in nature conservation areas, in agricultural areas) ignoring:	Land use practitioners should not restrict the total amount of resources available to the society based on their location or current economic value. Therefore, they should always grant the access to mineral deposits (i.e. grant the access to exploration and extraction activities).


## MinLand



<ul> <li>The Regulatory Decree no. 15/2015 (see Key Element "Allowing the coexistence of compatible uses of land");</li> <li>Interdictions should be addressed later, at the EIA stage, rather than in LUP, because LUP has primarily to do with land's capacity for certain uses and activities</li> <li>This is related to the general national and European LUP and Environment policies, where mineral resources are not treated as natural resources, instead they are always approached from the point of view of economic activity (extractive industry) and respective possible negative impacts on the environment.</li> <li>Moreover, minerals are often considered according to their known economic value, excluding the not yet discovered mineral resources and deposits with low intrinsic economic value (eg. aggregates). Such kind of decision ignores that the economic value of mineral deposits is a variable that changes with time, endangering the long-term accessibility to these minerals.</li> <li>When DGEG proposes the implementation of LUP-MR, municipal LUP authorities become aware of the importance of mineral resources and that they should be approached in a different point of view: natural resources having an economic interest that changes with time and that should be safeguarded from</li> </ul>	Conflicts with other uses of land should be addressed latter, during the EIA stage etc.
Fostering the acquisition of knowledge on the existing and potential mineral resources at municipal level. The reviewing process of municipal land use plans is based on bio-physical characterization studies, which, usually, do not consider the mineral resources. Therefore, the LUP-MR methodology fosters the acquisition of knowledge about the mineral resources that occur or may occur at municipal level. This is a different issue of inventorying and characterising the mining activities already established. (SUCCESS FACTOR)	Municipal authorities should rely on internal or external qualified human resources to characterize the mineral resources.
Equal Footing evaluation of minerals To avoid that areas where mineral deposits occur (or may occur) are unnecessarily occupied by uses or activities that compromise their extraction, implies that the use of land for mineral activities should be treated on an equal footing with other possible uses. (CHALLENGE ENCOUNTERED)	Tools developed by the H2020 Project MINATURA2020 may be used to equally weight the use of land for mineral or other activities





GOOD PRACTICE ASPECT 2:	
Flexible Integration Of Mineral Resources In LUP	
Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
LUP-MR is adaptable to changes in legislation According to LUP legislation, municipal authorities should delimit the land use category called Spaces for the Exploitation of Geological Resources (if applicable). Before the discussion and implementation of LUP-MR, the LUP municipal authorities make a direct correspondence between that category and the mining permits regulated by the mining legislation, and nothing more than that (i.e. excluding unknown deposits and known deposits that are not yet subject to any kind of permit). Therefore, LUP category (i.e. the use of land) is linked to an administrative topic. Instead, land subcategories defined by LUP-MR are linked to the primary role of land regarding the level of knowledge about mineral resources (Knowledge & Safeguarding, Protection, Valuing), which is independent of legislation. Thus, if legislation changes (e.g. by excluding or including new types of areas), it will not affect the primary role assigned to the use of land nor the respective subcategories, which will accommodate the modifications. An example happened recently: besides the mining permits, old mining legislation considered Reserve Areas and Captive Areas to protect relevant mineral deposits. These areas were considered by LUP-MR at the Protection role. New legislation does not give these names to the areas where relevant mineral deposits exist. Therefore, LUP-MR adapts by excluding these names, but does not exclude the protection role that can be assigned to land. Another example: a possible new legislation may consider that the exploration permits are not public servitudes and, for that reason, they will not be integrated in LUP. By LUP-MR they will continue to be integrated into the subcategory Exploration Areas	The integration of mineral resources in LUP should be done according to the level of knowledge about them (e.g. unknown deposit versus known deposit, deposit being exploited versus not being exploited, deposit bigger than actual concession, etc.) and how this level influences the role that should be attributed to the use of the land, and not only depending on the type of mining activity ruled by legislation
Soft policy tool – no obligation to be applied	The difficulties encountered by this soft policy instrument will be easily overcome if it were a binding political tool.

The municipal political decision-making process is generally not receptive to the inclusion of areas for

However, in order it becomes a binding tool, it will need awareness and engagement of national LUP and



## MinLand



<ul> <li>mining activities in the LUP due to the widespread opposition to the mining activities that drives it in that direction. For that reason, it is common to hear expressions such as "we are expressing the will of the people", or "we do not want anything related to mines in our land jurisdiction" or even "about areas for mining activities, we only admit those to which we are bound by law".</li> <li>The areas that political power is bound to include are only those related to the current mining permits.</li> <li>Being LUP-MR an informal methodology, it requires a debate with land use municipal authorities to carry out its implementation. From experience of working with them and given the kind of positions mentioned earlier, sometimes they are conflictual debates because biased, non-technical or rational arguments against mining are presented. However, after creating awareness about the importance of mineral resources, and explaining the concept of "minerals safeguarding", most of the times the LUP-MR is implemented by the municipality.</li> </ul>	Environment authorities (political decision-makers) for a normative act expressing that the already legislated Spaces for the Exploitation of Geological Resources should include the land subcategories of LUP-MR. If this is not the case, and because the LUP-MR is an informal methodology supported only by the will of the decision makers and technicians from the mining authority, the methodology will tend to be overlooked as these technicians and decision makers change or retire. In other words, there is a need for a formal recognition of the LUP-MR by the national political authorities, otherwise it will disappear.
Participation of the mining authority in the Advisory Committee for the review of Municipal Land Use Plans. An Advisory Committee is set up for each municipal land use plan review process (regulated through a ministerial legislative act). The Advisory Committee includes public entities that are considered relevant for that specific municipality. DGEG (the mining authority) is called for most of these advisory committees, allowing to bring to the discussion the issue of minerals safeguarding. However, for the municipalities for which there are no active mining permits, DGEG is not called to participate. Therefore, no areas will be allocated to minerals safeguarding. Moreover, the rules for land use in these municipalities usually specify the interdiction for mineral activities in all its territory, implying that mineral exploration activities will not take place – unknown mineral deposits will never be discovered. (CONTEXTUAL FACTOR /CHALLENGE ENCOUNTERED)	The review process of municipal land use plans should have an advisory committee where the mining authority should always be present, in order to propose LUP-MR methodology. Awareness about the importance of minerals to the society and on the need to safeguard their access in LUP is needed at the level of Municipal and Regional LUP authorities, which are the ones responsible for deciding which entities should integrate the Advisory Committee.
Allowing the coexistence of compatible uses of land. The Portuguese LUP legislation, through a normative	-
the second se	







municipal LUP authorities (Regulatory Decree 15/2015), promotes the coexistence of compatible land uses and specifies compatibility between mining, agricultural and forestry activities. This is achieved by directly expressing that the use of the land should respect "the principle of compatibility of uses, ensuring the separation between incompatible uses, and promoting the coexistence of compatible and complementary uses". After, it is clearly stated that agriculture, forestry and exploitation of geological resources are compatible activities.





# Case 11: Integration of Mineral Resources into Spatial Planning: The best practice example of aggregate resources' exploitation

This case responds to

### Minland Good Practice Stream Topics:

B – Identification of actual and potential land uses

C – Assessment of whether minerals and other land uses have been introduced on equal footing

#### D – Assessment and extent of integration between minerals and land use policies

#### H – Assessment of strategic consideration of safeguarding

Permitting

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# Part 1: Case Overview

#### 1.1 Executive summary

The case relates to a national level policy tool for safeguarding the exploitation of primary aggregates 'resources. It focuses on the framework applied for the delineation of conflict free aggregates' extraction areas (named "Quarrying Areas", QA), on the pre-exploitation phase.

The specific case describes how a national level policy tool is integrated in land use planning (i.e. a top-down approach as the national plan provides a framework that is incorporated in regional and local spatial plans).

The Quarrying Area (QA), is namely an area "assigned exclusively for aggregates extraction". As such, it is the only activity of the extractive sector that is taken into account in regional spatial planning (i.e. the area has a specific land use which is "the extraction activities for the production of primary aggregates"). In principle, the aggregates' exploitation rights from quarries operating within the established QA prevails the exploitation rights of any other mineral commodity occurring within its boundaries (with some exceptions outlined in more detail in part 2.1 of the present). The case illustrates an example of how mineral resources (in this case rocks suitable for primary aggregates production) are protected against other land uses (the QA have a specific land use identity since they assigned for aggregates extraction activities) and how a policy related to their management is integrated in the land use policy.

#### 1.2 Overview of Key Good Practice Aspects and suggestions

**Good practice Aspect:** Devising an integrated policy tool to secure/safeguard aggregates extraction from conflict free extraction areas

- Integration of the QA into the Regional spatial plans and prioritisation of extraction of aggregates (resolves competition issues with other land uses)
- Minimization of the environmental footprint (the QA are designated in areas with favourable morphology not directly visible from the surrounding settlements and not imposing adverse effects to the surrounding environment)
- Secure long-term supply of aggregate resources (recoverable aggregates from the designated QA should cover the estimated needs of the region for at least 40 years. In addition, in land use plans, the QA do not modify their character as areas "assigned exclusively for aggregates extraction", until the max possible depletion of their reserves)







• Facilitation and simplification of the licensing and environmental permitting procedures as opposed to quarries operating outside the QA

Suggestion for transferability: The case study provides good practice information for practitioners interested in public policy tools for minerals safeguarding as well as how to better integrate minerals policy in land use planning policy. It illustrates an example of how aggregates extraction is protected against other land uses and comprises an integrated plan for aggregates' extraction safeguarding that could be extended to include all mineral resources (e.g. establish and include in land use planning current active mining areas as well as areas with mining potential in the future). Such a plan should at least consider exploitation of Mineral Resources as a priority activity in the area of interest and clearly define exclusivity or coexistence criteria with other activities (i.e. tourism, agriculture, etc.). This approach will facilitate access to and exploitation of mineral deposits by addressing and timely resolving land-use competition issues (i.e. by addressing the mining area in land use plans as an area where the extraction activities have priority and/or at least are considered on equal basis with other land uses). It could be implemented on a strategic (i.e. national level) and then detailed in regional and local level at a later stage. It could work with countries that follow a top-down approach in land use planning policy (i.e. the regional and municipal level spatial plans is obligatory to be harmonized with the upper level strategic level spatial plans).

