

# 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**

**Authors:** Jorge Carvalho ([jorge.carvalho@lneg.pt](mailto:jorge.carvalho@lneg.pt)), Vitor Lisboa ([vitor.lisboa@lneg.pt](mailto:vitor.lisboa@lneg.pt)), National Laboratory of Energy and Geology (LNEG), Maria João Figueira ([maria.figueira@dgeg.pt](mailto:maria.figueira@dgeg.pt)), Paula Castanheira Dinis ([paula.dinis@dgeg.pt](mailto:paula.dinis@dgeg.pt)), Directorate General for Energy and Geology (DGEG)



## 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



Metals



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.

**Knowledge & Safeguarding** 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 **Exploration Areas** and **Potential Areas** 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 **Valuing** role of the land relates to the use of resources (profitability). The following land subcategories may be considered:

- **Consolidated Activity Areas:** 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.
- **Complementary Exploitation Areas:** 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.

- **Areas under Rehabilitation:** 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 Law 31/2014 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);
- 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 achieved 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 Aspects)	Suggestions for Transferability (of Key Elements)
<p><b>Addressing the unknown/hypothetical resources.</b></p> <p>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.</p> <p>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.</p> <p></p> <p><b>SUCCESS FACTOR / STRATEGIC CHOICE</b></p>	<p>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.</p>


## GOOD PRACTICE ASPECT 1:

## PREVENTING STERILIZATION OF MINERALS IN LUP

Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)
<p><b>An approach focused on mineral resources, regardless of their location and economic value.</b></p> <p>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:</p> <ul style="list-style-type: none"> <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> </ul> <p>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.</p> <p>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.</p> <p>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.</p> <div data-bbox="453 1787 528 1861"> </div> <p><b>SUCCESS FACTOR / STRATEGIC CHOICE</b></p>	<p>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). Conflicts with other uses of land should be addressed later, during the EIA stage etc.</p>

GOOD PRACTICE ASPECT 1: study for a mining and landscape route	
Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)
<p><b>Fostering the acquisition of knowledge on the existing and potential mineral resources at municipal level.</b></p> <p>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.</p>  <p><b>SUCCESS FACTOR</b></p>	<p>Municipal authorities should rely on internal or external qualified human resources to characterize the mineral resources.</p>
<p><b>Equal Footing evaluation of minerals</b></p> <p>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.</p> <p><b>CHALLENGE ENCOUNTERED</b></p>	<p>Tools developed by the H2020 Project MINA-TURA2020 may be used to equally weight the use of land for mineral or other activities.</p>

## GOOD PRACTICE ASPECT 2: FLEXIBLE INTEGRATION OF MINERAL RESOURCES IN LUP

Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)
<p><b>LUP-MR is adaptable to changes in legislation</b></p> <p>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 &amp; 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.</p> <p>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.</p> <p>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.</p> <div style="text-align: center;">  <p><b>SUCCESS FACTOR</b></p> </div>	<p>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.</p>

## GOOD PRACTICE ASPECT 2: FLEXIBLE INTEGRATION OF MINERAL RESOURCES IN LUP

Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)
<p><b>Soft policy tool – no obligation to be applied</b></p> <p>The municipal political decision-making process is generally not receptive to the inclusion of areas for 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”.</p> <p>The areas that political power is bound to include are only those related to the current mining permits.</p> <p>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.</p> <p style="text-align: center;"><b>CHALLENGE ENCOUNTERED</b></p>	<p>The difficulties encountered by this soft policy instrument will be easily overcome if it were a binding political tool.</p> <p>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.</p> <p>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.</p> <p>In other words, there is a need for a formal recognition of the LUP-MR by the national political authorities, otherwise it will disappear.</p>

## GOOD PRACTICE ASPECT 2: FLEXIBLE INTEGRATION OF MINERAL RESOURCES IN LUP

Key elements (of Good Practice Aspects)	Suggestions for Transferability (of Key Elements)
<p><b>Participation of the mining authority in the Advisory Committee for the review of Municipal Land Use Plans.</b></p> <p>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.</p> <p>DGEG (the mining authority) is called for most of these advisory committees, allowing to bring to the discussion the issue of minerals safeguarding.</p> <p>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.</p> <p><b>CONTEXTUAL FACTOR /CHALLENGE ENCOUNTERED</b></p>	<p>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.</p> <p>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.</p>
<p><b>Allowing the coexistence of compatible uses of land.</b></p> <p>The Portuguese LUP legislation, through a normative act aiming at criteria harmonization and directed to 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.</p> <p><b>CONTEXTUAL FACTOR</b></p>	