European Union Network for the Implementation and Enforcement of Environmental Law

Permitting and Inspection under Art. 6 (3) Habitats Directive
Quarries and Open Cast Mining

Experience in IMPEL Member Countries, Best Practice Examples

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Introduction to IMPEL

The European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) is an international non-profit association of the environmental authorities of the EU Member States, acceding and candidate countries of the European Union and EEA countries. The association is registered in Belgium and its legal seat is in Brussels, Belgium.

IMPEL was set up in 1992 as an informal Network of European regulators and authorities concerned with the implementation and enforcement of environmental law. The Network's objective is to create the necessary impetus in the European Community to make progress on ensuring a more effective application of environmental legislation. The core of the IMPEL activities concerns awareness raising, capacity building and exchange of information and experiences on implementation, enforcement and international enforcement collaboration as well as promoting and supporting the practicability and enforceability of European environmental legislation.

During the previous years IMPEL has developed into a considerable, widely known organisation, being mentioned in a number of EU legislative and policy documents, e.g. the 7th Environment Action Programme and the Recommendation on Minimum Criteria for Environmental Inspections.

The expertise and experience of the participants within IMPEL make the network uniquely qualified to work on both technical and regulatory aspects of EU environmental legislation.

Information on the IMPEL Network is also available through its website at: www.impel.eu

Title of the report: Permitting and Inspection under Article 6 (3) Habitats Directive – Quarries and Open Cast Mining	**Number report:** 2016/15
Project Manager/Authors: Gisela Holzgraefe (DE) – project manager, Ana Garcia (PT) – co-manager, Jose Antonio Vazquez Quintela (ES), Iñaki Bergareche Urdampilleta (ES), Katica Bezuh (HR), Brigitte Mrvelj Čečatka (HR), Lia Mergulhão (PT), Constantin Hutupas (RO), Kate Bayley (UK). **Attendants to the workshop:** Gisela Holzgraefe (DE), Kate Bayley (UK), Claudia Carpino (IT), José Antonio Vázquez Quintela (ES), Enis Tela (AL), Andreja Slapnik (SL), Katica Bezuh (HR), Brigitte Mrvelj Čečatka (HR), Ismail Hetemaj (KOS), Constantin Hutupas (RO), Ana Garcia (PT), Lia Mergulhão (PT), Luís Martins (PT), Milton Silva (PT), Jorge Cancela (PT), Jorge Carvalho (PT), Paulo Sá Caetano (PT), Olímpio Martins (PT), Leonor Batalha (PT), Mário Reis (PT), Tiago Sameiro (PT), Ana Mascarenhas (PT), Elsa Albuquerque (PT)	**Report adopted at IMPEL General Assembly Meeting**: December 2018, Vienna Austria **Total number of pages: 235** Report: 176 Annexes: 59 in main document and 60 in Annex I (separate document)

Executive Summary

This IMPEL project explored how European countries apply Article 6(3) to the non-energy extractive industry (NEEI) activities of quarries and open cast mining in practice. This final report shares and compares practices and experiences, defines common understandings, raises the competences of the experts involved and contributes towards further knowledge in this thematic area, namely permit writers and inspectors. The report covers: the importance of strategic planning and management plans, the potential impacts of NEEI on nature and wildlife, the criteria for assessment of significance used on screening and appropriate assessment of NEEI plans and projects in accordance with the Habitats Directive, permitting, monitoring, inspection and restoration/rehabilitation after exploration. Inspection of NEEI sites in or close to Natura 2000 sites is addressed in more detail in the report on the IMPEL project 2017/18 "Nature protection in permitting and inspection of industrial installations – implementation of Art 6(3) of the Habitats Directive (phase 4): Guidance for environmental and nature protection inspections of quarries and open cast mining in or near Natura 2000 sites"


IMPEL

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1. Introduction

1.1. Previous IMPEL projects and background documents from the European Commission

In 2013 IMPEL identified in a preliminary project "Nature protection in permitting and inspection", the need for more information concerning the implementation of the Habitats Directive, namely the application of the Article 6(3).

In 2014 IMPEL carried out a project that explored the implementation of Art. 6(3) of the Habitats Directive from a general perspective. A follow-up project in 2015 Project explored the implementation of this legal provision in two sectors, namely wind farms and pig and poultry farms. For the pig and poultry sector, IMPEL developed a document providing comprehensive information and guidance for permit writers and inspectors. Further sectors have been considered for assessment following this project.

To assist in the understanding and correct application of the Article 6 of the Habitats Directive procedure, the Commission has produced a number of interpretative and methodological guidance documents on specific provisions of the Article1, that are the baseline information for the work and added information provided in this report.

They include general guidance, such as:

- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2000).
- Assessment of plans and projects significantly affecting Natura 2000 sites (EC, 2001).
- Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2012)

And sector specific guidance, namely the most important for this project, the Guidance Document "Non-Energy mineral extraction and Natura 2000", European Commission, 2010 (EC, 2010)[2], and additionally:

- Guidance on Natura 2000 and forests.
- Farming for Natura 2000.

[1] Available at http://ec.europa.eu/environment/nature/info/pubs/directives_en.htm.

[2] Available at http://ec.europa.eu/environment/nature/natura2000/management/docs/neei_n2000_guidance.pdf

- Guidance on Aquaculture and Natura 2000.
- Inland waterway transport and Natura 2000.
- The implementation of the Birds and Habitats Directives in estuaries and coastal zones.
- Integrating biodiversity and nature into port development.
- Wind energy developments and Natura 2000.
- Guidance document on Climate change and Natura 2000.

1.2. Abstract and purpose of the IMPEL project on quarries and open cast mining and Natura 2000 (2016/15)

The Habitats Directive[3] forms the cornerstone of Europe's nature conservation policy.

Article 6(3) states that any plan or project not directly connected with or necessary to the management of a site of community importance, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment. It also states that such plan or project can be approved only after having ascertained that it will not adversely affect the integrity of the site concerned.

In this context and given Europe's manufacturing and construction industries heavy dependency on the non-energy extractive industry for essential raw materials (including non-energy minerals), which are often present on Natura 2000 sites, there is a need to ensure the compatibility of extractive industry with its potential impacts on wildlife and nature.

This IMPEL project explores how European countries apply the legal provision of Article 6(3) in practice, specifically on the non-energy extractive industry (NEEI) activities of quarries and open cast mining. The project aims to produce a final report, which shares and compares practices and experiences, defines common understandings, raises the competences of the experts involved and contributes towards further knowledge in this thematic area, namely permit writers and inspectors. The report will be available for all interested parties through the IMPEL website.

The report covers specific themes within NEEI in the European Union (EU): the potential impacts of NEEI on nature and wildlife, the importance of strategic planning and management plans, the criteria for assessment of significance used in screening and appropriate assessment of NEEI

[3] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

plans and projects in accordance with the Habitats Directive, permitting, monitoring, inspection and restoration/rehabilitation after exploration.

1.3. Scope

The scope of the project includes open cast mining (for production of stones, sand (pits), chalk, gravel, and other products for civil construction, industry, etc.), with the exception of marine areas and underground mining, activities integrated on the sector of Non-Energy Extractive Industry (NEEI).
The project analyses prospecting, extraction, first processing of mineral rocks and closure activities, not including the further processing such as refining. The report mentions the importance and the European Union (EU) framework for substitution of raw materials, in Chapter 2, but this theme has not been further explored during this project.

1.4. Methodology

The project consisted of two project team meetings and a workshop.

The support and information from other European Countries was requested through a questionnaire with the intention of providing experience and best practices from member states and other European countries. There were 12 answers to the questionnaire, from Albania, Bulgaria, Croatia, Italy, Portugal, Kosovo, Slovak Republic, Slovenia and Spain, that are summarized in Annex I.

The project team invited all contributors to the questionnaire to be present at the workshop that took place in Lisbon, Portugal, from 29th June to 1st of July 2016.

The workshop had approximately 20 participants, from Germany, Italy, United Kingdom, Croatia, Albania, Kosovo, Romania, Slovenia, Spain and Portugal. Natural Authorities for Nature Conservation or Environment representatives from industry participated temporarily.

During the workshop, presentations were made by the Portuguese association of extractive industry - Assimagra. Assimagra presented work on a project in which they have collaborated with public authorities, (Institute for Nature Conservation and Forests), concerning the compatibility of extractive industry in a Natural Park, Serras de Aire e Candeeiros. There was a

strong wish from the Portuguese coordinator for Assimagra to integrate their work with the IMPEL project (http://minatura2020.eu/). These participations were very relevant to the success of this event, allowing the share of knowledge and experiences, bringing more perspectives and enriching the discussions. The main output of the IMPEL project is the present report.

2. The non-energy extractive industry (NEEI)

2.1. NEEI in the European Union and its sources

The Non-Energy Extractive Industry (NEEI) provides many of the basic raw materials for Europe's manufacturing and construction industries.

The NEEI sector can be divided into three main sectors, namely construction minerals, industrial minerals and metallic minerals.

The European Union (EU) is self-sufficient in the production of construction minerals, including aggregates (sand, gravel, and crushed natural stone), various brick clays, gypsum and natural ornamental or dimension stone. Europe's demand for, and production of, construction materials is high. The production of aggregates is mainly resultant from natural resources (91%), only 5% are recycled aggregates, and 2% are of marine origin or manufactured (EC, 2013)4. The sector mainly consists of small and medium-sized enterprises (SMEs) operating over 20000 extraction sites that supply local and regional markets (EC, 2013). Potential sources of raw construction minerals are widely distributed across the EU, but Germany, France, Italy, Spain and the United Kingdom are identified as major producers (EC, 2011).

The EU also has a large production of industrial minerals supplying a very wide range of industries. For some minerals, such as barytes, salt, magnesite, fluorspar, bentonite, kaolin and potash, Europe is an important global producer. The EU however is a net importer for many of these industrial minerals (EC, 2013).

Concerning metallic minerals, the European economy is highly dependent on ores and metals imports. Only a small number of metal ores are extracted within the EU, which is still a relatively important producer for some, such as chromium, copper, lead, silver and zinc. However, this production is insufficient to meet European demand (EC, 2013). The distribution of mines is limited to a relatively small number of Member States, such as Austria, Finland Greece, Ireland, Poland, Portugal and Sweden (EC, 2010). Regarding recycling, the use of recycled metal scrap represents around 40% to 60% of input to EU metal production, according to industry estimates.

[4] Strategic Implementation Plan for the European Innovation Partnership on Raw Materials, Part I, Final Version – 18/09/2013), available at https://ec.europa.eu/growth/sectors/raw-materials/industries/minerals.

For several metals, including rare earths and Platinum-group Minerals (PGMs), the EU completely relies on imports (EC, 2013).

Due to large quantities of construction and industrial minerals produced and consumed, and also because of the high consumption of industrial minerals, there is a need to improve the overall sustainability performance, the range of the primary production materials and to ensure a higher proportion of recycling. These improvements would benefit the economy and reduce the deployment of natural resources, particularly important for Natura 2000 areas.

2.2. NEEI in Natura 2000 and legislative framework

To measure the present and future impact of NEEI, it is important to have reliable figures for occupied areas, or areas with potential for extraction mineral resources, and its evolution in time, together with total area estimates for Natura 2000 areas in each country.

The relevance of this information is acknowledged under the European Innovation Partnership (EIP) On Raw Materials, with an action for a new and reliable data-base (link to EU mineral potential) on primary and secondary raw materials. This document is for use by authorities to better develop land use planning, with the ultimate aim of discovering new resources and opening new mines (see section 2.3).

Under this initiative a Final Report of the Project Minventory EU raw materials statistics on resources and reserve (2015)[5] was published, which characterized the metadata held in member states and their offshore dependencies, and 13 neighbouring European Countries concerning the availability and accessibility of statistical data on resources and reserves for:

- 42 key minerals - primary raw materials (i.e. geological deposits of minerals and ores (land-based and marine)
- secondary raw materials (i.e. materials consigned as waste having been once used, but which might be reprocessed for re-use)
- 'in use' materials (i.e. materials embedded in products and infrastructure which might, in future, become secondary raw materials) (scoping exercise only).