#### **1.3 Mineral resource groups**

#### X; Aggregates

# Part 2: Case description

#### 2.1 Case description

The specific case on aggregates describes how a national level policy tool for safeguarding the exploitation of primary aggregates 'resources is implemented on regional and local levels of public administration (i.e. a top-down approach as the national plan provides a framework that is incorporated in regional and local spatial plans). The case study focuses on the procedures applied for the delineation of conflict free aggregates' extraction areas, the Quarrying Areas (QA)\*, during the pre-exploitation phase.

According to the prevailing legislation, the production of primary aggregates in Greece is only allowed \*\* to be performed within legally bound areas, the QA, defined on a geographical subdivision (Regional Units/Periferiakes Enotites) of the Administrative Regions\*\*\*. The designation of QA for primary aggregates production, constitutes the basic institutional tool for the secure long term supply of aggregates from primary sources on regional level in Greece. The QA were introduced as a policy tool about 3 decades ago in an effort to sustainably cover the long term local needs in aggregates. The QA are predefined areas which comply with specific criteria (briefly mentioned below) and which may host more than one quarry operators.

The QA are determined with a decision issued by the Regional Governor, following consultation with an 8-members' Committee with representatives from different authorities deriving from all levels of public administration \*\*\*. The following authorities are represented in the consultation committee:

- Ministry of Environment and Energy (central level of government)
- Forestry Department from the De-centralized Administration (de-centralized level of government)
- Technical Services of the Municipality (local level of government)
- Ministry of Culture and Sports (central level of government)
- Department of Environment and Spatial Planning of the Administrative Region (regional level of government)
- Geological Survey of Greece (HSGME)
- Department of Public Works of the Regional Unit (regional level of government)
- The Regional association of Municipalities of the Administrative Region (regional level)







Prior to the delineation of an area as QA, various interests are weighted against each other by the appointed committee (multi-criteria assessment of the area under investigation). The following criteria are considered:

- Criteria related to the quality characteristics of the rocks and adequacy of resources to cover local needs for at least 40 years (the rocks should be of suitable quality for the production of aggregates);
- Spatial criteria, such as conformity with the National Spatial Strategy, the Special Spatial Plans and the Regional Spatial Plans, distance from the main consumption centres etc. (the area must not be in conflict with other land uses, should be close to main consumption centres);
- Environmental criteria (the extraction activities should not cause adverse effects to the surrounding environment);
- Criteria related to sustainability and safety issues (e.g. the safety of the workers and the surrounding communities, the sustainable exploitation of the resources);
- Criteria related to the protection of archaeological and cultural heritage (the extraction activities do not cause any adverse effects to the cultural heritage).

In principle, the aggregates' exploitation rights from established QA prevails the exploitation rights of any other mineral commodity occurring within its boundaries unless ore deposits, industrial minerals or marble deposits of economic importance, are located in the area.\*\*\*\*.

\* QA are legally bound areas within the boundaries of which the operation of one or more aggregate quarries, are permitted. A QA can be characterized as "a specific area of public, municipal or private status that contain rocks of suitable quality for the production of aggregates provided it is assured that the development of extraction activities within its boundaries, will not cause any adverse effects to the surrounding natural and anthropogenic environment". The QA are delineated in a distance of at least 1000 meters from existing urban plans and approved urban extension development plans.

**\*\*** The exploitation of aggregates outside a QA may be permitted under specific circumstances: a) for the production of aggregates for specific uses (e.g. for anti-slippery road construction, production of cement), b) in case the aggregates will be used exclusively for public infrastructure works of national importance, c) in case it is not possible to delineate a QA in areas with e.g. limited availability of space and/or the coexistence of touristic activities such as islands etc.

\*\*\* The Greek State is divided into 13 Administrative Regions and 7 De-Centralized Administrations. The former are further sub-divided into 325 Municipalities. Each administrative region is <u>geographically</u> divided into "Regional Units" (the Greek State encompasses 74 Regional Units) which, in most cases, coincide with the formerly named Prefectures. The De-Centralized Administrations constitute the extension of the central government at the regional administrative level. Each one is responsible and supervises 1-3 Administrative Regions having as a major task "to ensure the implementation of the governmental policies at Regional level".

\*\*\*\*In this case, according to the prevailing legislation, the exploitation rights of the aforementioned commodities have priority over aggregates' extraction.

#### 2.2 Responsible institutions

- The Ministry of Environment and Energy (YPEN) is the competent authority for mining and spatial planning policy development and the elaboration of the legislative framework for the designation of QA
- The 13 Administrative Regions are responsible for the designation of the QA within their geographical boundaries
- Consultation Committee comprised of 8-members representing different authorities from all levels of public administration (details in 2.1). The Committee is mandated by the regional authorities to propose the designation of a QA

#### 2.3 Case stakeholders





Public administrators (representing the Ministry of Environment and Energy on national level) are primarily responsible for mineral and spatial planning policy whereas regional government public administrators are responsible for land use planning and for the designation of the QA in their Regions. Furthermore, municipal public authorities are legally responsible for spatial planning activities: zoning plans (land-use plans).

#### 2.4 Context

The extraction of aggregates from quarries operating within the Quarrying Areas, has a number of advantages such as:

- Contribution to the long term secure supply of aggregates since the recoverable aggregates from the designated QA should cover the estimated needs of the region for at least 40 years
- Minimisation of the environmental footprint since the QA are designated in areas not directly visible from the surrounding settlements
- The minimization of the infrastructure works needed for the operation of the quarries within a QA, since these works accommodate more than one quarries
- The establishment of a QA is based on a favourable morphology of the ground surface, thus a rational exploitation can be properly accomplished
- The generation of additional revenues for the local authorities/communities, deriving from the fees, royalties and rents paid by the quarry operators

However, some of the major challenges encountered include: a) Delays that exceed the 5 years period defined by Law, to issue a decision for the establishment of a new QA and b) Failure to designate a suitable area as QA, due to limited available space like e.g. in islands that fulfil the criteria outlined in paragraph 2.1 of the present. In both cases, informal quarrying activities from unauthorized locations may be encouraged.

Furthermore, within the context of safeguarding Mineral Resources a new Spatial Plan is in progress since February 2019 constituting the compilation of a Spatial Plan that will integrate mineral resources into the strategic level of spatial planning (top-down approach). This new Spatial Plan, will encompass the main directions for the spatial arrangement of the extractive sector (i.e. the incorporation of the current active mining areas into the land use planning as well as areas with mining potential in the future. This approach will facilitate access to and exploitation of mineral deposits by addressing and timely resolving land-use competition issues (i.e. by addressing the mining area in land use plans as an area where the extraction activities have priority and/or at least are considered on equal basis with other land uses). Its compilation is challenging, for all relevant stakeholders (i.e. the extractive industry, the Mining and Spatial Planning authorities, and local communities) due to the land use competition issues to be resolved and the potential opposition from social partners (mainly local communities, NGOs, third parties with conflicting interests in the area). Due to the relevance of this spatial plan to the challenges and aims of the MINLAND project, it was selected as the key topic for the Greek Local Workshop. The presentations and panel discussions during the workshop were the source of useful results for Minland. The expected impacts from the elaboration of this Spatial Plan, pertain to:

- Creation of a more favourable environment for the exploration and exploitation activities on national level provided these activities will be placed in parity with other productive activities (e.g. tourism, agriculture, development of projects from renewable energy sources etc.)
- The generation of a framework to which, all the Spatial-Development frameworks of the regions and municipalities, regarding the development of exploitable MRM, will be compatible with;
- The facilitation of exploration licensing and exploitation permitting of MRM through the creation of a framework that will clearly establish the areas of existing exploitable deposits on national level as well as the broader areas for MRM prospecting, thus, reducing the time and the current bureaucratic permitting processes, especially in relation to important investment initiatives.

## Part 3: Case Evaluation







#### 3.1 Impact achieved

**Good Practice Aspect:** Devising an integrated policy tool to secure/safeguard aggregates extraction from conflict free extraction areas (i.e. the QA)

- Less licences needed for individual quarry operators because some of the needed licenses cover the whole QA and have been granted prior to the exploitation stage of individual quarries located within the QA
- Less infrastructure development needed since more than one quarries operate within a specific QA (due to common use and cost share of the infrastructure)
- Mitigation of illegal quarrying activities since the local needs in aggregates are covered by the legally operating quarries within the QA
- Improvement of SLO because the QA are established in locations not directly visible from or having severe impacts on the surrounding areas
- Generation of revenues for the local authorities, deriving from the fees, royalties and rents paid by the quarry operators

#### 3.2 Good Practice Aspects: Elements and their transferability



### **GOOD PRACTICE ASPECT**

# Devising an integrated policy tool to secure/safeguard aggregates extraction from conflict free extraction areas

Key Elements (of Good Practice	Suggestions for Transferability
Aspects)	
Integration of conflict free aggregates extraction areas (i.e.QA) into legally binding spatial plans: The extraction of aggregates from quarries located within QA constitutes an example of how a policy tool could contribute to the rational and secure exploitation of a mineral resource since it is an area assigned exclusively for their exploitation and incorporated in the regional spatial plans. (SUCCESS FACTOR)	Mining and Spatial Planning authorities on the national and/or regional scale responsible for policy and regulatory framework design as well as industry, are identified as the main group of stakeholders that could contribute to the development of this tool and benefit from such an approach.
Equal representation of different authorities/interests and knowledge needs in the consultation committee. Various interests are weighted against each other applying a multi- criteria assessment of the area under investigation (i.e. proposed QA). (SUCCESS FACTOR/STRATEGIC CHOICE)	The design of mineral safeguarding policies and the development of a similar tool for all mineral resources should involve the active engagement/communication with representatives from local communities, mining associations and NGOs in order to facilitate commitment for later implementation. Social acceptance issues and potential opposition from local communities should be resolved through a consultation process prior to the implementation stage of such a policy tool.
Not fully operational in islands: In the islands of	Apply more flexible criteria for the designation of a suitable
Greece (with the exception of a few big islands like	area.
Crete and Lesvos) is quite challenging to define a	
suitable QA due to lack of available space that	
fulfills the selection criteria for their establishment.	
(CHALLENGE ENCOUNTERED)	
· · · · · · · · · · · · · · · · · · ·	
Positive CLO acttings The designation of a OA is a	
completely decentralized procedure. The regional	
authorities are responsible for coordinating the	
relevant procedures based on estimations of their	
future needs in aggregates. The members of the	
appointed consultation committee represent	
mostly local and regional authorities and interests.	
Por the afore mentioned reasons as well as the	
consultation committee and the integration of the	
established QA into regional spatial plans,	
minimizes local opposition and contributes further	
to social acceptance of this activity of the extractive	
sector. (CONTEXTUAL FACTOR)	







**Regulatory Policy tool for implementing mineral safeguarding:** Regulatory tools are much more efficient in implementing minerals deposit safeguarding. The designation of the QA into spatial plans as areas where the extraction of aggregates is a priority over other activities (e.g. tourism, agricultures etc.) may be considered a best practice approach that could be transferred to other mineral resources.

