

# 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.

## 1.3 Mineral resource groups



Metals



Aggregates



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 Aspects)	Suggestions for Transferability (of Key Elements)
<p><b>Data-availability:</b></p> <p>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.</p> <p>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.</p> <p>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 <a href="http://geonorge.no">geonorge.no</a></p> <p style="text-align: center;"></p> <p style="text-align: center;"><b>SUCCESS FACTOR</b></p>	<p>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.</p> <p>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 <a href="http://geonorge.no">geonorge.no</a>, 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.</p>
<p><b>Criteria of valorisation:</b></p> <p>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.</p> <p>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.</p> <p style="text-align: center;"></p> <p style="text-align: center;"><b>SUCCESS FACTOR</b></p>	<p>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.</p> <p>If the system is developed trans-nationally, comparison of mineral deposits across countries would become easier as well.</p>

GOOD PRACTICE ASPECT 1: Improved data on mineral resources	
Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)
<p><b>INSPIRE compliancy:</b></p> <p>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.</p> <p>A challenge related to this element is the time-consuming work of updating the national standards to be INSPIRE compliant as well.</p> <p style="text-align: center;"><b>CONTEXTUAL FACTOR</b></p>	<p>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.</p>
<p><b>Lack of data and information exchange:</b></p> <p>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.</p> <p style="text-align: center;"><b>CHALLENGE ENCOUNTERED</b></p>	<p>Routines for transferring data between authorities should exist, particularly when exploration licences expire, or companies leave an exploration area.</p> <p>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.</p>
<p><b>Requirements from national mapping authority:</b></p> <p>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.</p> <p style="text-align: center;"><b>CONTEXTUAL FACTOR</b></p>	<p>Clear and reasonable requirements should be established to ensure that data quality is as good as possible, including routines for assessments and developments.</p> <p>This could be done as an informal practice or incorporated into national/federal/regional legislation (laws, acts, regulations, codes, policies etc).</p>

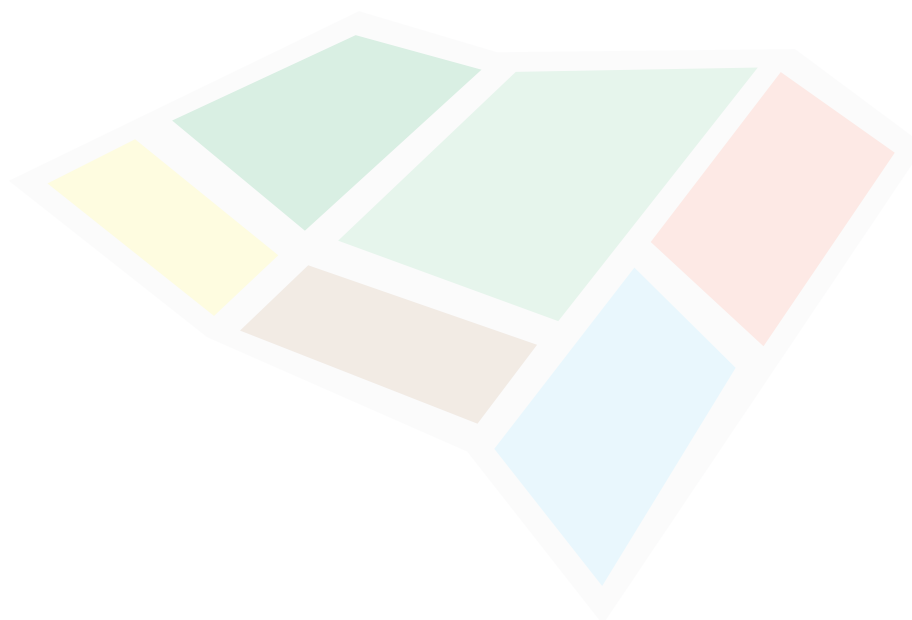


**GOOD PRACTICE ASPECT 2:****Integration of mineral resources into land-use planning for mineral resources safeguarding****Key elements  
(of Good Practice Aspects)**

**Mineral resources in land use planning legislation:**  
 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.

**CONTEXTUAL FACTOR****Suggestions for Transferability  
(of Key Elements)**

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.



<p align="center"><b>GOOD PRACTICE ASPECT 3:</b>  <b>Policies and strategies concerning mineral resources in land use planning</b></p>	
<p align="center"><b>Key elements (of Good Practice Aspects)</b></p>	<p align="center"><b>Suggestions for Transferability (of Key Elements)</b></p>
<p><b>Policies and strategies demanding better data on mineral resources</b></p> <p>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.</p> <p>Improved quality and suitability for land use planning have been a requirement.</p> <p align="center"><b>CONTEXTUAL FACTOR</b></p>	<p>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.</p>
<p><b>Conflict reducing strategies:</b></p> <p>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.</p> <p>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 should have priority. If two competing uses have a similar value, the final land use is decided through a political decision.</p> <p align="center"><b>CONTEXTUAL FACTOR</b></p>	<p>Mandatory meetings with different responsible government authorities and departments involved in land use planning provide way for conflict mitigating strategies.</p>