All the countries that replied to the questionnaire (see Annex I) of the present IMPEL Project - Bulgaria, Italy, Portugal, Kosovo, Romania, Croatia and Slovenia) - identified NEEI present in (or

[5] http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8273&lang=en.

within 10 km of) a Natura 2000 site. This question was found not to be applicable for Albania and Kosovo as these countries are not yet member states. Nevertheless, most protected areas in Kosovo are expected to be part of Natura 2000 and so this country identified quarries in those areas.

Within the questionnaire, mineral products identified as resulting from exploration were gypsum, barite, bauxite, limestone/dolomite, gneiss, carbon clay, sand (pits), chalk, gravel, andesite, amphibolite, basaloid andesite, slate, dacite, diorite, diabase, calcareous or quartz sandstone, granodiorite, granite, mica schist, gneiss, marble rhyolites, igneous rock, granular rocks, basaltic scoria, volcanic tuffs and also sand, gravel and salt from sea and gold and silver.

Bulgaria, Croatia and Romania provided their exact number of the extracting activities, which were between 70 and 200 within Natura 2000 sites and up to 400 in areas near Natura 2000 sites. Romania, Bulgaria and Italy identify the exact area affected by this activity.

Concerning the legal framework, most countries referred to the national or regional laws applied, from nature conservation and environmental impact assessment - transposing the associated Directives - and also Natura 2000 or Protected Areas Management Programs or Plans.

For the activity itself, the important legal acts cover themes such as: underground resources, disclosure and use of existing geological resources in the national territory, including those located in the national maritime space or prospecting or exploration, extraction and primary processing of mineral resources, liquidation and / or conservation of geological and mining sites and reclamation of affected lands and the terms and conditions for their reconciliation.

Some countries have general guidance on environmental protection associated with the exploration of mineral resources (Italy)[6], specific guidance (for example Degraded Areas Recovery Guide in Portugal), and criteria guidance for the elaboration of environmental documentation needed for the environmental impact assessment of projects likely to have effects on Natura 2000 sites (Spain)[7], (Italy)[8].

The Italian legislation for the special protection areas (ZPS) identifies specific prohibitions for quarries. The ministerial decree 17 October 2007 (Article 5, paragraph 1, letter n) has expressly

[6] http://www.ambienteinliguria.it/eco3/DTS_GENERALE/20080313/lineeguida_attivitaestrattive.pdf. And also a Practical Example on "Gestione delle attività estrattive in Aree protette. Il caso del Parco Regionale Fluviale del Trebbia", http://www.sarmaproject.eu/uploads/media/2010_ER_CERA_SPOTORNO.pdf.

[7] http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/publicaciones/eia-nat2000_tcm7-218039.pdf

[8] http://www.flanet.org/sites/default/files/Verifica%20VIA.pdf

provided that in ZPS (which include Natura 2000 sites) there is a ban on opening new quarries and the expansion of existing ones, except those already laid down in the sector plans in force on the date of enactment of the Decree. In these cases, the ultimate recovery of areas affected by mining has to be done for natural purposes and with a positive impact assessment.

2.2.1. Legal background of permitting

There are a number of environmental laws and policies which are relevant to the non-energy extractive industry (NEEI), several of which have already been referred to in this document as well as listed in the EC guidance on undertaking new non-energy extractive activities in accordance with Natura 2000 requirements (the NEEI guidance)[9]. Relevant national legal frameworks differ significantly across Europe, the most obvious difference being implementation between countries with centralised or non-centralised control[10].

Authorising (*generic term used to encompass a number of different permits required to undertake NEEI activities*) mineral extraction by a competent authority is a key consideration of the Minerals Planning Policies for all Member States, with the broad aim of regulating land use in the public interest.

Three main types of legislation are applicable to the regulation of NEEI activities across member states:

- Mining law – relating to the ownership (state or privately owned) of minerals.
- General land use planning law – relating to land use (for example, planning permission in England).
- Other laws (particularly environmental law) – relating to the environmental protection and minimisation of environmental impact (for example, an environmental permit in England, Environmental Authorisation in Spain, environmental impact assessment in Croatia).

2.2.2 Mining Law

Mineral extraction may only take place if the operator has obtained all necessary permits and approvals. In England, this includes permissions from bodies such as the Environment Agency, local planning authority and licenses from Natural England (in relation to coal resources this

[9] http://ec.europa.eu/environment/nature/natura2000/management/docs/neei_n2000_guidance.pdf

[10] Recommendations on the framework conditions for the extraction of non-energy raw materials in the European Union (October 2014)

would also include the Coal Authority). The UK has a number of factsheets addressing issues for the planning of mineral extraction[11].

State owned minerals are most commonly those which are scarce and/or of national interest and importance - traditionally metallic ores and energy minerals fall in the category of 'state owned'. An example of such a situation is Romania, where legislation requires that all soil/subsoil minerals are state owned by the National Agency for Mineral Resources. In Croatia all mineral resources (as defined by the Mining Act 56/13, 14/14) are state owned.

In the case of state owned minerals, the mineral owner is not always the owner of the land on which the minerals exist, and as such land can be appropriated if the mineral extraction is considered to be in the public interest. In these cases, the land owner is compensated. Privately owned (landowner) minerals are more common, and are of comparatively low value when compared to state owned, and/or minerals that are not considered to be of national interest. It is for these reasons that mineral rights in these cases usually rest with the landowner.

In the UK minerals are defined in the Town and Country Planning Act 1972 (as amended by the Town and Country planning Act (minerals) 1981) as: *all substances in or under land of a kind ordinarily worked for removal by underground or surface working, except that it does not include peat cut for purposes other than for sale.* With the exception of oil, gas, coal, gold and silver, the state does not own mineral rights in the UK. Generally minerals are held in private ownership, and information on mineral rights, where available, is held by the Land Registry together with details of land ownership[12]. A general overview of mining rights in the UK can be found in 'Exploration for metalliferous and related minerals in Britain: A guide, 2nd edition (2000)[13].

2.2.3. General land use planning law

Planning for mineral supply has a number of special characteristics (location limitations, operational lifetime, monitoring and restoration requirements[14]), that are not necessarily present and set it aside from other developments. This means that it is necessary to consider protection of minerals from other non-NEEI developments (i.e. identified for mineral

11 http://www.bgs.ac.uk/mineralsuk/planning/mineralPlanningFactsheets.html

12 Minerals UK: https://www.bgs.ac.uk/mineralsuk/planning/legislation/mineralOwnership.html

13 https://www.bgs.ac.uk/mineralsuk/exploration/guide.html

14 Planning practice guidelines (2016): http://planningguidance.communities.gov.uk/blog/guidance/minerals/minerals-overview/

extraction), and has implications for the preparation of strategic and national mineral plans. In England, national mineral planning policies are set out in the National Planning Policy Framework (NPPF)[15], published in 2012. The focus of the NPPF is a presumption in favour of sustainable development. The English authority with responsibility for mineral planning (including deciding planning applications), is called the Mineral Planning Authority (MPA), and their responsibilities include future mineral planning through policies and guidance, regulating individual developments through deciding planning applications, and policing of existing developments to ensure that they are working within the constraints of the planning permission. In England, the MPA is most commonly the local authority for the area/region. In 2004, the implementation of the Planning and Compulsory Purchase Order Act (2004) required MPAs to produce a 'Minerals and Waste Development Framework' (MWDF), which shows how the MPA will plan for future provision of minerals and disposal of associated waste in their area.

Since 2009, the Croatian Mining Act introduced an obligation for regional governments to undertake mining-geological studies which encompass existing and potential deposits of mineral resources with the intention of planning the need and supply of minerals, which will act as a base for spatial planning. Although the content of such studies is prescribed by ordinance, in reality it failed to influence future mineral planning as the mineral prospection and exploration are costly activities which involve several stages of investigation - the level of which is not prescribed by ordinance.

Mining laws and land use planning are intrinsically linked to spatial planning as described in the NEEI guidance[16] and Chapter 2 and 3. of this document; and are a key consideration of Mineral Planning Policies across all member states. The ability to strategically plan on a country-wide scale ensures a sound framework for the sustainable, long-term supply of raw materials across the EU[17]. Further information on mining law, land use planning and their interaction with strategic planning are considered in Chapter 3 of this document.

2.2.4 Environmental law

As well as being authorised for mineral rights and planning usage, industries such as NEEI that have the potential to cause pollution or pose another risk to the environment must also be

[15] https://www.gov.uk/government/publications/national-planning-policy-framework--2

[16] http://ec.europa.eu/environment/nature/natura2000/management/docs/neei_n2000_guidance.pdf

[17] Report on national mineral policy indicators-Framework conditions for the sustainable supply of raw materials in the EU (February 2014): http://ec.europa.eu/DocsRoom/documents/5562/attachments/1/translations

regulated for their potential environmental impacts. Environmental authorisations may take the form of permissions, permits, licences, consents, registrations, notifications or exemptions; and may cover various environmental aspects such as pollution prevention, waste management, hazardous waste, trade effluent and water abstraction in order to carry out an activity legally. The primary aim of an environmental authorisation is to control the impacts of NEEI activities (or any other regulated industry) on the natural environment, as well as assess its potential for impacts to designated nature conservation sites and species.

Assessments of the impact of regulated industry on European, national and locally designated nature conservation sites are within scope of both land use planning and environmental law for all member states. Hence, where applications are made for such authorisations, an assessment of environmental impacts are required as part of determination.

Most EU countries (where Natura 2000 sites have already been designated) have some form of legal framework through which conservation (appropriate) assessments are undertaken to ensure that activities being permitted will not have an adverse effect on Natura 2000 sites prior to granting any permission or permit[18]. The framework is implemented through the Habitats Directive which has already been discussed in both this document and the NEEI guidance[19]. The appropriate assessment for Natura 2000 sites will be undertaken either by the competent authority in charge of determining the authorisation (England) or by the consultant for the application which is then reviewed and agreed by the competent authority (Spain, Portugal).

Member states also have differing legislative frameworks to protect non-EU (national and locally designated) nature conservation sites. In England for example, nationally designated nature conservation sites (Sites of Special Scientific Interest or SSSI) are protected through the Wildlife and Countryside Act and Countryside and Rights of Way Act 2000 and local sites (for example local wildlife sites, ancient woodlands and local/national nature reserves) are protected through the Environment Act 1995 and Natural Environment and Rural Communities Act (NERC) 2000. In Spain, National Parks are designated by the national Spanish government and other local designations declared by regional Spanish government such as that of Galicia. In Romania all 'other' (non-Natura 2000) nature conservation sites are protected under Government Emergency Ordinance (GEO) 57/2007 regarding protected natural areas of Law 5/2000.

[18] IMPEL Project 2016/15: Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive (*Questionnaire response document*)

[19] http://ec.europa.eu/environment/nature/natura2000/management/docs/neei_n2000_guidance.pdf

2.3. The European Innovation Partnership (EIP) On Raw Materials

The European Commission has recently launched the European Innovation Partnership (EIP) on Raw Materials[20], to address the challenges of ensuring the sustainable supply of raw materials, including non-energy, non-agricultural raw materials, such as minerals, to the European economy and the sustainability in their extraction and use whilst increasing benefits for society as a whole. The EIP reinforces the Raw Materials Initiative (EC, 2008)[21], by translating the strategic policy framework into concrete actions and by mobilising the stakeholder community to implement them.

The EIP on Raw Materials is a stakeholder platform that brings together representatives from industry, public services, academia and non-governmental organizations (NGOs). Its mission is to provide high-level guidance to the European Commission, Members States and private representatives on innovative approaches to the challenges related to raw materials.

The overall objective of the EIP on Raw Materials is to contribute to the 2020 objectives of the EU's Industrial Policy[22] - increasing the share of industry to 20% of GDP, and the objectives of the flagship initiatives "Innovation Union"[23] and "Resource Efficient Europe"[24].