#### (CONTEXTUAL FACTOR)

**Political mandate** is needed to be given to the competent Ministry to develop the regulatory framework.

**Availability of data** on mineral resources that should be protected for future development.

Selection of areas with mineral potential to be incorporated in land-use plans by **applying a multi criteria assessment** that considers mineral resources and mining areas on equal terms with the other natural resources and activities (e.g. tourism, agriculture) and by considering the exploitation of mineral resources as a priority activity in the area of interest.





# Case 12: Fokis Bauxite Mining: A case of reconciliation and co-existence of different land uses

## This good practice case responds to

# Assessment of whether minerals and other land uses have been introduced on par

## Minland Good Practice Stream Topics:

#### C – Assessment of whether minerals and other land uses have been introduced on equal footing H – Assessment of strategic consideration of safeguarding

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# Part 1: Case Overview

#### **1.1 Executive summary**

The case of bauxite in the prefecture of Fokis (Region of Sterea Ellada) is a good practice case showcasing the possibility of mining to co-exist with different and competing land uses.

In the prefecture of Fokis a significant mining and metallurgical activity relates to bauxite takes place: three mining companies and one metallurgical industry while the area in which those industries operate is quite extended. At the same time, Fokis is well known for its archaeological and cultural heritage (Delphi archaeological site, byzantine monasteries etc), for naturalistic landscapes (regions of Natura 2000 and environmental sensitive areas) has intense touristic activity (ski centers) and also hosts Mornos, one of the most important water reserves for the capital of Greece Athens.

Despite all the different and conflicting land uses, the mining and metallurgical activities are still operating generating significant income for the Region. This was possible only after bilateral compromises, especially in order to gain local social acceptance. The solution was for the mining companies to stay underground and be invisible as long as possible and to harm the least possible surface area.

#### 1.2 Overview of Key Good Practice Aspects and suggestions

The principal good practice aspects for the case of Fokis bauxite are the following:

- The acknowledgment of mining interest of the Region through the inclusion of the mining in Spatial Planning can be helpful for the promotion of mining
- Respect for other land uses and compromise with related legislations. This could mean the change of the current mining practice (from surface to underground for example), but on the long term this practice will help gain social acceptance and build the trust with local communities.
- In land use planning, the declaration of extensive zones as "Regions of Exclusive Mining Exploitation" must be avoided as can lead to severe reaction by local community. It is preferable to allow mining to co-exist with other activities and not ask for exclusivity.

**1.2 Mineral resource groups:** 

#### **METALLIC MINERALS;**



# Part 2: Case description

#### 2.1 Case description

The case of bauxites' extraction in Fokis prefecture presents an interesting aspect of the relationship between the minerals industry and land use planning, for the case of Greece.

The exploitation of Bauxites in the Prefecture of Fokis is competing with numerous other land uses:

- Exploitation and protection of archaeological sites and landscape
- Tourism
- Natura regions/ environmentally sensitive areas
- Water reserves

Yet, even though the environment appears very challenging for the realization of mining activities, three mining companies are active and extract bauxite, while one of the biggest aluminium plants is also operating in the area. But this was not the case from the beginning. The decision of the authorities to designate large areas to mining exploitation led to severe reactions by the local community, which in some point also raised international interest for the protection of Delphic landscape. The solution came only when the mining activities were limited to smaller areas and the decision was taken to allow only underground mining. Therefore, the case of Bauxite consist one good example on how actual mining can be compatible with other land uses.

#### 2.2 Responsible institutions

In Greece, the licencing and permitting of the Non- Energy Extractive industry involves both the Central government as well as the Regional/ Local authorities (L.3852/2010), namely:

- The Ministry of Environment and Energy (YPEN) at the national level,
- the 7 De-centralised (Regional) Administrations (tiers of ministries) and
- the 13 Administrative Regions

The mineral type, the size of the project/activity, any land use peculiarities of the area of intervention (i.e. frontier area, protected area), or/and the land ownership legal status determine which one from the above mentioned authorities will issue which license.

YPEN is the responsible authority for approving the exploitation of "Ores" as well as for issuing exploitation permits for industrial minerals and marbles. Furthermore, YPEN is the responsible authority for the environmental permitting of both surface and underground mines, as well as for the limestone quarries of the cement industry, all mines and quarries that are situated within protected areas such as Natura 2000, industrial mineral quarries that occupy areas larger than 250 acres, asbestos mines, etc.

On the other hand, the Administrative Regions grant exploration permits for ores, as well as for the industrial minerals and marbles occurring in private areas. The De-Centralized Administration grants consent for exploration activities for marbles and industrial minerals on public (state-owned lands), while the Administrative Region grants exploitation permits for aggregates on private areas, as well as exploitation of clays for the production of clay bricks or roof tiles, and extraction of slate slabs.

For the case of bauxite in Fokis prefecture, the ministry of environment and energy was the responsible body for issuing the exploitation and environmental licences while the Region of Sterea Ellada was the responsible body for issuing the Regional Spatial plan.

#### 2.3 Case stakeholders

Aside from the institutions stated in 2.2 above, there are three categories of stakeholders. These are:

a) Mining Companies.

#### b) Citizens/Individuals.





#### c) The Non-Governmental Organisations

#### 2.4 Context

Bauxite extraction in the area of Fokis takes place over an extended area, as the Bauxite ROM ore is transferred and fed to the alumina plant, the only plant of this kind in Greece and one of the major aluminium plants at European scale. Thus, the activities related to raw material operations are in a very large scale and can affect a wide area of the Region. Regarding the ownership regime, the bauxite deposits are state owned but their exploitation is realised by three mining companies and is ruled by the Mineral Code (MC) dispositions.

Apart from the significant bauxite reserves, the area of Fokis also is well known for important archaeological, historical and cultural sites. For example, in this area, the Delphi archaeological site is located, therefore actions for the protection of the monuments and the landscape are in place. Furthermore, the presence of such a prestigious and world-class monument signifies increased touristic activity throughout the whole year. The area experiences increased touristic activity during the winter months due to the presence of one of the most well-known ski-centers in Greece (also the one closest to the capital of Greece, Athens). Fokis prefecture is also well known for hosting areas with high naturalistic significance (natural parks, Natura areas), therefore restrictions for the protection of environmentally sensitive areas are also in force. Last, but not least in the list of competing land uses, in the area also hosts Mornos water reserves; one of the major water reserves for the supply of the capital with water.

During the first period of bauxite mining, the ore was mined through open pit mining excavations. The importance of the mineral reserves led the authorities to concede to the mining companies large rights in the Fokis area and an extensive zone was declared as a "Region of Exclusive Mining exploitation ". This spatial planning designation triggered a significant opposition by the local community having as a peak the lodging of appeals by the Delphi authorities to the Council of the State asking for the annulment of the ministerial decision endorsing the Regional Spatial Plan. The reactions ceased only after the designation of smaller areas for mining AND the decision for underground mining.

Therefore, the Fokis case is a characteristic case where the neighbouring of many competing land uses had significant impacts on land use planning policies in the Region of Sterea Ellada (Regional Spatial Plan under revision) as well as for the terms and conditions for the licensing of the individual mines. In the new Regional plan, designation of mining zones is not envisaged, despite the importance of these Mineral Raw materials and only underground exploitation of bauxite is allowed. **The Fokis case highlights that even for regions with complex and multiple land uses, it is possible for mining to co-exist with other activities.** 

## Part 3: Case Evaluation

#### 3.1Impact achieved

Due to the many commitments and restrictions enforced by the archaeological legislation for the protection of the Delphic landscape, underground mining was enforced as the designated method for bauxite extraction. This fact was beneficial for the mining companies active in the region since:

- The social acceptance of mining by the local communities was improved
- The rehabilitation cost has decreased
- The extraction efficiency was improved

Currently, the landscape problems at the mining regions have been completely eliminated and the only remaining issues are located at the coastal area, at the bauxite transfer zone.

#### 3.2 Good Practice Aspects: Elements and their transferability

## **GOOD PRACTICE ASPECT 1:**

# Coexistence of mining with other land uses (tourism, cultural heritage, areas of naturalistic interest)

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Acknowledgment of mining interest of the Region through the inclusion of the mining in Spatial Planning.	The designation of " <b>suitability zones</b> " for the extractive sector is a useful tool to establish priorities among different and conflicting activities.
The Regional Spatial Plan for Central Greece provides for the extractive sector the following strategic guidelines: a) Recognizes that the Region holds a distinct position in the international and European economic and business system due to its industrial production, the range of its MRM and the magnitude of the business groups operating in its territory. b) Designates the entire bauxite zone as zone of exclusively mining activity with the comment that this designation concerns the mining properties (only underground) whereas the local planning will determine the specific exploitation zones.	
Respect for other land uses and compromise with related legislations The restrictions imposed primarily by the archaeological survey led to the underground exploitation of bauxite. The decision of underground mining allowed the favourable designation of regional land planning.	Underground exploitation (when applicable) can diminish the negative reactions and allow co-existence of mining with other activities
The declaration of extensive zones as Regions of Exclusive Mining Exploitation must be avoided as it can lead to severe reaction by local community. The Delphi authorities lodged appeals to the Council of the State asking for the annulment of the ministerial decision endorsing the Regional Spatial Plan. The reactions ceased only after the designation of smaller areas for mining <u>AND the decision for</u> underground mining	<ul> <li>The designation of areas for exclusive extractive use may provoke serious problems to the activity, especially if these zones embrace towns and settlements, important archaeological sites and landscapes etc.</li> <li>Only local spatial plans may proceed to the designation of extractive zones of main or exclusive use, applied on the ground (with coordinates).</li> </ul>







## Case 13: Co-existence of Somincor Neves-Corvo polymetallic underground in a Natura 2000 area

This good practice case responds mainly to the challenge of mining in a Natura 2000 area with the necessary adjustments to the environmental constraints, with mining company strongly committed with high standards on social licence to operate

### Minland Good Practice Stream Topics:

### C – Assessment of whether minerals and other land uses have been introduced in equal footing G – Assessment of integration of social aspects and civil society involvement (SLO)

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# Part 1: Case Overview

#### **1.1 Executive summary**

This case presents a very good Social License to Operate example, in Portugal, developed by Somincor - Sociedade Mineira de Neves-Corvo, SA., for the polymetallic underground mine, located in the Iberian Pyrite Belt in the Baixo Alentejo region, in the south of Portugal. This mine is called NEVES-CORVO and is located around 220 km from Lisboa and 102 km from Faro.

This mine is one of the EU largest underground copper mines and started its operation in 1988. Yearly outputs around 220K Tons of copper concentrate, 145K Tons of zinc concentrate and 10K Tons of lead concentrate, employing directly around 2000 workers. Presently, the mine is more than 1.000m deep.

The mine is located in Natura 2000 area within the Special Protected Areas (SPA) of Castro Verde and the Site of Community Interest (SCI) of Guadiana.

The mining project has been subjected to EIA and got approved with constraints due to the Nature Conservation Area. All the extensions/activities have been licensed.

Mining company has complied with all the obligations and has gone far beyond. The company has developed several programs and increased corporate social responsibility by developing actions to support local communities.

The Government also supports this initiative, by allowing a part of the value of the royalties that the company has to pay to the State to be allocated to develop actions in the region; in order to improve life quality of local communities, to increase public awareness, acceptance and trust in the mining sector.

To achieve this, the good networking work developed by the mining company with stakeholders, is very important and also increases the acceptance of the mine by local population, decision makers and Non-Governmental Organizations.

#### 1.2 Overview of Key Good Practice Aspects and suggestions

Good Practice Aspect 1: Assessment of whether minerals and other land uses have been introduced in equal footing







**Principle of parity:** Land use decision makers recognizes the importance of the mineral resources and assesses the project with equal footing as other natural resources; this mine is located in Natura 2000 areas, and in the Iberian Pyrite Belt (one of the most important VMS provinces in the EU).

There are several actions taken by the mining company to increase the biodiversity in the region.

The principle of parity has been accepted due to all the work that has been done during the last 30 years in Portugal, among Governmental organizations, mining companies, land use and environmental decision makers.

**Transferability:** Create higher trust, transparency and proximity between mining company, mining authority and local land use decision makers.

The organizations with knowledge and competences on mining (mining authority, geological survey, universities and other experts) should present scientific, solid and substantiated arguments in order to explain the importance of mineral resources which are also natural resources.

To achieve this it is important that all the players (mining, land use and environmental) understands each other, and agree on essential and elementary issues, that are equally important to each of them. Every player must leave its "comfort zone" and make the necessary adjustments. The actors must be willing to compromise in order to reach a common ground.

#### Good Practice Aspect 2: Assessment and extent of integration between minerals and land use policies

**Principle of coexistence:** Consider the possibility of having different activities in the same area, with mining being a temporary activity which may be developed in coexistence with other activities in rural soil.

The organizations with knowledge and competences on mining (mining authority, geological survey, universities and other experts) should present scientific, solid and substantiated arguments in order to explain the importance of mineral resources which are also natural resources.

**Transferability**: Create regulatory framework on land use and mining accepting the possibility of coexisting activities in rural soil, similar to what happens in Portuguese legislation on rural soil. Law 54/2015 and DL 80/2015 and DR 15/2015.

#### Good Practice Aspect 3: Assessment of integration of social aspects and civil society involvement (SLO)

Mining company has high environmental and social standards, which are recognized by the authorities and local population, increasing acceptance, trust and commitment.

Government created royalties policy with focus on strengthening social, environmental and cultural standards, for the benefit of local communities.

Agreements and development of research with several Portuguese universities and NGOs for the increase of biodiversity in the area of the mine and surroundings.

**Transferability**: Mining companies have to be committed to high standards and have close relationship with local communities, authorities and NGOs, prior to opening the mine.

Create regulatory framework on the use of the royalties paid by the mining companies in applying part of the money in local developments.

Create partnerships between mining company, universities and NGOs.

#### **1.3 Mineral resource groups:**



#### **METALLIC MINERALS;**

# Part 2: Case description

#### 2.1 Case description

Somincor - Sociedade Mineira de Neves-Corvo, SA., was created in July 24th 1980, after the discovery, in 1977, of a massive sulfide deposit with significant amounts of basic metals, mainly copper and zinc. Somincor is part of LUNDIN group (http://www.lundinmining.com)

Somincor Neves Corvo Mine is located in the south of Portugal, in Baixo Alentejo region in the Iberian Pyrite Belt which is one of the largest Vulcano Massive Sulphides provinces in the world. With excellent infrastructures built (railway, motorway, energy, airports nearby and access to sea port), Neves-Corvo is 220 km from Lisboa and 102 km from Faro.

Somincor Neves-Corvo mine has 6 massive sulphide deposits: Corvo, Graça, Neves, Zambujal, Lombador and Semblana. Presently, the mine is more than 1.000m deep at Lombador deposit. The mine is estimated to operate until 2027 although there is the possibility of operating far beyond, depending on the results of studies for the expansion of the waste dam facilities and further exploration works. This mine is one of the EU largest underground copper mines and started its operation in 1988. Yearly outputs around 220K Tons of copper concentrate, 145K Tons of zinc concentrate and 10K Tons of lead concentrate, employing directly around 2000 workers.

The mine is located in Natura 2000 area within the Special Protected Areas (SPA) of Castro Verde and the Site of Community Interest (SCI) Guadiana. There are a <u>Protection Area for Wild Birds</u> and <u>several Habitats</u> according to the Habitats Directive n.º 92/43/CEE (Habitat 92D0, Habitat 6310, Habitat 4030 (Anex B-I).

The mining project has been subjected to EIA and got approved with constraints due to the Nature Conservation Area. All the extensions/activities have been licensed.

Mining company has accomplished with all the obligations and has gone far beyond. The company has developed several programs and increased corporate social responsibility by developing actions to support local communities. Al this is being done on a voluntary basis by the company and also with some help from the Government which allows that up to 20% of the value of the royalties that the company has to pay to the State may be allocated to develop actions in regions where the mine operates to improve life quality and local programs, to create transparency conditions for mining companies to operate with a social "license", to increase public awareness, acceptance and trust on the mining sector.

So the mining company develops several programs, in particular: Social programs for their employees, their families and general community; Environmental programs for the mining area and surroundings, including protocols with NGO's and universities; Research, technical innovation and technology programs creating an expert network in the region, focused on the development of new best available techniques.

The mining company also takes innovative actions to disclose the work that has and is being done: prepared a field guide and a Film "The sound of earth-a mine of biodiversity" which is available in PT/EN <u>http://biodiversidade-somincor.pt/web/index.php/pt/</u>

Currently, the situation in terms of nature conservation is very good, and we can tell that the existence of the mine has brought a big advantage for the local communities and the biodiversity in the area.

For all these the good networking work with stakeholders has been very important and also the proximity to the communities.







#### 2.2 Responsible institutions

- Institution 1: DGEG Direção Geral de Energia e Geologia
   DGEG is the Portuguese Mining Authority, who regulates, assesses and inspects the activity.
- Institution 2: ICNF– Instituto de Conservação da Natureza e da Biodiversidade
   ICNF is the Nature Conservation Agency, who has the jurisdiction on Natura 2000 areas and who issues opinion in all that connects to the activities in this area.
- Institution 3: APA Agência Portuguesa do Ambiente APA is the National Environmental Authority, who regulates environmental impact assessment and assesses monitoring results and licenses some activities connected to mining activity
- Institution 4: CCDRA Comissão de Coordenação e Desenvolvimento Regional do Alentejo CCDRA is the Regional land use decision maker, who coordinates the land use plans and applies the principles of parity and coexistence in them
- Institution 5: CMs Câmara Municipal de Castro Verde (CMCV) e Câmara Municipal de Almodovar (CMA) The CMCV e CMA are the municipal political decision makers.

#### 2.3 Case stakeholders

- NGO's
- Communities
- Society

These stakeholders were involved in several initiatives, meetings were held and the mining company took good note of their needs and interests and addressed them by creating programs and projects that aim to fulfil those.

#### 2.4 Context

The Iberian Pyrite Belt (IPB) is a Variscan metallogenic province that is located in SW Portugal and Spain, and hosts the largest concentration of massive sulphide deposits worldwide - Zn–Pb–Cu and Zn–Cu–Pb metal content types. The dimension of the IPB is about 250 Km length and varies from 20 Km to 70 km wide. IPB contains more than 90 Vulcano massive sulphide (VMS) deposits, with mineral resources around 1700 Million tonnes (Mt), with 14.6 Mt Cu, 34.9 Mt Zn, 13.0 Mt Pb, 46,100 t Ag, 880 t Au and other associated metals, such as Sn. The Neves Corvo deposit where the mine is located, is the second biggest VMS in the world and one of the eight giant (≥100 Mt) VMS deposits in the IPB. The other eight giant deposits are Aljustrel (Portugal) and Rio Tinto, Tharsis, Aznalcóllar-Los Frailes, Masa Valverde, Sotiel-Migollas and La Zarza (Spain).