This will be achieved by:

- Reducing import dependency and promoting production and exports by improving supply conditions from EU, diversifying raw materials sourcing and improving resource efficiency (including recycling) and finding alternative raw materials.

- Putting Europe at the forefront in raw materials sectors and mitigating the related negative environmental, social and health impacts (EC, 2013).

The Strategic Implementation Plan (SIP) for the EIP on Raw Materials, (CE, 2013) sets out specific objectives and targets associated to the three pillars defined on EIP, as shown in Figure 2.1.

[20] More information available on https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/european-innovation-partnership-eip-raw-materials.

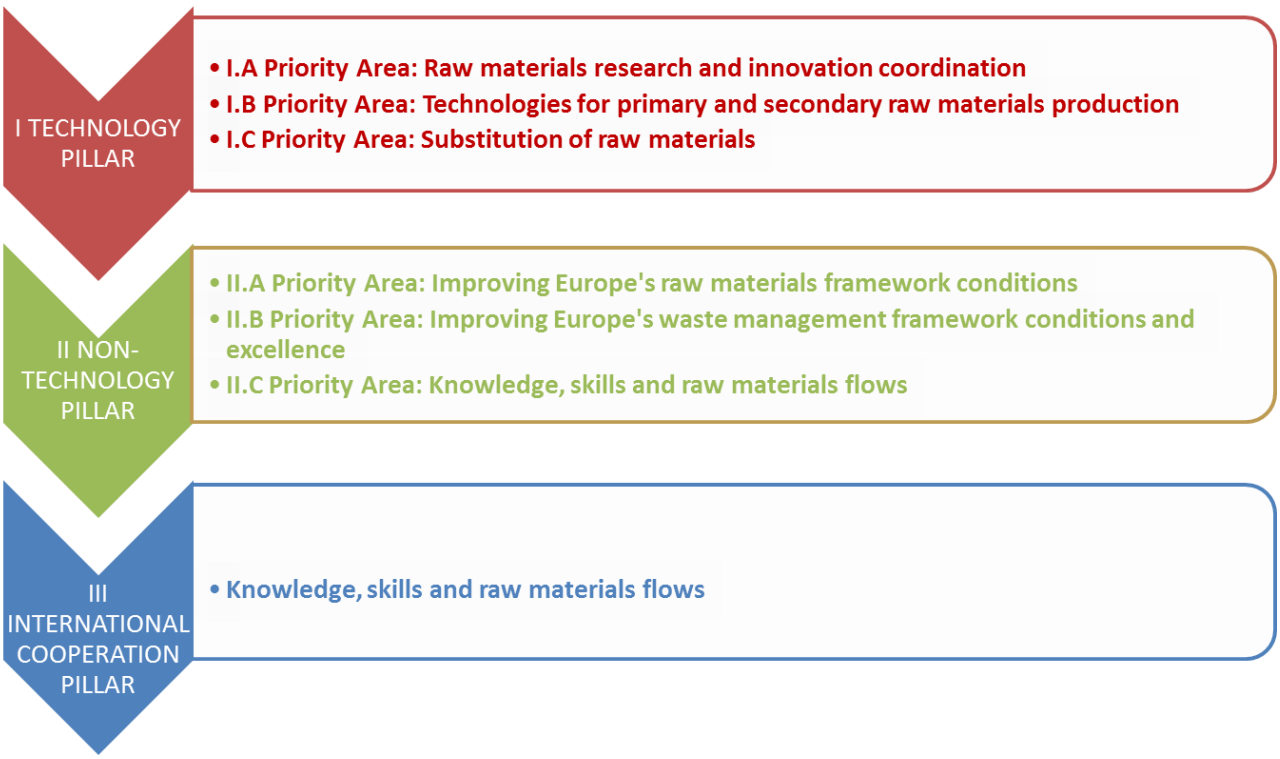
[21] https://ec.europa.eu/growth/sectors/raw-materials/policy-strategy_en

[22] http://ec.europa.eu/growth/

[23] http://ec.europa.eu/research/innovation-union/index_en.cfm

[24] http://ec.europa.eu/resource-efficient-europe/

Figure 2.1: EIP on Raw Materials



Source: SIP for the EIP on Raw Materials

Integral to the three pillars are priority areas and specific targets for consideration. Those most important for the thematic areas of this report summarised in Annex II. Targets relevant to this IMPEL project are shown in Table 2.1.

Table 2.1: Selected targets from the SIP for the EIP on Raw Materials

Selected targets from the Strategic Implementation Plan for the European Innovation Partnership on Raw Materials
New reliable data-base on primary and secondary raw materials to better develop land-use planning.
Exploitation activities in a sustainable way, with examples of new clean and safe solutions.
Substitution of raw materials, for example: Reduction - use less material to achieve the same level of functionality in a given product; Alternative material - replace one material for another without loss of functionality; Alternative system - replace one/several components within the same product; Alternative products - replace existing technology with different products and/or services;
Member States' practices, EU guidance and legislation as well as communication to address mineral policy, permitting, environmental management and reporting by public institutions;
Increase transparency on raw materials availability in the EU, which is strongly influenced by environmental protection (EIA, NATURA 2000, and Mining Waste Directive);
Framework conditions for enhanced efficiency in material use and in waste prevention, re-use and recycling, and raw materials efficient product design, which includes themes as efficiency and high quality recycling, connected with the important policy to move towards a circular economy.
Pro-active international co-operation strategy of the EU at bilateral and multilateral level, promoting synergies.

Source: SIP for the EIP on Raw Materials

The EIP on Raw Materials is expected to provide many products for the above targets and is subject to monitoring and evaluation over the longer term. The implementation of the SIP should be evaluated at mid-term (2017).

The Annual Monitoring Report 2014 for the EIP on Raw Materials (12/02/2015)[25] provides some examples of outputs already available that have resulted from the EIP´s implementation, these are shown in Table 2.2.

[25] https://ec.europa.eu/growth/tools-databases/eip-raw-materials/sites/rawmaterials/files/Annual%20Monitoring%20Report%202014%20FINAL.pdf

Table 2.2: Examples of outputs from EIP on Raw materials

Examples of outputs from EIP on Raw materials
CUMIHR – demonstration for new hard rock drilling techniques
GtoG engaging whole gypsum recycling value chain
REMIND Commitment on EU Responsible Mining Demonstrators
BRGM "Responsible Mine" project
GTK's "Mining Academy" project
STAND4MINES Commitment, two Spanish standards on sustainable mining management
Standards and guidelines developed in 2014 include: EUROASSET – guidance to align mineral reporting standards REMIND – white paper on sustainable mining SUMAN 2000 – for the revision of national mining law in Spain

Source: Annual Monitoring Report 2014 for the European Innovation Partnership on Raw Materials (12/02/2015)

A report of the Ad Hoc Working Group on exchange of best practices on minerals policy and legal framework, information framework, land-use planning and permitting (AHWG), Version - October 2014 is also available. This report makes recommendations on the framework conditions for the extraction of non-energy raw materials in the European Union[26]. Such examples include the following:

- A relevant checklist for the minimum permitting requirements - including the Environmental Impact Assessment (EIA) checklist should be as precise as possible and be the less burdensome as possible for the individuals applying for a permit (for example, a series of checklist modules to be applied according to requirements applying to different levels of development)
- To ensure a level-playing field, competitiveness and in the interest of social welfare, protection of employees and environment, more efforts should be undertaken to apply accurately existing EU and national legislation and in the area of law enforcement

[26] http://ec.europa.eu/growth/publications

- Regional and local administration should provide data to national level on extraction within or close to Natura 2000 sites
- There should be no automatic exclusion of raw material extraction activities in and around Natura 2000 sites. Instead, extractive activities shall follow the provisions outlined in Article 6 of the Habitats Directive to ensure that these activities do not adversely affect the integrity of Natura 2000 sites. Full application of the European Commission Guidance on Non-energy mineral extraction and Natura 2000 is necessary.

Another output is the 'Report on National Minerals Policy Indicators Framework conditions for the sustainable supply of raw materials in the EU', Brussels, February 2014 (Second pillar of the Raw Materials Initiative)[27], that reports the application of 20 indicators in many Member States, shown in Table 2.3.

Table 2.3: Indicators from the National Minerals Policy Indicators Framework conditions for the sustainable supply of raw materials in the EU

Indicators
Legal framework (indicators 1 -3) (1) Mineral Act; (2) Financial incentives for exploration and extraction; (3) Access to mineral reserves and resources
Information framework (indicators 4-5) (4) relevant supply and demand statistics; (5) Geo-scientific knowledge base
Land use planning (indicators 6-9) (6) Digital geological knowledge base on resources and reserves in an appropriate scale following the INSPIRE Directive rules; (7) Suitable maps obligatory for the land use planning; (8) Land use planning responds to national needs; (9) Structure/tool for identifying the different needs and level of uses
Authorisation and permitting (indicators 10-20) (10) "Reducing time delay / check list for the application", (11) "the arrangements between the applicant and all the authorities in order to avoid redundant stages", (12) "Average time frame for granting the authorization", (13) "Number of complete permits delivered over a certain and agreed period of time compared to the number of applications for exploration and extraction"; (14) "Mining Act takes into account developments in the area of environmental legislation", (15) "The start-up costs for extractive companies", (16) "The tool or mechanism to

[27] http://ec.europa.eu/growth/publications

Indicators
disseminate EU guidance documents"; (17) "Percentage of authorization/permitting decisions subsequently challenged at Court"; (18) "Reasons for appealing against the decisions" ; (19) "Number of extraction sites inside NATURA 2000 areas"; (20) "Percentage of court cases related to NATURA 2000"

3. Planning and Management

3.1. Strategic Planning on European level

Although the European Commission has no competencies in the field of strategic spatial planning[28], the Informal Council of Ministers of Spatial Planning of the European Commission (CEMAT) approved in 1999, the European Spatial Development Perspective (ESDP, 1999)29. It is a legally non-binding document and provides a framework with 60 policy options for all administrative bodies with planning responsibility. The strategic aim is to achieve a balanced and sustainable development strategy. The key points are:

- An integrated approach – look at all sectors (e.g. environment, economic development, transport etc.) that affect each other
- A wider view on spatial development
- Strategic aspects – interlinked actions to achieve a balanced and sustainable territorial development
- Indicative views – the responsibility lies with the regions and territories to implement the development principles

Together with the CEMAT guidelines on Spatial Development (guidelines for sustainable, regional development on the continent of Europe)[30], the ESDP offers an important reference framework for Sustainable Development of the European territory, both within and across EU borders.

The concept of sustainable spatial development is the main objective of the Guiding Principles. Sustainability is related to long-term approaches - the benefits provided by spatial development policies should have long-lasting character and should not be jeopardised by the overlooking of important interferences between public policies or sectors of activity. Four dimensions of

28 http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/som_en.htm

29 http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/pdf/sum_en.pdf

30 http://www.coe.int/t/dgap/localdemocracy/cemat/VersionPrincipes/Default_en.asp

territorial sustainability have been identified in the Guiding Principles: economic, social, environmental and cultural sustainability (ESDP, Glossary31).

Although strategic planning is not a requirement from the perspective of the Habitats Directive, the benefits of spatial planning in Natura 2000 sites is widely recognised and explored in specific sector guidance from the European Commission, particularly for Non-Energy Mineral Extraction and Natura 2000 (CE, 2011) [32], and Wind energy Developments and Natura 2000 (CE, 2011a) [33].

The aim of strategic planning is to create a framework for defining a clear land use policy that integrates cross-sectoral policies, requiring the identification and establishment of a use or non-use of each land unit that is technically appropriate, economically viable, socially acceptable and environmentally non-degrading (FAO, 1995) [34]. This procedure must primarily take into account the protection of natural values and resources, as water, biodiversity, ecosystems and geological and hydrogeological, crucial for assuring good life conditions, both for the present and future generations. Secondarily, it must consider activities that provide social-economic resources, such as NEEI and nature tourism. These activities can often come into conflict, however there are some examples of synergy between them as shown in section 3.1.2. The Portuguese example of the Natural Park of Serras de Aire e Candeeiros, is further explored in chapter 6.

The development of sustainable land use management policies and practices rely on a knowledge-based procedure that seeks for an integrated (multifaceted and interdisciplinary) approach to meet present and future needs of populations and the natural systems on which they depend. Therefore, the resulting land use planning must anticipate potential conflicts and propose and/or monitor solutions that should (Carvalho *et al.*) [35]:

- Reflect a comprehensive understanding of the potential impacts on natural resources that sustain all kinds of living communities
- Include measures to prevent over-allocation, chronic depletion, and/or degradation of natural resources and/or eco-services

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31 http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/pdf/sum_en.pdf

32 http://ec.europa.eu/environment/nature/natura2000/management/docs/neei_n2000_guidance.pdf

33 http://ec.europa.eu/environment/nature/natura2000/management/docs/Wind_farms.pdf

34 FAO (1995), Planning for sustainable use of land resources: towards a new approach, http://www.fao.org/docrep/v8047e/v8047e03.htm

35 Jorge Carvalho, Célia Marques, Luís Martins, Raquel Cardoso, Carlos Caxaria, António Mateus, Paula Dinis, "Mineral resources: an inherent component of sustainable land use management", Minatura 2020.

- Foresee future needs and ensure equivalent opportunities to the access of natural resources and fruition of eco-services, thus minimising disturbances in natural flows that may be difficult, expensive, or even impossible to reconcile with common biogeophysical and biogeochemical processes

In this context, strategic planning should be an open and transparent process for determining a balanced society's choices, and allowing a reconciliation of different perspectives in making land-use decisions. The emphasis is that such early planning maximises win-wins, and minimises conflicts wherever possible (CE, 2011).

This approach also contributes to gather a broad knowledge and awareness of scenarios and potential conflicts and possible alternative approaches and solutions and can contribute to more legal predictability and legal certainty. The criteria applied and the choices made should be available to the public.

Achieving this integrated approach entails the involvement of all stakeholders and interest groups in the process of decision making. This requires a high level political commitment, from Government, Regional and Municipal authorities, but also from public administration, Universities, private organisations, non-governmental organisations (NGO´s), land owners and civil society.

3.1.1 Methodology

Strategic planning must consider various scales, namely local, regional, national and European levels. The starting point should be from a broader geographical area – national, towards a narrower, more focused local scale, in order to achieve a more integrated and coherent land use strategy.

Initial focus should be on characterisation studies, both biological and geological, ensuring a broad depth of information, knowledge of reserves and demand, quantitative and qualitative data on natural resources and values, of national, regional and local importance. The biological and geological studies of Carvalho *et al.,* 2013 are shown below.

Biological studies.

- Characterisation and mapping of vegetation units, giving particular emphasis to the survey of flora species more relevant for conservation within the protected areas
- Identification of fauna species
- Identification, characterisation and mapping of biotopes and habitats

Geological studies.

- Thematic geological mapping oriented to this type of mineral resources, i.e. ornamental limestone
- Fracturing studies
- Diamond drilling
- Spatial delimitation of lithologic units suitable for ornamental purposes
- 3D geological modelling
- Reserves evaluation

It is important to consider different scenarios, always taking into account the predictable effects from climate change. Other important items to consider are:

Policy, legislative and administrative framework which regulates spatial plans identifying restrictions applied by sectorial policies and regulations and the spatial plans of actual land use.

Strategic planning can result in priorities being laid down for each specific land unit, based upon the criteria set out, and defined on a relevant scale according to the geographical area. These priorities must clearly identify areas that may be suitable or unsuitable for extraction, defining rules that inform public bodies, operators, and the public of the criteria and decisions made. This is often achieved through regulatory documents and associated spatial plans.

Throughout this process, the provisions outlined in Article 6 of the Habitats Directive are still applicable to ensure that these activities do not adversely affect the integrity of Natura 2000 sites.

3.1.2 Examples

The responses from the questionnaire (Annex I) indicated that Croatia, Italy, Portugal, Romania and Spain have strategic spatial plans covering the extractive industry and taking into

consideration Natura 2000 sites. Slovenia has a national programme of mineral resources. Portugal´s plans are at site level only, where Natura 2000 overlaps a protected area (PA), the PA land spatial planning assesses the options and conditions for NEEI at site level. In Italy each local authority and region have their own plans. In Germany the Federal Government defines the general rules and spatial planning is carried out by the federal states (see further example from Germany below).

3.1.2.1 Example from Germany and Federal State of Schleswig-Holstein (with focus on extractive industry)

As already noted, the framework for strategic planning is based on requirements that are defined on different levels (international, national and regional). It is carried out by different bodies on international, national and local level.

- **The Basic Principles of the Planning System**

The Federal Spatial Planning Act is in line with the European Spatial Development Perspective. Together with the Federal Building Code it forms the legal basis of the planning system in Germany. The federal structure in Germany is over three levels of federal, state, and local competencies.

Federal spatial planning is essentially limited to the development of guiding principles and, principles of spatial planning which also provide the legal basis for state spatial planning and superordinate specifications for sectoral planning.

State spatial planning implements the federal principles of spatial planning. At the local level, final planning goals are developed in compliance with both federal and state spatial planning specifications. It is the responsibility of local authorities to regulate the use of land for building and other purposes at the lowest planning level.

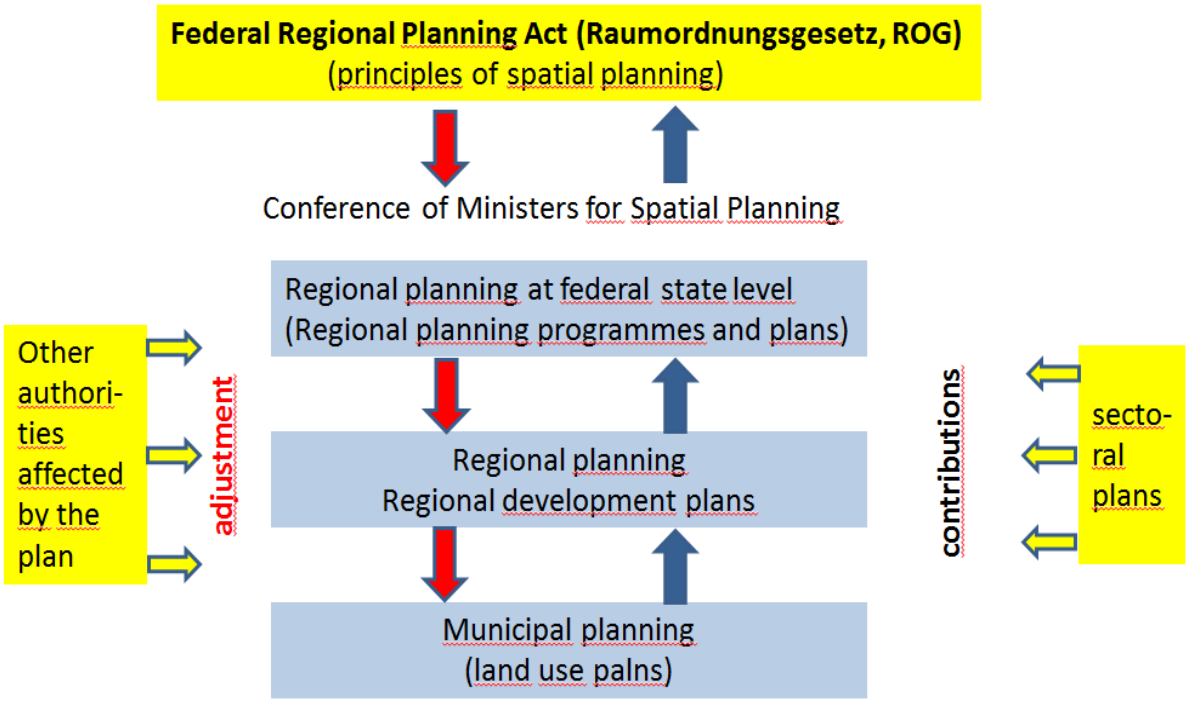
- **Spatial Planning and NEEI activities – federal level**

At the federal level the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) is the competent authority for spatial planning. The Federal Spatial Planning Act does not provide a binding federal spatial structure plan, only guidance for joint

federal/state action, which is based on the three guiding principles of European Spatial Development Perspective.

Figure 3.1 shows the hierarchy of the German planning system.

Different levels of the planning system in Germany



For NEEI activities, the principles of regional planning through the Federal Spatial Planning Act stipulate that areas shall also be reserved for the precautionary protection and systematic prospecting and extraction of site-specific raw materials.

Within the document there is a requirement for states to establish spatial structure plans for their territory and based on that regional plans for sub-regions. Under the provisions for regional plans, it is specified that regional plans should contain specifications concerning spatial structure. This may include uses of sites designed to safeguard supplies of and systematically search for and extract location-specific raw materials. There may also be stipulations for the need to compensate for, make good or limit unavoidable damage to the ecological balance or the countryside in this area elsewhere.

The stipulations may also refer to the following areas:

- Scheduled for certain regionally significant functions or uses, thus excluding other regionally significant uses in this area provided that they are inconsistent with the priority functions, uses or objectives of regional planning (priority areas)
- Where special importance is attached to certain regionally significant functions or uses when balanced with competing regionally significant uses (reserve areas)
- Suitable for certain regionally significant measures which are to be assessed within the scope of urban development in accordance with section 35 of the Federal Building Code and are prohibited in another location in the planning area (suitable areas for development)

Priority areas with respect to regionally significant uses may be established to have the simultaneous effect of creating suitable areas for regionally significant measures.

For NEEI activities the guidance document on guiding principles and strategies for the spatial development in Germany[36], includes a chapter on the 'Sustainable management of the use of natural resources and of other subsoil activities'. Under this framework, risks and benefits of using natural resources are assessed, the impact on regional spatial planning communicated at an early stage and weighed carefully against each other. Three main initiatives are mentioned:

- Integration of spatial planning in the regulations on mining activities
- Creation and implementation of regional concepts on re-cultivation and follow-up uses
- Filling gaps in knowledge and improvement of information on underground / subsoil spatial planning.

- **Spatial Planning and NEEI activities – state level**

Level of federal states – example Schleswig-Holstein:

The state spatial planning authority is the competent body for the state development plan and setting up and updating of the regional plans for the five regions. The plans are developed with the involvement of the public.

The state development plan 2010 for Schleswig-Holstein defines the principles and objectives of spatial planning. For NEEI activities it points out the importance for the economic development

[36] "Leitbilder und Handlungsstrategien für die nationale Entwicklung in Deutschland"

of the region and sets priorities (for example e.g. the extraction of near-surface raw materials shall take place with priority in key areas of extraction of near-surface raw materials) (listed in the annex to the development plan). Taking into consideration competing demands for land, these areas shall be indicated as priority areas or reserve areas in regional plans and in general, the raw material shall be extracted completely after exploitation of the site, and the deterioration of the landscape shall be compensated for, or reduced by measures of renaturation and natural succession, etc.

Additional criteria for the designation of priority areas and reserve areas are also defined. For NEEI activities, a direct reference to Natura 2000 sites is not yet made in the state development plan of Land Schleswig Holstein.

For regional plans, Schleswig-Holstein is divided into five regions. They consist of a text part (with information on principles, reasoning and explanations) and a map of the region (with the different sites and their characteristics). Each of the plans contains a section on areas with particular importance and priority areas for the extraction of near-surface raw materials. For each region the need for raw materials like sand and construction material on regional and supra-regional level is assessed and estimated for the next 20 years. For other materials such as chalk (for cement production), clay minerals or others the need for the industrial sector and other criteria are taken into consideration too. The individual sites are then assessed with respect to defined criteria (e.g. quality, place of the site, accessibility, sensitivities of the landscape, ecology, settlements and their surroundings e.g. forest, existing or planned protected sites under national law, Natura 2000 sites, geologic or geomorphologic heritage, biotope networks (system of connected biotopes), suitable areas for developing wind energy production). The plans contain priority areas and reserve areas. For priority areas the weighing with other competing claims for use has shown that the extraction has a higher priority than other interests of use. For reserve areas the weighing with other interests of use is not yet completed.