The deposit is completely blind with no surface expression, and has been discovered on 1977 by gravimetric geophysics which detected an important anomaly.

The mine started its operation on 1988 with copper production (extremely high Cu grades) and later some tin production. On 2005 there has been an expansion on drilling with the focus on Zinc. On 2010 there was the discovery of a new important deposit "Semblana", and now there are at least 6 discreet massive sulphide lenses identified in the Neves-Corvo mine.

Later on 2008, when the mine was already in full activity, the Natura 2000 network concluded the definition of the Castro Verde Special Protection Area (SPA) and the Site of Community Importance (SIC) of Guadiana, which overlaps with the mining site. The Castro Verde Special Protection Area (SPA), is the most representative steppe area in Portugal, with a total area of 85.345 hectares; the landscape is mainly composed of slightly undulated plains that cover wide low altitude areas (between 100 and 300 m). The stream valleys and the random quartzite outcrops characterize the landscape. In this SPA the extensive farming practices are predominant, being the traditional farming system based on extensive dry farming of cereals rotating with fallow lands, which results in an annual mosaic of crops, ploughed lands, stubbles and fallow lands. The fallow lands are generally used as pasture



for sheep and cattle. In this SPA there are also holm oak groves (montados), scrub forests and small olive plantations. The diversity and abundance of steppe birds is the responsible for the protection status of this SPA. There are a Protection Area for Wild Birds and several Habitats according to the Habitats Directive n.º 92/43/CEE (Habitat 92D0, Habitat 6310, Habitat 4030 (Anex B-I).

The Site of Community Importance of Guadiana, with an area of 39,257 ha, is mainly riparian, as it includes Guadiana River and many of its tributaries, where e The Guadiana River and some of its tributaries (Vascão, Oeiras and Terges/Cobres streams) are considered as of great value to nature conservation, functioning as an important corridor for many terrestrial and aquatic species. Guadiana Site is home to several species of endemic Iberian freshwater fishes, such as *saramugo* (*Anaecypris hispanica*), *barbo-de-cabeça-pequena*(*Barbus microcephalus*) and *boga-do-Guadiana* (*Chondrostoma willkommii*), some examples which happen to be endemic to the Guadiana Riverbed valleys surrounded by cliffs shelter a very diverse Mediterranean flora. The Guadiana Site also belongs to the historical occurrence area of the Iberian lynx (*Lynx pardinus*) and to the corridor of priority areas for its conservation, as it still maintains areas with potential habitat that can be enhanced to restore the essential conditions for the presence of this species.

The mining project has been subjected to EIA (2007) and Zinc Extension Project (2017) and got approved with constraints due to the Nature Conservation Area. All the extensions/activities have been licensed.

The EIA highlighted potential negative environmental impacts of the SPA and has identified a range of possible bestpractice mitigation measures to reduce these impacts, which have been adopted by the mining company:

- SOMINCOR has developed a corporate and site strategy for reducing energy use and Green House Gases emissions which are monitored and reported as part of the Air Quality Greenhouse Gas Management Plan ("AQGHGMP").
- The water management system was redesigned and reengineered in order to accomplish with the legal framework for the water quality.

The Mining company always used the best available techniques and best solutions to operate within a sensitive Natura 2000 area. All required a big effort and investment from the mining company and from the stakeholders to overcome the challenges.

SOMINCOR has a Community Investment Policy that seeks to build capacity in local communities, improve the social and environmental conditions in communities nearest the operations and to create opportunities for employees to be SOMINCOR ambassadors in their communities. A significant amount of money has been and is being spent on education, community wellness, local supplier development and road safety initiatives. The SOMINCOR Community Investment Policy outlines the company's mission statement, objectives, priorities, exclusions and application process for funding organisations and projects.

The Portuguese Government is also committed with SLO, and has taken measures to promote that part of the money from the royalties is applied in the mining region by the company with other stakeholders, to improve life quality of the population.

The DGEG, representing the State which is the owner of the mineral resource, in the contract signed with the mining company (Somincor), has allowed that up to 20% of the amount of the royalties due to the State may be used by the mining company in local and regional programs/initiatives for the benefit of local communities. The value of exploitation royalties may be subject to a deduction up to 20% of the amount receivable in the following actions:

- ... % In local/regional social responsibility programs;
- ...% In local, regional or national environmental programs and geological and mining heritage projects;
- ... % To support projects proposed by local authorities (municipalities, districts) covered by the area of the mining concession;
- ...% in R&D internal mining projects focused on mineral optimisation of metal recovery







The Rules that need to be followed are:

-Portuguese Mining Authority (DGEG) has to approve the projects, programs and actions that will be developed with the use of up to 20% of the royalties.

-Portuguese Mining Authority (DGEG) will keep a database on the information spent by the mining companies in each activity/region in order to monitor this good practice.

This initiative has contributed to increase public awareness, acceptance and trust on the mining sector, and the results have supported the adoption of this innovative policy in other mining contracts. All this helps to build trust and transparency relationships between the populations, stakeholders, mining company and the Government, creating conditions for this mining company to be recognized to be operating with a social "license".

# Part 3: Case Evaluation

#### 3.1 Impact achieved

Impact 1 - Somincor vision and strategy include development of a high performance, motivated culture, achieving a safe, productive and healthy work environment, and to conduct their business activities ethically and transparently. Somincor belongs to Lundin Mining which is committed to giving back to the communities in which they operate by funding important social programs.

Impact 2 - DGEG/Government policy on royalties: Since 2012 the Portuguese Government introduced a new royalties policy, which is supported by the National Strategy for Geological Resources - Mineral Resources (NSGR-MR) in the objective INCREASE SUSTAINABILITY ON ROYALTIES USE.

The royalties policy considers that up to 20% of the value of the royalties due to the Government may be used directly on sustainable projects for the benefit of local communities. This value may be applied to local and regional programs, plans and projects proposed by the civil society." The new royalties policy is achieved:

- By allocating part of the money coming from mining companies in regions where mining occurs to improve life quality and local programs.
- By creating transparency conditions for mining companies to operate with a social "license".
- By increasing public awareness, acceptance and trust on the mining sector.

So the mining company develops several programs, in particular:

Social programs:

- Protocol with "Association of Black Knights Village": Social project to support Hippotherapy and Therapeutic Riding lessons for children and youngsters with development disabilities from Almodôvar, Castro Verde municipalities and surrounding areas.
- Lunchbox Project Smile in Motion: Social design with the Alentejo Local Health Unit for delivering lunch boxes to needy students.
- Protocol with Several Group of Schools: Social project to support students of needy families with school supplies and food.
- Protocol to be concluded with the Senior University in Castro Verde: Social project, to support seniors in Castro Verde municipality.
- Farmers agreement: made agreements with local farmers so they can maintain the agricultural activity in about 50% of the company's land.

Environmental programs:



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- Biodiversity Promotion Protocol: Environmental project in collaboration with the Government Body Institute for Nature Conservation and Forestry, in order to implement measures to protect the Saramugo an endemic fish from the Guadiana basin classified as "critically endangered" by the New Red Book of Vertebrates of Portugal.
- Noise minimization Project: Social and environmental design to reduce noise in the industrial area and nearby populations. In fulfilling its legal obligations, Somincor worked on its noise mapping, having noted the influence of the mining complex laboring noise in the nearby residential areas of the mining site.
- Projects with NGOs: for the protection of Nature and universities for the protection of endangered species (plants, lichens, fauna)

Research, technical innovation and technology programs:

- Project on Concentrates Quality Improvement : Research Project which aims to minimize penalizing minor elements in the concentrates. Somincor established a collaboration with the Laboratory of Kamloops Global ALS Canada, one of the most advanced laboratories in the world in this area which uses state of the art test equipment in mineralogical analysis. The study and analysis of concentrates aim to remove the penalizing elements and thus greatly increase its value.
- Recovery Improvement Project: Research Project on grinding optimization studies and regrinding's, also developing improvement on water quality studies. This project is a partnership with Grinding Solutions (England), Ian Warfc Research Institute of Australia, Imperial College of London, Technical University of Lisbon and the Faculty of Engineering of Porto University. Parte 3.

The mining company also takes innovative actions to disclose the work that has and is being done: prepared a field guide and a Film "The sound of earth-a mine of biodiversity" which is available in PT/EN <u>http://biodiversidade-somincor.pt/web/index.php/pt/</u>

Now, the situation in terms of nature conservation is very good, and we can tell that the existence of the mine has brought a big advantage for the local communities and the biodiversity in the area. This has brought better infrastructure in the region, more direct and non-direct jobs in two municipalities, higher educational skills for children and youth, higher level of education for population with cultural impacts.

#### 3.2 Good Practice Aspects: Elements and their transferability

#### Principle of parity:

In this case we face a situation where different natural resources compete for the same land: from one side we have one natural resource- mineral resource which is of great importance because belongs to a world class deposit located in the Iberian Pyrite Belt (as explained in 2.4), from the other side we have the definition of Natura 2000 areas which are also important natural resources (as explained in 2.4).

The mine started about 20 years before the final definition of the Natura 2000 areas, and has never created significant negative impacts in the surroundings and never harmed the natural heritage, allowing to classify the area as SIC and SPA.

Mining and land use decision makers have recognized the importance of both of the natural resources, and have agreed in creating conditions to harmonise these two different overlapping uses of land (for mining and for Natura 2000).

For transferability it is important to accept that mining activity developed in a responsible way may be an added value and also compatible with high exigency environmental standards.

It is also important to communicate, listen and be constructive when finding solutions. All players must understand each other (mining, land use and environmental), and agree on essential and elementary issues, that are equally important to each of them. Every player must leave its "comfort zone" and make the necessary adjustments.

#### Principle of coexistence:





Consider the possibility of having different activities in the same area, with mining being a temporary activity which may be developed in coexistence with other activities in rural soil.

Present strong arguments in order to explain the importance of mineral resources which are also natural resources.

For transferability it is important to create regulatory framework on land use and mining accepting the possibility of coexisting activities in rural soil, similar to what happens in Portuguese legislation on rural soil. Law 54/2015 and DL 80/2015 and DR 15/2015.

#### Social License to operate:

Mining company has high environmental and social standards, which are recognized by the authorities and local population, increasing acceptance, trust and commitment.

Government created royalties policy with focus on strengthening social, environmental and cultural standards, for the benefit of local communities.

Agreements and development of research with several Portuguese universities and NGOs for the increase of biodiversity in the area of the mine and surroundings.

For transferability the mining companies have to be committed to high standards and have close relationship with local communities, authorities and NGOs, prior to opening the mine.

The Government should create regulatory framework on the use of the royalties paid by the mining companies in applying part of the money in local developments and programs.

Create partnerships between mining company, universities and NGOs.

## **GOOD PRACTICE ASPECT 1:**

## **Introduction Of The Principle Of Parity**

Key elements	Suggestions for Transferability
<b>Principle of parity:</b> Mining and land use decision makers have recognized the importance of both of the natural resources, and have agreed in creating conditions to harmonise these two different overlapping uses of land (for mining in the Iberian Pyrite Belt which is one of the most important VMS provinces in the World and for Natura 2000).	For transferability it is important to accept that mining activity developed in a responsible way may be an added value and also compatible with high exigency environmental standards. It is also important to communicate, listen and be constructive when finding solutions. All players must understand each other (mining, land use and environmental), and agree on essential and elementary issues, that are equally important to each of them. Every player must leave its "comfort zone" and make the necessary adjustments.
	<ul> <li>The objectives are:</li> <li>Create higher trust transparency and proximity between mining company, mining authority and</li> </ul>





are held with stakeholders and decision makers, and a lot of fruitful discussion is taken.

• Present strong arguments in order to explain the importance of mineral resources which are also natural resources. This should be done by the mining company and the mining authorities.

## **GOOD PRACTICE ASPECT 2:**

## **Co-Existence Of Land Use Introduced In Legislation**

Key elements	Suggestions for Transferability
<b>Regulatory aspect:</b> Consider the possibility of having different activities in the same area, with mining being a temporary activity which may be developed in coexistence with other activities in rural soil.	The Government at national or regional level depending on the administrative structure of the country/region, should prepare a piece of legislation where considers flexibility and co-existence of different land uses for each areas in the land use planning. The European Commission may also issue
the mining company to increase the biodiversity in the region. At a national level has been created regulatory framework on land use and mining accepting the possibility of coexisting activities in rural soil, similar to what happens in Portuguese legislation on rural soil. Law 54/2015 and DL 80/2015 and DR 15/2015. This might be applied also at regional level.	recommendations to the Member States on this land use practice.

## **GOOD PRACTICE ASPECT 3:**

### **Re-Investment Into Local Communities**

Key elements (of Good Practice Aspect)	Suggestions for Transferability (of Key Elements)
Mining company has high environmental and social standards, which are recognized by the authorities and local population, increasing acceptance, trust and commitment. Communication SOMINCOR has a Community Investment Policy that seeks to build capacity in local communities, improve the social and environmental conditions in	Mining companies have to be committed to high standards and have close relationship with local communities, authorities and NGOs, prior to opening the mine.







communities nearest the operations and to create opportunities for employees to be SOMINCOR ambassadors in their communities. A significant amount of money has been and is being spent on education, community wellness, local supplier development and road safety initiatives. The SOMINCOR Community Investment Policy outlines the company's mission statement, objectives, priorities, exclusions and application process for funding organisations and projects.	
Government created royalties policy with focus on strengthening social, environmental and cultural standards, for the benefit of local communities.	Create national or regional regulatory framework on the use of the royalties paid by the mining companies in applying part of the money in local developments.
Agreements and development of research with several Portuguese universities and NGOs for the increase of biodiversity in the area of the mine and surroundings. Due to the sensitive area on biodiversity the mining company decided to invest in research in the area and signed protocols with experts and Universities.	Industry, Government or universities should take the initiative to create partnerships between mining company, universities and NGOs.





# Case 14: The Austrian Mineral Resources Plan (Österreichischer Rohstoffplan, AMRP) – a safeguarding tool for mineral resources and its implementation on different levels of governance

This good practice case response to the challenge of strategic aspects of protecting mineral resources ('safeguarding') as well as integration of minerals and land use planning policy

Minland Good Practice Stream Topics: D) integration of minerals and land use policy H) protecting mineral resources and safeguarding

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# Part 1: Case Overview

#### 1.1 Executive summary

The Austrian Minerals Resources Plan (AMRP) is a good practice example of implementing and integrating mineral safeguarding approaches in land use planning policy. The AMRP is a policy instrument to **safeguard mineral resources** for land owner raw materials (aggregates, construction materials) on the national level and acts as a policy instrument that facilitates integrated minerals and land use planning policy implementation on the provincial level. Its main objective is to document raw-material deposits and outline minable deposits with low conflict potential with other policy-relevant land-uses such as nature conservation (e.g. national parks, Natura2000), urban/settlement development, watershed, etc. While policy-making for mineral resources and mining are institutionally embedded on national level, spatial planning (including land-use planning) policy-making and implementation is institutionally embedded on the provincial and even municipal level (zoning plans, spatial development plans/visions). Thus, the actual horizontal (across policy sectors) and vertical (across different levels of governance) integration of minerals and land-use (spatial) planning occurs in different institutional arrangements and practises.

Therefore, the Austrian case looks into how the AMRP is linked to, and integrated on, the level of policy governance and decision-making processes as well as on the legislative domain. In this regard, we provide some recommendations to illustrate the diversity of implementation pathways of safeguarding approaches by investigating barriers and enablers of institutional frameworks, land-use planning options and vertical policy integration on the example of two Austrian Federal States (provinces). The case of safeguarding mineral deposits and integrative mineral and land use policy is of value for both national level mineral and land use planning policy makers, mining authorities, as well as public administrators on the regional or federal state level.

1.2 Overview of Key Good Practice Aspects and recommendations

Good Practice Aspect 1: An integrated national plan for mineral safeguarding and minimisation of land use conflicts:

- Designing the AMRP (i.e. mapping raw-material deposits with low conflict potential) requires political mandate and sufficient amount of resources (SUCCESS FACTOR/STRATEGIC CHOICE).
- **Suggestion for Transferability:** Data availability from different policy streams and close collaboration with responsible authorities and administrative levels related to relevant sectors of such policy streams.





- Providing an information baseline for minable deposits with low conflict potential (SUCCESS FACTOR/STRATEGIC CHOICE).
- **Suggestion for Transferability:** Political mandate and resources given to responsible authority for gathering of data to develop a planning tool.
- Lack of data and information exchange between different sectors (horizontal) and levels of government (vertical). (CHALLENGE ENCOUNTERED)
- **Suggestion for Transferability:** Provision of resources and organisational structure to manage flow and exchange of data amongst and between different levels of government.
- Lack of monitoring or progress measuring of implementation (CHALLENGE ENCOUNTERED).
- Suggestion for Transferability: Apply qualitative and quantitative instruments for policy monitoring.
- Non-disclosure of the Austrian Raw Materials Plan (CHALLENGE ENCOUNTERED).
- **Suggestion for Transferability:** Proper data management plan and consideration that allows for disclosure to public administration.
- Technical planning approach and lack of political sensitivity in policy design (CHALLENGE ENCOUNTERED).
- Suggestion for Transferability: Active engagement and multi-level governance in the form of a crossscale/ cross-policy working group to avoid "technical solutions to complex problems".
- Heterogeneous legal frameworks and decision-making processes on regional level considered (9 provinces) (CONTEXTUAL FACTOR)
- Suggestions for Transferability: Integrative policy making as a baseline.

Good Practice Aspect 2: Flexible approach (soft policy tool) for implementation of a national level mineral safeguarding policy:

- Willingness and commitment to implement AMRP by provincial government actions requires active engagement/communication and governance approaches for guiding implementation on regional level (SUCCESS FACTOR).
- **Suggestions for Transferability:** Active engagement/ communication and governance approaches for guiding implementation and improve coordination and linkages between different policy streams.
- Legislative competence distributed along different levels (CONTEXTUAL FACTOR).
- **Suggestions for Transferability:** In similar contexts a more integrated approach for communication and coordination is necessary to achieve safeguarding.
- Voluntary and 'soft-policy instrument' indicate no obligation for lower levels to implement plans (CHALLENGE ENCOUNTERED).
- **Suggestion for Transferability:** Depending on regulatory/legal framework different approaches could be more effective e.g. regional programmes (regulatory policy instrument).

#### Good Practice Aspect 3: Implementation of the AMRP: Option 1 – Ordinance

- Regulatory policy tool for implementing mineral safeguarding (SUCCESS FACTOR).
- **Suggestions for Transferability:** Choice of appropriate policy instruments (voluntary instruments demand high technical and managerial capacities) but also provides flexibility, coercive instruments however may provide legal protection and predictability.





- Alternative and masked safeguarding mechanisms are favourable option for mineral safeguarding in a regulatory tool in case there are less favourable conditions (political commitment or interest) in mining, since these are indirect methods for safeguarding of mineral deposit (STRATEGIC CHOICE).
- Suggestions for Transferability: Indirect methods can support safeguarding in less favourable conditions (political commitment or interest).
- Implementation of priority zones (SUCCESS FACTOR)
- Suggestions for Transferability: Priority zones can provide strong protection against other land-uses that would hinder or limit future extraction of the deposit.
- Transparency of zoning areas (STRATEGIC CHOICE).
- Suggestions for Transferability: transparency of zoning areas can increase accountability and legitimacy of decisions but also provides an additional burden for the administration in terms of time and resources.