On the basis of the Federal Building Code, local authorities undertake land-use planning on their own responsibility (local planning autonomy). Local land use planning has to be in line with the regional plans. This means that priority and reserve areas for NEEI activities determined in the regional plan have already a certain legal status and it is easier for companies to get a permit for their business especially in a priority area. Generally, NEEI sites are situated outside of areas designated for urbanisation or industrial development and where no preliminatory or binding land-use plans exist.

Thus, systematic regional planning helps to avoid conflicts with Natura 2000 objectives in the permit procedures for NEEI activities.

3.1.2.2 Example from Portugal (Carvalho et al., 2013)

Serras d'Aire e Candeeiros Natural Park / Maciço Calcário Extremenho sustainable exploitation of mineral resources in an area of the Natura 2000 Network.

In the central region of the Portuguese territory, an uplifted limestone massive stands out. As a result of the combination of lithology with tectonic uplift, this region presents a peculiar karstic landscape with its intrinsic surface and underground morphological structures, as well as a large number of associated habitats with respective endemic flora and fauna. Besides these natural values, the region is characterised by population settlements in small villages and comprising many quarries, an activity with local and regional social and economic importance. These activities were considered as major threats to the conservation of natural values and for this reason the region was classified as a natural park in 1979 - the Portuguese Natural Park of Serras de Aire e Candeeiros (NPSAC) - with an area of 422 km², which is also a Site of Community Interest (SCI) of the Natura 2000 Network since 2000 (Ref. PTCON0015).

In 2010, a new land use management plan and respective regulatory framework was implemented for the NPSAC. This new management plan established the general rules for that industry aiming at its compatibility with environmental protection and valorisation of natural resources. In view of those policy guidelines, a set of five Specific Intervention Areas (SIA) for the development of mining activity of ornamental stones were defined at the regional level in the new Natural Park land use plan. These areas correspond directly to the main exploitation areas existing in NPSAC, occupying a total of 17, 11 km² and representing 4% of the NPSAC area. The elaboration of a detailed spatial plan at the municipal level was developed for each of the five SIAs, aiming at the establishment of compatibility measures between a rational mining activity, the environmental restoration of degraded areas and the conservation of existing natural values.

Many bodies are working together in this process, namely the Institute for the Conservation of Nature and Forestry (ICNF) and ASSIMAGRA, an industrial association of ornamental stone producers with the majority of associates having interest in quarrying at NPSAC.

To reach this objective, ASSIMAGRA and ICNF conducted a project, aimed at:

- Defining strategies for the sustainable development of the extractive industry in the NPSAC
- Creating background geological and environmental information for the land use planning of the Natural Park Specific Intervention Areas, and for the implementation of joint exploitation projects for each area
- Characterising and monitoring the hydrogeological conditions within the NPSAC in order to evaluate its vulnerability to the extractive industry
- Inventorying, characterising and presenting a proposal for the management of the geological heritage within the NPSAC, in view of its association with ornamental stones as identity brands of the region
- Developing a communication and public awareness program to demonstrate the harmonisation between the extractive activity and nature conservation
- Defining a panel of sustainable development indicators for the mining activity in the NPSAC

Two types of output resulted from the geological and environmental studies carried out in each SIA of the NPSAC: a Rural Area Intervention Plan (IPRA) and a Joint Exploitation Project. A general waste management plan was also developed, considering the environmental constraints.

IPRAs are the formal Portuguese designation of the detailed land use plans at the municipal level. This planning tool comprises a regulation document, a land use map at the 1:2000 scale (where several spatial land use classes are defined), and a map of conditioning factors (containing the restrictions of public utility) at the same scale.

The Joint Exploration Project is a practical tool for the rational exploitation of ornamental limestones within each SIA, considering environmental protection and preservation of natural values. Each SIA comprises:

- an Exploitation Plan presenting and ruling the several quarrying stages over time
- a Waste Management Plan connected to a General Waste Management Plan for the NPSAC
- a Landscape Recovery Plan to minimise the ornamental limestone exploitation impacts and ensure the restoration of endogenous vegetation.

In 2016, the IPRAs are covered under an approval process by the local municipal authorities, who are the competent authorities on this subject.

This process also involved a strategic environmental impact assessment of each proposed plan. Each quarry was within the scope, and therefore had to comply with environmental impact

assessment legislation, at the time mandatory for all quarries (independently of their dimensions) located in protected areas, that ensure interconnection with Natura 2000 legislation.

3.1.2.3 Minatura Project

The Minatura Project started in 2015 and will end in January 2018, funded by the Horizon 2020 Programme of the European Commission, and is working on a concept and methodology for a harmonised European minerals deposit framework.

Its overall objective is to develop a regulatory policy framework for definition and subsequent protection of 'mineral deposits of public importance' (MDoPI) in order to protect them for 'best use' in the future, resulting in improved conditions for sustainable access and supply of raw materials within the EU (more information in Annex II). Project Minatura will explore land use competition challenges between mining and other land uses, by the analysis and interpretation on different levels and in different future scenarios. It will also study and define regional, national and EU-level regulatory measures for safeguarding of MDoPI.

The project explores case studies onshore in Hungary, Italy, Croatia (Koprivničko-križevačka County) Poland, Portugal, Slovenia, Sweden, and offshore in Ireland, UK.

More information concerning Minatura Project is available in Annex II of this document.

3.2. Management Plans and other conservation measures for Natura 2000 sites

Strategic planning defines a sound framework for national, regional and local spatial decision making and should be complemented by conservation measures directed to the specific characteristics and circumstances of each protected area. Together, these instruments, ensure more consistency and coherence to the decisions made by the permitting authorities, namely with competences in nature protection, consequently supporting administrative decisions, that fundamentally require more legal certainty (see chapter 8).

Article 6(1) of the Habitats Directive states:

For special areas of conservation, Member States shall establish the necessary conservation measures involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites.

According to Article 6 (1), 'necessary conservation measures' must be established for all special areas of conservation. This particular arrangement does not apply to the Special Protection Areas (SPAs), however Articles 4(1) and 4(2) of the Birds Directive does introduce a similar approach for the management of SPAs set out in Article 6(1). The guidance document 'Establishing conservation measures for Natura 2000 Sites - A review of the provisions of Article 6(1) and their practical implementation in different Member States' (CE, 2014) [37], provides useful information that supports the implementation of such arrangements.

The European Court of Justice (ECJ) case C-508/0438 provides jurisprudence on the failure of a member state to fulfil obligations on transposing Article 6 (1) from the Habitats Directive. The decision stated that the implementation of Article 6(1) is not optional, and that the necessary conservation measures must be established for all Special Areas of Conservation (SACs), in addition to eventual obligations and prohibitions laid down pursuant to law. In this context member states must designate Sites of Community Importance as Special Areas of Conservation and apply the necessary conservation measures required under Article 6(1) within six years of the Site of Community Importance being adopted by the Commission (in accordance with Article 4(4)) (CE, 2014) [29].

These necessary conservation measures must assure the following: 'Favourable Conservation Status (FCS) for all habitat types and species listed in Annexes I and II of the Habitats Directive needs to be translated into site-level conservation objectives, which are a set of specified objectives to be met in a site in order to make sure that the site contributes in the best possible way to achieving FCS at the appropriate level (national or regional level, taking into account the natural range of the respective species or habitat types)' (CE, 2014) [29].

[37] CE, 2014 "Establishing conservation measures for Natura 2000 Sites", http://ec.europa.eu/environment/nature/natura2000/management/docs/conservation%20measures.pdf

[38] http://curia.europa.eu/juris/liste.jsf?language=en&num=c-508/04

The Habitats Directive provides the definitions of conservation status for habitats[39] and species[40], respectively in article 1e and 1i.

The conservation status of a natural habitat will be taken as 'favorable' when (CE, 2014):

- its natural range and areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and for its typical species the conservation status its will be taken as 'favorable' as well, meaning:

    - population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
    - there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Often achieving and maintaining a favorable conservation status for habitats and species for which the site was designated in their natural range, will require the implementation of positive and pro-active measures, involving (if need be) management plans and statutory, administrative or contractual measures (CE, 2014).

The choice between statutory, administrative or contractual measures, or even of the management plans, is left to the Member States. This is in line with the principle of subsidiarity. However, Member States must choose at least one of the three categories, i.e. statutory, administrative, and contractual (CE, 2000[41]).

The guidance document of the European Commission (CE, 2014) on conservation measures provides extensive information to support such design. It explores the development and implementation of the necessary conservation measures in Natura 2000 sites, namely roles and responsibilities, the process for management planning (key steps and activities), the principal ingredients for conservation management planning and financing Natura 2000 conservation measures (setting the framework, allocating appropriate resources and providing incentives for

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39 *"the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2".*

40 *"the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2".*

41 "Managing Natura 2000 sites The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC" http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision_of_art6_en.pdf

stakeholders). It also provides key references, examples, and guidelines for Natura 2000 management planning from different countries.

Annex I of the 2014 report supplies a checklist of key aspects to consider in Natura 2000 of management instruments, including the following topics:

- Description and analysis of the area
- Conservation objectives
- Conservation measures
- Ways and means of implementation
- Monitoring and review
- Financing

Annex II of this report contains fact sheets on Natura 2000 management planning in the member states in 2011. In this last document, it has been noted that many member states choose to make management plans obligatory by law.

Albania has established conditions for the development of mining activities, important to consider on the design of a management plan, these are shown below.

- Mining activities with minimal impact on the landscape of relief
- Effective use of minerals, energy and water during mining activities
- Minimization of harmful emissions into the environment from mining and effective closure of mining, environmental rehabilitation
- The promotion of recycling and the use of secondary products
- Deep processing of mining products (physical, metallurgical, chemical, biological)
- Implementation of a GIS database and multidimensional modelling
- Effective management of the impact on the environment and taking preventive measures
- Community transparency of mining areas
- Reduction of environmental and social risks
- Rehabilitation of pollution hotspots historical mining
- Public - private partnership concept

In Italy, proper management of the quarry site, in order to enhance biodiversity, especially in areas of high biodiversity value (Natura 2000 areas in particular), involves:

- The definition of environmental restoration projects to improve habitats of flora and wildlife fauna and biodiversity, both during the project and at the end of its life cycle;
- Natura 2000 impact assessment
- The assessment, prevention and / or mitigation of the potential impacts of mining activities on flora and fauna in all project phases
- The development of strategies and action plans for biodiversity that analyse the possibilities for mining to contribute positively to biodiversity by integrating them in a practical way in the operation of each site
- The collaboration with the authorities responsible for conservation of natural resources
- The creation of security zones for the species (for example, the placement of artificial nests) or the creation of water points (for example small ponds for amphibians and reptiles)

4. Aspects of NEEI Appropriate Assessment

4.1 Scope and content

Article 6(3) of the Habitats Directive (HD) states that any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site´s conservation objectives.

In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of Article 6(4) of HD, the competent authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public'.

An appropriate assessment should be made in view of the site´s conservation objectives (species and habitats types for which the site was designated), with the aim of determining adverse effects.

The area potentially subject to 'adverse effect' has a broader remit than simply the project area and should also include the surroundings. For example, in Slovenia, direct impacts for mineral deposit extraction is up to 20 m and includes water birds, fish, lamprey, dragonflies, mammals (beaver, otter) and molluscs, and the indirect impact distance up to 500 m.

In this context, "Direct impact territory" is defined as the area which can be destroyed or damaged because of the activity and "indirect impact territory" as the area where significant

impact affecting nature can occur and is generally broader than the direct impact territory. The direct impacts are those that occur in the natural heritage (flora, fauna, geological features) located totally or partially in the area to be affected by the mobilization of soils resulting from the execution of project infrastructures. The occurrences likely to be the target of possible indirect impacts are those that, although not directly affected by the implementation of the project, are located in the vicinity of the work fronts, and can therefore suffer affectations that can be avoided.