Good Practice Aspect 4: Implementation of the AMRP: Option 2 – Sectoral Action Plan

- Soft policy instrument as implementation pathway: the Sectoral Action Plan is a nonregulatory/voluntary plan for the region that is required in case of less or contradicting political interest (CHALLENGE ENCOUNTERED).
- **Suggestions for Transferability:** A soft-policy tool can be perceived as a compromise for dealing with a controversial topic.
- Supply and demand outlook and planning tool that outlines the need, demand and requirement for mineral extraction (SUCCESS FACTOR).
- **Suggestions for Transferability:** Required integrated and extensive collaboration with other policy streams in realising inter-linkages.
- Comprehensible illustration of important regional, provincial interests for nature conservation (SUCCESS FACTOR)
- **Suggestions for Transferability:** Clear identification and weighing of land-use interests to support regional and provincial interests.
- The use of the plan to support on-demand decision-making enabling expert opinions and supporting administrative procedures (SUCCESS FACTOR).
- Suggestions for Transferability: The access to data and an 'expert' tool to support demand for minerals as a public interest.

#### **1.2 Mineral resource groups:**

#### X AGGREGATES

# Part 2: Case description

#### 2.1 Case description

The Minland case of the Austrian Mineral Resource Plan ("Österreichischen Rohstoffplan" AMRP) describes 1) what are key characteristics of a national plan for safeguarding minerals deposits for land owner raw materials (aggregates, construction materials) and, 2) how such a national level policy is implemented on effective levels of spatial and land use planning policy on provincial (and down streamed regional and local) levels of public administration. The goal of the AMRP is to assess and determine, based on standardised methods, on a national level, raw-material deposits and to assess their conflict potentials with other land-use options (i.e. settlement development, watersheds, conservation, forestry, etc.). Hence, so called *Rohstoffeignungszonen* (mineral potential





areas) were intersected with other competing/conflicting zones or designated areas (especially building land, groundwater tables, conservation/nature protection, Natura 2000, areas protected based on water-shed protection/water legislation) to determine possible *Rohstoffsicherungsflächen* (literally: Raw Materials Safeguarding areas). Furthermore, the case looks into how the AMRP is used and facilitated on a voluntary basis in the context of land use planning on the level of policy governance and decision-making processes as well as the legislative domain. While in Austria the safeguarding for mineral deposits (free-to-mine, state owned) is organised by the national level (competence portfolio of the federal state), the implementation and connection to spatial planning/land use planning takes effect only at the provincial level (provinces).

Thus, the AMRP provides good practice information for practitioners interested in public policy tools for minerals safeguarding as well as how to better integrate minerals policy in land use planning policy. The case study describes interactions of mineral and land-use planning policy and processes, focussing on the pre-exploration/land-use planning phase, and its declination on the regional level. We exemplify this, by looking into how the AMRP is applied in two Austrian provinces (Tyrol and Styria), indicating two ways of how a national planning policy can be implemented on the regional level and in regional land use planning processes. These two provinces illustrate the diversity of implementation pathways by looking into legal frameworks, land-use planning options and vertical policy integration.

#### 2.2 Responsible institutions

- The Austrian Ministry of Sustainability and Tourism (Department of Mineral Policy) responsible for designing the AMRP
- **Provincial government authorities** of Styria and Tyrol and selected **regional and local public authorities** responsible for implementing the AMRP (FOR AGGREGATES)

#### 2.3 Case stakeholders

Whereas **National government public administrators** are responsible for mineral policy (based on the constitution) ), **provincial government public administrators** are responsible for land use planning. Furthermore, **regional and local public authorities** (spatial planning visions, development plans/programs, etc. on sectoral or integrated level) are also legally endowed for spatial planning activities: zoning plans (land-use plans) are embedded on local/municipal level by constitutional law.

#### 2.4 Context

The Austrian Mineral Resources Plan has the legal status of an 'Expert Report' and is considered a documentation/inventory of (minable) deposits but NOT a planning strategy or a master plan for land use planning in the narrower sense (see report Court of Auditors). Hence, a legal basis for "technical planning activities" on national level regarding minerals is/was not fully established (e.g. by means of mandatory technical plans), and, thus, there is no mandatory implementation on provincial and downstream levels. However, several provinces used data from the AMRP and implemented the AMRP in some less or more stringent way in their provincial, regional and subsequently local land use planning systems. Austrian public administration and policy are divided into four main levels, which makes a stringent implementation of the AMRP through all levels of land use planning challenging: national, provincial (federal states), regional and municipal. The Austrian federal system and principle of subsidiarity embeds many different legal frameworks, policies, planning instruments and implementation responsibilities on provincial and municipal level. Thus, the integration of mineral and land use policy is taking place on different levels of governance as well as with a variety of different public institutions involved.

# Part 3: Case Evaluation

#### 3.1 Impact achieved by the AMRP







The results from the case study suggest a fragmented implementation and unclear impact (regarding the number of protected deposits) of the *AMRP*, due to its soft / non-coercive character. It can be stated that the *Rohstoffplan* contributed to the Minland Good Practice Stream topic of protecting mineral resources / safeguarding and policy integration and mainstreaming safeguarding and preventing sterilisation as policy goals in LUP and raising awareness in LUP on provincial level :

- To introduce and create awareness for the concept/national policy goal of mineral safe guarding on lower levels of governance (i.e. provincial, regional and local)
- Partial uptake of the data provided by the AMRP mineral safeguarding/preventing sterilisation concept in provincial and regional land use planning policy instruments (i.e. stringent uptake: Designation of mineral resource priority zones of different nature and level of strictness; less stringent: Regional development programs are delineating mineral extraction priority zones)
- **Application of "masked" protection /zoning of deposits to avoid speculation** (indirect safeguarding trough agricultural priority, forestry or grassland zones)
- **Outlook on future demand of raw materials:** Sectoral Plan for Minerals and Mineral Extraction and safeguarding provide an outlook on the future demand on raw materials

3.2 Good Practice Aspects: Elements and their transferability

GOOD PRACTICE ASPECT 1:		
An integrated national plan for mineral safeguarding and minimisation of land use conflicts		
Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)	
Mapping raw-material deposits and outline minable deposits with low conflict potential: Using comprehensive data sets on minerals resources to apply a methodology of supply and demand projections to outline and describe deposits with potential low land-use conflicts. (SUCCESS FACTOR / STRATEGIC CHOICE)	Developing a methodology that has certain quality criteria, is able to include and process different several data items (deposits of minerals, different land use forms etc.), including data from other policy streams, to support the coordination and improve linkages between mineral policy and land-use planning policy (and other policy streams, such as environment, nature protection, water management, forestry/agriculture); Using data and including policy goals/outlined polygons into policy making – is only initial step – including persons/actors/stakeholder from those policy streams is important for coordination and integration and improve implementation. Data availability from different policy streams (nature, infrastructure, agriculture/forestry, etc.) is the starting point in the administrative process for spatial planning in order to delineate land uses or zoning. However, public administrators needs to work closely with actual decision-makers by providing processes for feeding this information into the actual decision-making process. Thus, having administration	





	closely working with the political level in the same process is necessary to enable informed decisions for delineation of land uses.
<ul> <li>Providing information baseline for minable deposits with low conflict</li> <li>potential: The collection, provision and management of data to provide a data baseline for identifying minable deposits with low conflict potential.</li> <li>(SUCCESS FACTOR / STRATEGIC CHOICE)</li> </ul>	<ul> <li>Political mandate given to the ministry to gather this data and develop the planning tool</li> <li>Providing sufficient amount of resources and time <ul> <li>One ministerial department: 2-3 staff members &amp; 5 years) for data compilation and setup of the AMRP;</li> <li>Resource provision to the Geological Survey to perform the mapping, hence the mapping/evaluation of mineral deposits is not only the outcome of business based exploration activity but is performed by the Geological Survey prior to any exploration activity. Thus, the data remains in the hands of the state (and partly provinces, who are also doing geological mapping, e.g. Styria and Tyrol).</li> </ul> </li> </ul>
Lack of data and information exchange: Data and information exchange are in general very limited. In particular, vertical and horizontal information exchange is not existent: i.e. there are neither formal nor informal working groups in place where public administrators from different provincial governments and the ministry (due to share responsibilities) could share experience and information fostering policy implementation. (CHALLENGE ENCOUNTERED)	<ul> <li>Provide resources and organisational structure for national level as well as provincial, regional and local level of admiration to more effectively manage the data exchange and flow (i.e. AMRP data for informing land use planning at lower levels; information on altered land use forms informing the AMRP in terms of having up-to-date and valid data).</li> <li>LUP needs accessible, suitable GIS/data interfaces, defined polygons to integrate them into LUP process and valuation/comparison with other land use options as well as needs (e.g. infrastructure/processing sites, etc.)</li> <li>LUP should have knowledge on protected deposits and evaluation of attainment of "safeguarding" policy goals (informing AMRP policy process as feedback loop).</li> </ul>
Monitoring & measuring progress: no policy monitoring is taking place in order 1) check the impact of the AMRP, or 2) to check the progress of the implementation on the provincial and regional level. (CHALLENGE ENCOUNTERED)	Apply qualitative and quantitative policy monitoring and evaluation tools to keep progress of the implementation of policy tools.
Non-disclosure of the AMRP: Non- disclosure of the policy document resulted in various difficulties (e.g. for once the public interest was not disclosed, hence legal actions and steps for provincial spatial planning resulting from disclosure were missing) (CHALLENGE ENCOUNTERED)	Similar as with public data of conversions or re-zoning of green or rural land to urban land, information of raw materials deposits need to be available to public administration responsible for spatial planning. As to how this data transfer and disclosure takes place, there is a need to establish clear procedures ensuring availability and consideration of e.g. potential political conflicts of interest.