Within the appropriate assessment procedure, the nature impacts which need to be assessed are: direct and indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative significant effects on biodiversity.

In some regions of the EU (for example, Galicia-Spain), new mining activities are prohibited inside Natura 2000 sites (except potential mining areas included in the Regional Mining Plan or mining councils). In these areas, only extensions to existing permitted mines which have previously undergone an appropriate assessment can be part of an environmental impact assessment under Environmental Impact Assessment Directive (EIAD)[42].

The impact assessment is mandatory to projects integrated in Annex 1 of EIAD, namely 'Quarries and open cast mining where the surface of the site exceeds 25 hectares, or peat extraction where the surface of the site exceeds 150 hectares. But smaller projects can also be subject to an assessment if included in Annex II, namely the Extractive Industry such as (a) quarries, open cast mining and peat extraction (projects not included in Annex I), (b) underground mining, and (c) extraction of minerals by marine or fluvial dredging.

In Annex III of EIAD (Selection criteria referred to in article 4(3) of this Directive) establishes criteria to determine whether the project listed in Annex II should be subject to an environmental impact assessment, namely the location of projects:

The environment sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:

(a) The existing and approved land use

(b) The relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground

[42] Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects.

(c) The absorption capacity of the natural environment, paying particular attention to the following areas:

(i) wetlands, riparian areas, river mouths;

(ii) coastal zones and marine environment;

(iii) mountain and forest areas;

(iv) nature reserves and parks;

(v) areas classified or protected under national legislation; Natura 2000 areas designed by Member States pursuant to Directive 92/43/EEC (Habitats Directive) and Directive 2009/147/EC (Birds Directive);

(vi) areas in which there has already been a failure to meet the environmental quality standarts, laid down in Union legislation and relevant to the project, or in which it is considered the there is such failure;

(vii) densely populated areas; (viii) landscapes and sites of historical, cultural or archaeological significance

In addition to this, point 3 of Annex III of EIAD also specifies the type and characteristics of potential impacts of projects on the environment and, because of this, the following must be considered:

(a) the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected)

(b) the nature of the impact

(c) the transboundary nature of the impact

(d) the intensity and complexity of the impact

(e) the probability of the impact

(f) the expected onset, duration, frequency and reversibility of the impact

(g) the accumulation of the impact with the impact of other existing and/or approved projects

(h) the possibility of effectively reducing the impact

The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light or each individual case, the direct and indirect significant effects of a project on the following factors, in the light of Article 3 of EIAD, on:

(a) Population and human health

(b) Biodiversity, with particular attention to species and habitats protected under (Habitats Directive) and Birds Directive (Directive 2009/147/EC)

(c) Land, soil, water, air and climate

(d) Material assets, cultural heritage and the landscape

(e) The interaction between the factors referred to in points (a) to (d)

In Annex IV of the EIAD, there is a checklist (Part 1) of information required to support the completion of the appropriate assessment, based on the reports presented by the Member States to the European Commission with the periodically assess of the progress made in implementing the directives, and based on the guidelines for reporting that were produced by the N2K Group to the European Commission (N2K Group, 2011). For more details, see European Environmental Agency, EEA technical report No 2/2015 - State of nature in the EU: Results from reporting under the nature directives 2007-2012[43].

In Annex V the checklist (Part 2) describes the scope of steps that follow, with the analysis and evaluation of the background information provided in Part 1, through identification, analysis and valuation of impacts, preventive and remedial measures, global analysis of impacts on the Natura 2000 sites, main alternatives considered, program of surveillance and environmental monitoring.

4.2 Screening and screening criteria- significance

Article 6 (3) and national provisions on nature conservation are very generalised and do not provide defined assessment criteria. For many of the effects from industrial installations such as noise or pollutant deposition, there are no defined criteria for 'significance' concerning Natura 2000 sites. The difficulty being that there is no defined and measurable relation between cause

[43] EEA Technical report No 2/2015 - State of nature in the EU: Results from reporting under the nature directives 2007-2012. file:///C:/Users/liamergulhao/Downloads/State%20of%20nature%20in%20the%20EU.pdf (accessed in 6.06.2017)

and effect, especially concerning pollutants such as heavy metals or additional fertilising substances (for example nitrogen and phosphorus) from industrial projects, and hence defined criteria would make the work of permit authorities easier. This chapter provides some information about the criteria used in EU member states for the assessment of NEEI projects, and particularly in cases where the project is carried out in or partly within a Natura 2000 site – in which case habitat loss can be an important criterion for the appropriate assessment.

4.2.1 Screening criteria and environmental assessment of quarries and peatlands in Italy

The document 'Criteri di verifica di assoggettabilità e di valutazione di impatto ambientale di cave e di torbiere'[44] (Criteria for determining the eligibility and for assessing environmental impact of quarries and peatlands) provides a systematic tool for the assessment of possible impacts for the Environmental Impact Assessment in Italy. It is the one of the few documents in Italy with direct relation to quarries. It comprises a scoring system with criteria which are also used for the appropriate assessment procedure.

4.2.2 Assessment of habitat loss - the German approach

The German standards of significance for habitat loss "Fachinformationssystem und Fachkonventionen zur Bestimmung der Erheblichkeit im Rahmen der FFH-VP" (Lambrecht & Trautner 200745, "Expert Agreement for the Assessment of Significance in Appropriate Assessment") have been developed under broad participation of scientific experts. They are used successfully in practice and estimated as best scientific knowledge in Germany.

The partial direct and permanent loss of a habitat where conservation objectives apply is generally considered to be a significant effect. Effects can only be considered non-significant where they fulfil all five cumulative criteria:

- no important, particular or special function or variant of the habitat is to be affected
- an absolute threshold for which an orientation value has been quantified for each habitat type will not be reached or exceeded

[44] Accessible at http://flanet.org/sites/default/files/Verifica%20VIA.pdf

[45] Accessible at http://www.bfn.de/0306_ffhvp.html, download at the Federal Agency for Nature Conservation.

- a quantitative relative threshold of 1 % of the habitat in the Natura 2000 site will not be reached
- no other cumulative losses shall lead to an exceeding of threshold values
- no other types of impacts shall lead to an exceeding of the values and thus significant effects.

Development of specific habitat type thresholds for habitat loss

In a two-step procedure, thresholds for all habitat types in Germany have been developed. Table 4.1 provides examples of habitat types with the assigned orientation values (OV) for quantitatively-absolute loss“.

Table 4.1: Habitat types with assigned orientation values.

code	Habitat type		m²	m²	m²
		class	Level I	Level II	Level III
			If loss ≤ 1 %	If loss ≤ 0,5 %	If loss ≤ 0,1 %
9110	Luzulo Fagetum Beach Forest	5	250	1 250	2 500
9130	Asperulo Fagetum Beach Forest	5	250	1 250	2 500
9170	Oak Hornbeam Forest	4	100	500	1 000
6510	Lowland hay meadows	4	100	500	1 000
4030	European dry heaths	3	50	250	500
6120*	Xeric sand calcareous grasslands	2	25	125	250
7110*	Active raised bogs	1	0	0	0

Development of orientation values for “quantitatively absolute loss of habitats of species”

Species and their habitats are inseparably connected to each other, however habitats are more easily measured for the purpose of impacts and therefore Natura 2000 sites are populated according to their habitat potential. Permanent habitat losses will normally have a lasting and irreparable effect on the species population size, however there can be ’minor losses‘ which remain within species-specific tolerances.

For the identification of species-specific tolerances the following key questions had to be answered.

In spite of the kind of permanent habitat loss:

- can decline of protected species and a deterioration of the conservation status be excluded?
- can 'qualitative and quantitative stability' be predicted?
- can the strict precautionary principle (ECJ) still be guaranteed?

Table 4.2 below provides examples of orientation values for species. The complete table can be found in Table 3 of the "Fachinformationssystem und Fachkonventionen zur Bestimmung der Erheblichkeit im Rahmen der FFH-VP" (Lambrecht & Trautner 2007[46]).

Table 4.2: Examples of orientation values for habitats of species

species	Basic OV	Middle OV	High OV	Conditions depending on
	Conditions level I	Conditions level II	Conditions level III	Habitat of species
Red Kite (Milvus milvus)	10 ha [2)]	-	-	6d
Black Woodpecker (Dryocopus martius)	2,6 ha [2)]	-	-	4
Eurasian Pygmy Owl (Glaucidium passerinum)	6 400 m²	3,2 ha	6,4 ha	4
Mouse-Eared Bat (Myotis Myotis)	1 600 m²	8 000 m²	1,6 ha	6d
Bechstein's Bat (Myotis bechsteinii)	1 600 m²	8 000 m²	1,6 ha	4
Great Crested Newt (Triturus cristatus)	640 m²	3 200 m²	6 400 m²	6e
Fire-Bellied Toad (Bombina bombina)	640 m²	3 200 m²	6 400 m²	6e
Whinchat (Saxicola rubetra)	400 m²	2 000 m²	4 000 m²	6a
Bluethroat (Luscinia svecica)	400 m²	2 000 m²	4 000 m²	6a

[46] Accessible at http://www.bfn.de/0306_ffhvp.html.

species	Basic OV	Middle OV	High OV	Conditions depending on
	Conditions level I	Conditions level II	Conditions level III	Habitat of species
Marsh Fritillary (Euphydrias aurinia)	40 m²	200 m²	400 m²	4
Desmoulin's whorl snail (Vertigo moulinsiana)	10 m²	50 m²	100 m²	4
Aquatic Warbler (Acrocephalus paludicola)	No OV [1)]			2b

4.3 Supporting Tools in Appropriate Assessment

The collection of the scientific data and information with significance which is needed for an appropriate assessment is frequently a difficult task.

4.3.1 The German information technology tool

The German Federal Agency for Nature Conservation has developed an online database to support the public in dealing with appropriate assessments – known as the Appropriate Assessment Information System. Within this system (called FFH-VP-Info), the scientific data and information are systematically collected and made available and includes:

- basic information about more than 140 types of projects and plans, their impact factors and their possible relevance to adverse effects on Natura 2000 sites
- definitions and explanations of 36 types of impacts and their possible effects on habitats and species
- detailed information based on scientific literature, particularly about potential adverse effects on the habitat types and species listed in the Annexes of the Nature Directives, structured in:
    - sensitivity / vulnerability
    - ability for regeneration

- methods for prediction and assessing effects
- thresholds of relevance
- thresholds of significance

This tool is, in particular, a support for applicants, planning agencies, nature conservation and competent authorities and the general public involved in appropriate assessments.

A list of potential impacts on habitat types and habitats of species included in Natura 2000 sites is proposed as part of the tool. The relevance of each is given in form of an indicator (0 generally not relevant, 1 potentially relevant, 2 regularly relevant). As a result the user can then obtain a project report providing an indication of habitat types and potential impacts from a specific activity.

Project type is a part of the "FFH-VP-Info-System" containing the basic information about the 'distinct project or types of plan' and its characteristic relevant impact factors. "Project type 11" covers the following categories of raw material extraction:

- underground mining
- lignite opencast mining
- other raw material extraction opencast mining – loose rock dry
- other raw material extraction opencast mining – loose rock wet
- other raw material extraction opencast mining – rock
- marine raw material extraction (excluding oil and gas extraction)
- oil and gas extraction – onshore
- oil and gas extraction – offshore
- spoil heap
- peat extraction

As an example, when in the list of potential impacts which could be of consequence for the activity, is selected - 'other raw material extraction opencast mining – loose rock dry' are highlighted the factors with more relevance to this type of project. The relevance of each is given in form of an indicator (0 generally not relevant, 1 potentially relevant, 2 regularly relevant).