Technical planning approach and lack of political sensitivity in policy design: A lack of political sensitivity and too little consideration of the "political perspective" and political dimension resulted in limited policy implementation performance. The strong technical focus resulted in a technically correct plan. More specifically, major implementation deficiencies are resulting from fragmented governance mechanisms, poor stakeholder participation apart from the "usual suspects" in the policy design of the <i>AMRP</i> and underrated risk of political willingness and poor consideration and integration of their needs in the policy. This has been further triggered by little considerations on policy design regarding implementation or provision of incentives for policy implementation bodies. (CHALLENGE ENCOUNTERED)	Technical planning approaches (i.e. mapping of deposits and delineation of mineral safeguarding zones) do not suffice for dispersed responsibility and complexity of the planning and policy problem: Mineral and resource planning can be considered as complex issue or 'wicked' problem, which can hardly be "managed" with technical planning approaches (such as blueprint planning). <b>Active engagement and multi-level/network governance approaches:</b> including also representatives from lower organisational units, industry, other stakeholder groups, NGOs and civil society should be actively involved in the design and drafting and evaluation process of mineral safeguarding policies. Diagonal implementation and dispersed responsibility across scales <b>demands a level of involvement that goes beyond the 'right to submit comments'</b> to draft and consultation procedures. Instead, it requires that implementing authorities are included in the evaluation process during design and implementation to ensure accountability (what happened) and build in feedback loops whether implementation processes work. <b>For example, a Cross-scale/cross-policy working group</b> might be beneficial that is meeting and working on a regular basis to establish a "learning space" for peer learning and policy feedback and to discuss alignments, interests etc. One of the possible topics for this working group to discuss could be potential avenues for implementation of the <i>AMRP</i> (e.g. practical examples Tyrol, Styria, what forms of implementation: soft instrument vs regulatory instrument, possibility Spatial Planning Law: as an option for integrating / safeguarding Mineral Deposits).
Heterogeneous legal frameworks and decision-making processes on regional level considered (9 provinces) in the regional implementation: Provincial government public administration responsible for land use planning as well as regional and municipal public authorities, also legally endowed for spatial planning activities, are characterised by heterogeneous legal frameworks and decision-making processes.	Integrative policy making as a baseline: 9 different provincial decision- making systems and legislative frameworks make integrative policy- making even more important, if there is the expectation that national policies need to be implemented; federal system with dispersed responsibilities might suggest an early integration during the policy design phase.

(CONTEXTUAL FACTOR)





## **GOOD PRACTICE ASPECT 2:**

# Flexible approach (soft policy tool) for implementation of a national level mineral safeguarding policy

Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)
Willingness and commitment to implement AMRP - provincial government actions: Though the policy document AMRP is a technical report, without any legally binding effect, the provincial government and the linked departments in public administration showed willingness (to different degree) to engage with the AMRP. (SUCCESS FACTOR)	Active engagement/communication and governance approaches for guiding implementation on regional level and for coordination between the different policy streams to improve the linkages.
In case spatial and mineral policy legislative competence is distributed along different levels, a more integrated approach for communication and coordination is necessary to achieve safeguarding of mineral resources: i.e. turning the implementation process into a strong "communication" approach between the different levels is further relying on the willingness of other public policy bodies to move in the intended direction and implement policies in coherent way. However, decentralised policy-making offers the opportunity for tailor-made, area-based policies, which provide a better fit for local circumstances, demands and interests. It appears, that in the Austrian case, and due to the division of competences between national (minerals/mining) and provinces (spatial planning), the governance system for coordination might not be fully operational. (CONTEXTUAL FACTOR)	In order to account for distribution of legislative and implementation competence across different levels: Active and co-creative engagement and multi- level/network governance approaches for policy design and later implementation. Such an approach requires the inclusion of representatives from lower organisational levels as well as other non-governmental stakeholders in in the design and drafting and evaluation process of mineral safeguarding policies. Incentive structures for minerals safeguarding for governance levels holding legislative competence for spatial planning: Soft tools such as co-creative policy design and multi-level network governance will only be active if minerals safeguarding is a priority for either the administrative or the political level of the respective responsible province, region or municipality. However, any incentives (e.g. mineral royalties) provided to province, region or municipality potentially facilitate both the consideration of safeguarding in the administrative as well as the political competent bodies or committee deciding on the actual land use choice.
Soft Instruments – no obligation for implementation on lower levels of public policy governance Soft instruments, like regional plans implementing the AMRP, still provide a lot of freedom for the decision makers as well as provide guidance and facilitation of a common understanding of terminology for decision-makers on lower levels of implementation. However – specific stringent and	According to a different legislative background, different approaches and policy instruments can be applied on the regional level: for example, (1) using the format of the policy tool <b>"Regional Programme"</b> (regulatory policy instrument implementation on regional and local level); (2) or a <b>"Sectoral Action Plan"</b> which is used as a guideline (voluntary policy instrument implementation on regional and local level).





strategic securing of land for mineral resources on regional and provincial scale is not facilitated.

Austrian case (interview, national level) stresses, that implementation is fragmented, because there was too much focus on technicalities and technical implementation and too little attention was paid to the political discourse, agenda setting and 'political momentum'; administration and LUP departments do not have the authority for the political agenda setting. Administrative/bureaucratic debate must be complemented with political discourse: the active (!) involvement of political actors/stakeholder (political realm) and the administration/civil servants (administrative realm) in policy making is crucial; considering suitable incentives to trigger implementation or make implementation more attractive.

(CHALLENGE ENCOUNTERED)

## **GOOD PRACTICE ASPECT:**

Implementation of the AMRP: Option 1 - Ordinance "Regional Programme"

**Styria** 

Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)
Regulatory Policy tool for implementing mineral safeguarding: regulatory tools are much more efficient in implementing minerals deposit safeguarding compared to soft (voluntary) policy tools. (SUCCESS FACTOR)	Soft policy instruments demand high technical and managerial capacities and willingness of the involved actors (mineral policy and LUP) for ensuring a coherent and accountable monitoring of the overall land use process; good communication with the industry, local stakeholder and community and other policy departments to keep the overview and management. They provide more flexibility – but also higher risk for shortcomings in the implementation process, while more coercive instruments provide a legal protection that can be enforced and is obligatory for all down streamed planning decisions.
Alternative and masked safeguarding mechanisms: Due to less favourable conditions (political commitment or interest) in mining indirect methods for safeguarding of mineral deposit are applied based on the data originating from the AMRP (e.g. access to mineral deposits can be safeguarded via the definition of priority zoning for "agriculture" - agriculture on the surface does not impact the accessibility of the mineral resource).	In case there are less favourable conditions (political commitment or interest) in mining indirect methods for safeguarding of mineral deposit are applied based on the data originating from the AMRP.

(STRATEGIC CHOICE)



## MinLand



Implementation of Priority zones: Establishment of Implementing priority zones of a coercive character can exclusive zones (depending on particular landscape provide strong protection of deposits against other land types) and Priority Zones on the regional planning uses that could hinder or limit future extraction of the scale (linking regional development and spatial deposit, thereby ensuring safeguarding. planning on regional level, 2 policy streams). Priority zones are outlined areas that have a strong coercive character: They provide strong protection against other land-uses that would hinder or limit future extraction of the deposit. (SUCCESS FACTOR) Transparency of zoning areas: Clear zoning and Transparency in the process: reasoning of the planning translation of areas in spatial units that are published and decision making process on the valuation of land, and accessible for the public: Transparent land-use land-use options and the decision taken, to ensure an options and zoning: accessibility of the data and accountable and transparent process, including the zoned areas. The reasoning for the planning and valuation criteria (e.g. weighing of different policy goals) decision making process on the valuation of land,  $\rightarrow$  this however, increases pressure on administration land-use options and the decision taken is to ensure and resources, which are not always available. For an accountable and transparent process, including example, facilitating transparency of zoning areas is an the valuation criteria (e.g. weighing of different policy additional burden for the administration in terms of time goals). and resources. More specifically, process transparency (STRATEGIC CHOICE) requires consideration of more documentation in the budgets for public administration. Hence, for transferability, one should consider the benefits of transparency and auditability of the process with increased demand of resources and capacity (and ensure that those responsible for the process have access to appropriate resources to complete the process without

## **GOOD PRACTICE ASPECT:**

being overburdened).

## Implementation of the AMRP: Option 2 - Sectoral Action Plan: Gesteinsabbaukonzept Tyrol

Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)
Supply & demand outlook and planning tool: Intermediary sectoral plan, that outlines the need, demand and requirements for mineral extraction (aggregates: demand based evaluation for aggregates; Metals/etc.: supply based evaluation) and its interlinkages to other policy streams (i.e. tourism, conservation, agriculture). (SUCCESS FACTOR)	Requires intensive research on regional demand forecast of raw materials from all sectors. Inter-linkage to other policy streams requires and integrated and extensive collaboration approach with other policy areas that can be demanding in terms of resources and time.





Less commitment for implementation: Soft policy instrument as implementation pathway in case of less or contradicting political interest: A non-regulatory or soft policy tool can be perceived as a compromise for dealing with a controversial topic or a topic with less political traction, that nevertheless provides guidance for planning and decision-making. (CHALLENGE ENCOUNTERED)	In case there is no obligation for implementation active and co-creative engagement as well as multi-level governance approaches for policy design and later implementation are required: Such an approach requires the inclusion of representatives from lower organisational (regional and municipal) in in the design and drafting process of mineral safeguarding policies. Soft tools should be clear in wording and describe well the expectations, goals etc. to function properly as guidance document, avoid ambiguity, and increase flexibility for implementation.
Comprehensible illustration of important regional, provincial interests for nature conservation: The Sectoral Plan (Gesteinsabbaukonzept Tyrol), which integrated parts of the ARMP, describes and discusses land use areas and interests. This indicates that there is weighing of different land-use options in the decision making process. (SUCCESS FACTOR)	Access to information of different land use areas (from the ARMP) allowed for informed weighing of land use of regional and provincial interest in the formulation of the Sectoral Plan (Gesteinsabbaukonzept Tyrol).
Support for on-demand decision-making: The Gesteinsabbaukonzept Tyrol, which serves as a voluntary instrument, is used for expert opinions and administrative procedures, when the demand for minerals is of public interest. (SUCCESS FACTOR)	Access and knowledge of a sectoral plan for safeguarding; requires information channels and coordination between actors responsible for land use planning and adjacent actors.