Impact no.	impact factor	relevance
1	Direct loss of habitat	
1-1	Site development / sealing	2
2	Change of habitat structure / use	
2-1	Direct change of vegetation / biotope structures	2
2-2	Loss / change of characteristic dynamics	1
2-3	Intensification of agricultural, forestry and aquaculture uses	1
2-4	Short time abandonement of habitat characteristic use / tending	1
2-5	Abandonement (for a longer time) of habitat characteristic use / tending	
3	Change of abiotic site conditions	
3-1	Alteration of soil resp. subsoil	2
3-2	Alteration of morphologic conditions	2
3-3	Alteration of hydrologic / hydrodynamic conditions	1
3-4	Alteration of hydro chemical conditions	1
3-5	Alteration of temperature conditions	1
3-6	Alteration of other site specific and especially factors relevant for climatic conditions	1
4	Barrier and trap effects / loss of specimen	
4-1	Construction-related barrier and trap effects / loss of specimen	1
4-2	Project/Installation-related barrier and trap effects / loss of specimen	2
4-3	Operation-related barrier and trap effects / loss of specimen	1
5	Impacts not related to substances	
5-1	Acoustic stimuli (noise)	2
5-2	Optical effects / movements/ agitation (excluding light)	2
5-3	Light	1

Impact no.	impact factor	relevance
5-4	Vibrations	2
5-5	Impact by mechanical effects (surf / trampling)	2
6	Substance related impacts	
6-1	Nitrogen and phosphate-compounds / nutrient input	0
6-2	Organic compounds	0
6-3	Heavy metals	0
6-4	Other pollutants arising from combustion or production processes	0
6-5	Salt	0
6-6	Depositions with structural impact (dust / suspended matter and sediments)	0
6-7	Olfactive effects (repelling or attracting scents)	0
6-8	Endocrine active substances / endocrine disruptors	0
6-9	Other substances	0
7	Radiation	
7-1	Non ionisising radiation / electromagnetic fields	0
7-2	Ionising radiation / radioactive radiation	0
8	Targeted manipulation of species and organisms	
8-1	Management of autochthonous species	1
8-2	support / spread of alien species	1
8-3	Control of organisms (by pesticides etc.)	0
8-4	Release of genetically new or modified organisms	0
9	Others	
9-1	Others	0

Report: Project-profile with a general explanation of the relevance indicator for the individual impact factor[47].

The report will also provide a general overview / explanation of the relevant indicator, for example for 8-4 (as shown in the table above) there is detailed information referring to literature on cross-pollination and invasion risk as well as risks through direct and indirect effects.

5. Potential impacts, avoiding and mitigation measures of mining activities on nature and wildlife

Mining activities have different phases (exploration, site preparation, mineral extraction, processing and site closure) and each phase of these processes is associated with different environmental impacts.

Environmental impacts are inevitable in all mining activities. The main objective should be to avoid, reduce, minimize and/or eliminate this environmental impact.

Mining activities are inherently destructive with respect to the environment and have a relatively high probability of significant effects when assessed. As a result of this, it is an activity that is subject to an environmental impact assessment or an appropriate assessment of its implications for the site in view of the site´s conservation objectives.

The following tables (5.1-5.7) highlight the possible environmental impacts caused by mining activities at various different stages of the process. The potential impacts are accompanied by further detail on the avoidance and mitigation measures which can be used to eliminate or reduce adverse effects on the environment.

Tables 5.1 to 5.4 provide an overview of potential impacts on habitats and species, but also on environment, ecology processes and environment considering the main process stages of quarrying and open cast mining. This table results from further work derived from an original content of Chapter 3 of the EC Guidance on NEEI and Natura 2000 (CE, 2010), and includes:

- Prospecting and exploration (5.1): land clearance, drilling and trenching, road/trail construction, movement of people and vehicles

[47] Accessible at http://ffh-vp-info.de/FFHVP/Projekt.jsp?m=1,0,10,2.

● Site preparation / Mineral extraction (5.2): land clearance; stripping/storing of “overburden” of soil and vegetation, infrastructure development (power lines, roads, buildings, crushers, conveyor belts), sewerage and drainage, blasting to release ores/rock, ore/rock extraction & stockpiling, mine and surface water treatment, surface & ground-water discharge, drawdown of water table, creation of waste rock piles, transport of materials.

● Processing (5.3): perforation – boreholes, crushing / grinding, ore/rock extraction – stockpiling, transport of materials, movement of vehicles, maintenance operations, mineral treatment, use and storage of process chemicals, dumps and tailings ponds

● Site closure (5.4): re-contouring of pit walls, quarry faces and waste dumps, covering of reactive tailings dumps, fencing dangerous areas, decommissioning of roads /dismantling of buildings, safe release dumps and tailing ponds, reseeding/revegetation of disturbed areas, monitoring and possible water quality treatments

Tables 5.5 to 5.7 explore the environmental impacts caused by mining activities and propose mitigation measures to eliminate or reduce the adverse effects on the environment at different stages from quarry and open cast mining activities. This information is useful to guide assessment (of the significance) of impacts and potential effects:

● Prospecting (5.5): field studies, surveys, clearing of wide areas of soil and natural vegetation, land clearance and removal surface, opening roads and building staging areas, movement of people, vehicles, trucks, machines, drilling test boreholes

● Site preparation / Mineral extraction/ Processing (5.6): site preparation, mineral extraction, processing, tailings disposal

● Closure and rehabilitation (5.7): re-contouring of pit walls, quarry faces and waste dumps, decommissioning of roads/dismantling buildings and other infrastructures, covering of reactive tailing dumps, possible treatment for water quality, reseeding and/or revegetation of disturbed areas, fencing dangerous areas for safety purposes, ongoing monitoring, other mine reclamation activities, abandoning the mining site

Table 5.1 Overview of potential impacts from quarries and open cast mining - **Prospecting and exploration**

Stages/ activities	Potential impacts on habitat and species					Ecology processes	Elements, characteristics and environmental processes capable of being affected by mining activity													Health
							Air quality					Water quality		Soil quality		Geophysical processes				Land topography and landscape	Health of the population
	Habitat loss, deterioration or fragmentation	Disturbance and/or displacement of sensitive species	Loss of rare or endangered species individuals or populations	Changes in species composition (local flora & fauna)	Site colonisation by alien and invasive pioneer species	Food webs	Air composition					Surface water	Underground water	Soil characteristics	Land used	Flooding	Erosion	Sedimentation	Ground stabilities	Landscape modifications	
							Dust	Noise level	Vibrations	NO_x	SO_x										
Land clearance	●	●	●	●	●			●	●			●	●			●	●		●	●	
Drilling and trenching	●					●	●	●	●			●	●				●		●	●	
Road/trail construction	●	●	●		●	●	●	●				●	●				●		●		
Movement of people and vehicles		●		●			●	●	●	●	●									●	●

Table 5.2 Overview of potential impacts from quarries and open cast mining - **Site preparation / Mineral extraction**

Stages/ activities	Potential impacts on habitat and species					Ecology processes	Elements, characteristics and environmental processes capable of being affected by mining activity													Health
							Air quality					Water quality		Soil quality		Geophysical processes			Land topography and landscape	Health of the population
							Air composition													
	Habitat loss, deterioration or fragmentation	Disturbance and/or displacement of sensitive species	Loss of rare or endangered species individuals or populations	Changes in species composition (local flora & fauna)	Site colonisation by alien and invasive pioneer species	Food webs	Dust	Noise level	Vibrations	NO_x	SO_x	Surface water	Underground water	Soil characteristics	Land used	Flooding	Erosion	Sedimentation	Ground stabilities	Landscape modifications
Land clearance	●	●	●	●	●	●		●	●	●	●	●	●		●	●	●		●	●	
Stripping/storing of "overburden" of soil and vegetation	●	●	●	●	●		●			●	●			●	●	●	●				●
Infrastructure development (power lines, roads, buildings, crushers, ...	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●		●	●
Sewerage and drainage	●	●	●									●	●								
Blasting to release ores/rock	●	●					●	●	●						●		●		●		●
Ore/rock Extraction & stockpiling	●	●					●			●	●			●	●		●		●	●	●
Mine and surface water treatment												●	●								●
Surface & ground-water discharge	●	●		●								●	●	●			●				●
Drawdown of water table	●	●	●	●	●							●	●								●
Creation of waste rock piles	●	●		●	●		●			●	●			●	●					●	●
Transport of materials		●					●	●	●	●	●									●	●

Table 5.3 Overview of potential impacts from quarries and open cast mining – **Processing**

Stages/ activities	Potential impacts on habitat and species					Ecology processes	Elements, characteristics and environmental processes capable of being affected by mining activity													Health	
							Air quality					Water quality		Soil quality		Geophysical processes				Land topography and landscape	Health of the population
	Habitat loss, deterioration or fragmentation	Disturbance and/or displacement of sensitive species	Loss of rare or endangered species individuals or populations	Changes in species composition (local flora & fauna)	Site colonisation by alien and invasive pioneer species	Food webs	Air composition					Surface water	Underground water	Soil characteristics	Land used	Flooding	Erosion	Sedimentation	Ground stabilities	Landscape modifications	
							Dust	Noise level	Vibrations	NO_x	SO_x										
Perforation – boreholes		●				●	●	●	●	●	●		●	●							
Crushing / grinding		●				●	●	●		●	●										●
Ore/rock extraction - stockpiling							●		●	●	●	●		●				●			
Transport of materials Movement of vehicles							●	●	●	●	●									●	●
Maintenance operations								●				●		●							
Mineral treatment							●			●	●	●		●							●
Use and storage of process chemicals		●										●	●								●
Dumps and tailings ponds	●	●		●			●					●	●	●	●	●	●		●	●	●

Table 5.4 Overview of potential impacts from quarries and open cast mining – **Site closure**

Stages/ activities	Potential impacts on habitat and species					Ecology processes	Elements, characteristics and environmental processes capable of being affected by mining activity													Health
							Air quality					Water quality		Soil quality		Geophysical processes				Land topography and landscape	Health of the population
							Air composition														
	Habitat loss, deterioration or fragmentation	Disturbance and/or displacement of sensitive species	Loss of rare or endangered species individuals or populations	Changes in species composition (local flora & fauna)	Site colonisation by alien and invasive pioneer species	Food webs	Dust	Noise level	Vibrations	NO_x	SO_x	Surface water	Underground water	Soil characteristics	Land used	Flooding	Erosion	Sedimentation	Ground stabilities	Landscape modifications	
Re-contouring of pit walls, quarry faces and waste dumps		•		•	•		•	•	•	•	•	•	•							•	
Covering of reactive tailings dumps	•	•	•	•	•		•	•		•	•								•	•	•
Fencing dangerous areas	•	•		•																•	
Decommissioning of roads / dismantling of buildings		•			•		•	•		•	•				•					•	
Safe release dumps and tailing ponds																				•	
Reseeding/revegetation of disturbed areas				•	•																
Monitoring and possible water quality treatments								•				•	•								

Table 5.5 Potential impacts, avoiding and mitigation measures for quarries and open cast mining – **Prospection**

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
1. Prospection This phase includes: 1.1. Field studies,surveys. 1.2. Clearing of wide areas of soil and natural vegetation. Land clearance and removal surface. 1.3. Opening roads and building staging areas. 1.4. Movement of people, vehicles,trucks,machines 1.5. Drilling test boreholes. Ending the Prospection phase can appear two options : 1. The prospection phase proves that the mineral ore deposit is large and economic viable. In this case activity pass to the next phases: exploration: 2. If the mining conditions are economic unviable the next phase is: -Site closure and rehabilitation site.	1. Air	1. Dust pollution over non cleared and surrounded areas can produce air quality reduction affecting natural process such as photosynthesis causing: - Growing plants reduction. - Changes in species composition fragile/resistant plants) - Proliferation resistant species and site colonisation by invasive pioneer species (alien species) - Deterioration and habitat loss 2. Dust emissions can produce disturbance,displacement and emigration of sensitive species of fauna, 3. Dust emissions can contaminate soils and water affecting flora and fauna and degradation of aquatic ecosystems (wetlands,…) 3. Greenhouse gas emissions (CO_2) from vehicles,trucks… 4. Ill-smelling from machines fuel combustion,wastes,…	Avoiding mining activities inside Natura 2000 sites and other sensitive areas for flora and wildlife.	- In this phase the design of the constructions is very important for future environment impacts caused for other mining phases. Studies about prevailing winds direction in the facilities design, movement of people and vehicles, transport of materials, should be adequate designed. - The exploration area should be the minimum area for an adequate exploration process, avoiding land clearance in surrounding areas - Avoiding exploration activities in sensitive stages for wildlife (reproduction, nesting, and breeding, feeding…). - Isolate sensible habitats from dust emissions using vegetation to intercept dust and/or artificial screening (meshes, buildings, nets…). - Using filters and dust collection systems in crushing chutes, conveyor belts and drilling systems. If it is possible, reuse this dust collected in the process cycle or sold as raw material. - Periodic clearing and removal of dust accumulations on roads and other installations. - Reduction traffic speed of machinery, trucks and vehicles. - Covering dump trucks during the mineral mining transportation. - Periodic watering of roads and accesses. - Using dust collectors during blasting operations and reducing the number of blasting holes. - Adequate maintenance of trucks, vehicles and machinery.

Table 5.5 Potential impacts, avoiding and mitigation measures for quarries and open cast mining – **Prospection (continue)**

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
1. Prospection	2. Noise and vibration	1. Noise emissions can produce disturbance, displacement and/ or migration of sensitive species of fauna. Impacts depends on proximity sensitive areas. 2. Blasting and other mining operations can caused vibrations and this produce the disturbance and/or displacement of sensitive species, especially in critical stages of species (for example, during breeding and nesting of birds, mammals).	Avoiding mining activities inside Natura 2000 sites and other sensitive areas for flora and wildlife. Prohibited mining activities in areas with a Recuperation or Reintroduction Plan of a rare or endangered species of fauna sensitive with noise and/or vibration impact (for example some raptors birds).	- Adequate maintenance of trucks, vehicles and machinery. - In this phase the design of future infrastructure development (crushers cribbles conveyor belts and blasting process is very important for future environment impacts caused by noise and vibrations. - Location the noisy operations (pressure equipments, machinery maintenance...) as far as possible from sensitive areas for fauna. - Blasting operations should be the minimum for a adequate exploration process, avoiding drilling and blasting in surrounding areas. - Optimization of blasting operations (quantity and quality of detonators,explosives...) - Avoiding exploration activities in sensitive stages for wildlife (reproduction,nesting, breeding,feeding,migration areas…) - Noise emission control.Monitoring activities - Isolate sensible areas from noise emissions using natural and/or artificial acoustic screens (trees,meshes,buildings…). - Exclusively noisy and disturbing operations in daytime. - Use machines and equipment electrically operated. - Substitution of materials transport in trucks for covered conveyor belts. - Design alternative routes to transport far from inhabited areas and sensitive areas for fauna.

Table 5.5 Potential impacts, avoiding and mitigation measures for quarries and open cast mining – **Prospection (continue)**

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
1. Prospection	3. Water	Impact on water resources affecting water quality and availability of water resources. Mine wastewater usually contains large amounts of suspended solids (turbidity) that can affect aquatic flora (loss of river macrophytes) fauna and natural water courses. Dumping mining wastes directly water courses produce water pollution and high impact over habitat and fauna hosting (fishes,amphibians...) and indirectly over their predators. Modification of natural water courses,alteration of river bodies and banks produce habitat loss, changes and degradation of aquatic ecosystems. Also the decline in vegetation and the competition of wildlife for water resources makes these ecosystems especially fragile	Avoiding mining activities inside Natura 2000 sites and other sensitive areas for flora and wildlife, specially aquatic flora and fauna. Avoiding mining activities nearby rivers, Wetlands,lakes,… Also, dewatering or discharges from mining activities upstream of a Nature 2000 site can have adverse effects on this site.	- In areas with Recuperation or Reintroduction Plans for rare or endangered species, the distance between mining activity and life area of the specie must be respected. - A good Knowledge about sensitive species affected from quality and availability of freshwater resources is essential for the adoption an adequate and specific mitigation measures. - In this phase the design of future infrastructures (roads, drainages, canalizations, water filters systems,dumps, household sewage system,waste management…) and exploitation activity (material storage…) is very important for future environment impacts caused by waste water. - Avoiding modifications of natural water surface courses and over surface drainage. - Official authorization of surface and groundwater abstractions. - Sustainable water management,avoiding unnecessary water consumptions and waste water production. - Periodic monitoring of water quality. - Waste management plan avoiding oil spillages to soil and water bodies. - Sedimentation particles systems (ditches, natural vegetation to intercept suspended solids,meshes,straw blocks…) - In this phase the design of future infrastructures (roads, drainages, tailing disposal, waste management…),extraction and mineral processing is very important for future environment impacts caused by erosion and soil degradation.

Table 5.5 Potential impacts, avoiding and mitigation measures for quarries and open cast mining – **Prospection (continue)**

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
1. Prospection	4. Soil	Habitat loss because of deterioration and fragmentation caused for land clearance. Soil and habitats disappearance because of roads construction , movement of machinery… Mortality of fauna from operations. Loss of wild fauna as a result of habitat fragmentation and loss of predators resulting of reduced prey resources. Erosion process may cause significant amounts of sediments (turbidity) to nearby waterbodies with the consequent alteration of aquatic habitats and fauna hosting.	Avoiding mining activities inside Natura 2000 sites and other sensitive areas for flora and wildlife. Prohibited mining activities in areas with priority habitats priority habitats and habitats of community interest and/or rare or endangered species which depending of that mining site	- Storage fertile land extracted from land clearance for future reseeding and/or revegetation of disturbed areas. - Sedimentation particles systems (ditches, natural vegetation to intercept suspended solids,meshes,straw blocks…) in ditch roads. -Protection systems against erosion processes over terraces, embankments,…

Table 5.6 Potential impacts, avoiding and mitigation measures for quarries and open cast mining – **Site preparation / Mineral extraction/Processing**.

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
2. Site preparation / Mineral extraction/Processing This phase includes: 2.1. Site preparation 2.2. Mineral extraction 2.3. Processing 2.4. Tailings disposal	1. Air	Environment impacts in this phase are similar to exploration phase but the impacts are more significant because of maximum production of quarries/mining operations simultaneously (ore extraction, drilling, blasting, crushing, grinding, transport of mineral, creation of waste rock piles, tailings ponds…). Dust pollution over exploitation area and surrounded areas produce airborne dust with consequent air quality reduction affecting deterioration or elimination habitats and species hosting and disturbance, displacement and emigration of sensitive species of fauna. Dust emissions can contaminate soils and water affecting flora and fauna and degradation of aquatic ecosystems (wetlands,…) Greenhouse gas emissions (CO_2) from vehicles, trucks… Gas emissions from the combustion of fuels in trucks, vehicles, heavy machinery… Dust pollution can affect workers health of mining site and inhabitants nearby villages.	Avoiding quarrying/mining activities inside Natura 2000 sites and other sensitive areas for flora and wildlife. Prohibited quarrying/mining activities in areas with priority habitats and habitats of community interest and/or rare or endangered species which depend of that mining site. Even, in some European regions is prohibited new quarrying/mining activities in Natura 2000 sites. Only can be authorized the enlargement of existing activities.	- Avoiding exploration activities in sensitive stages for wildlife (reproduction, nesting, breeding, feeding…). -Isolate sensible habitats from dust emissions using vegetation (plantation of natural windbreaks) to intercept dust and/or artificial barriers or screening (meshes, nets, buildings, conveyor belts,…). - Permanent paving of mine ways (concrete or asphalt surface). - Substitution of minerals transport in trucks for covered conveyor belts. - Covering dump trucks during mineral mining transportation. -Reduction traffic speed of vehicles and trucks during windy days. - Periodic watering of roads and accesses. - Periodic watering by sprinklers over aggregate and mineral piles (sand,gravel,…). - Dust emission control during drilling operation using dust collectors and reducing the number of blasting holes. - Using filters and dust collection systems in crushing chutes, conveyor belts and drilling systems.If it is possible, reuse this dust collected in the process cycle or sold as raw material. - Periodic clearing and removal of dust accumulations on roads and other installations. - Adequate maintenance of trucks, vehicles, machinery and heavy equipment. - Implement good disposal practices and personal training on environment matters. - Reduce the time between the mining phase and restoration phases. Immediate revegetation/reseeding of exploited areas.

Table 5.6 Potential impacts, avoiding and mitigation measures for quarries and open cast mining – **Site preparation/Mineral extraction/Processing**

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
. Site preparation / Mineral extraction/Processing This phase includes: 2.1. Site preparation 2.2. Mineral extraction 2.3. Processing 2.4. Tailings disposal	2.Noise and vibration	Disturbance,displacementand or migration of sensitive species of fauna because of noise from heavy machinery, crushers, trucks… Cumulative impacts because of simultaneously operations (drilling,crushing,ripping,stock-pilling…) affect wildlife. Vibrations as a result of drilling and blasting operations can affect infrastructure stability also produce noise and consequent alterations on the wildfauna inside and surrounding areas. It´s necessary to pay special attention in areas hosting sensitive species for these impacts (for example some raptors) specially in critical stages of these and other species (breeding ,nesting…) Health and safety risks related to explosives handling and blasting operations.	Avoiding mining activities inside Natura 2000 sites and other sensitive areas for flora and wildlife. Location the installations as far as possible from habited and Natura 2000 sites. Prohibited mining activities in areas with a Recuperation or Reintroduction Plan of a rare or endangered species of fauna sensitive with noise and/or vibration impact (for example some raptors birds).	- Location the noisy operations (pressure equipment, machinery maintenance...) as far as possible from sensitive areas for wildfauna. -Drilling and blasting operations should be the minimum for a adequate mining process, avoiding drilling and blasting in surrounding areas. - Optimization of blasting operations (quantity and quality of detonators, explosives…). -Avoiding exploration activities in sensitive stages for wildlife (reproduction, nesting, breeding, feeding, migration areas…). -Building sonic barriers surrounding areas hosting sensitive species. - Noise emission control and monitoring activities. - Isolate sensible areas from noise emissions. - Using natural and/or artificial acustic screens (trees, meshes, buildings…). - Exclusively noisy and disturbing operations in daytime. -Use machines and equipment electrically operated. -Substitution of materials transport in trucks for covered conveyor belts. -Design alternative routes to transport far from inhabited areas and sensitive areas for fauna. -Using rubbers and dulling systems in mechanical equipment. -Silencers installation in mobile equipment.

Table 5.6 Potential impacts, avoiding and mitigation measures for quarries and open cast mining – **Site preparation/Mineral extraction/Processing** (continue)

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
2. Site preparation / Mineral extraction/Processing This phase includes: 2.1. Site preparation 2.2. Mineral extraction 2.3. Processing 2.4. Tailings disposal	3.Water	Environment impacts in this phase are similar to exploration phase but the impacts are more significant because of maximum production of quarries/mining operations simultaneously (ore extrac-tion, drilling, blasting, crushing, grinding, transport of mineral, creation of waste rock piles, tailings ponds…). The potential sources of water pollution include drainage installations, wastewater from mining operations, surface run-off. The action of rainwater on mineral and waste rocks piles transfer pollution to freshwater bodies.Mine wastewater contains large amounts of suspended solids (turbidity). These solids can affect aquatic flora and fauna. Pollution of Water bodies (rivers, wetlands ..) through sedimentation of solids and waste compounds suspended in rainwater from mineral piles and dumps. Mining activities can produce permanent adverse impacts because of modifications of natural water courses and over the surface drainage. High environmental impact because of dumping mining wastes into rivers or other bodies of water as a method of disposal producing habitat loss, changes in species composition, mortality of fauna and flora (macro phytes) and degradation of aquatic ecosystems. Changes in the area water balance. Surface and groundwater can be contaminated affecting springs.	Avoiding mining activities inside Natura 2000 sites and other sensitive areas for flora and wildlife, specially aquatic flora and fauna. Avoiding modifications of natural water surface courses and over surface drainage. Avoiding mining activities nearby rivers, wetlands, lakes Dewatering or discharges operations from mining activities upstream of a Nature 2000 site can have adverse effects on this site	- In areas with Recuperation or Reintroduction Plans for rare or endangered species, the distance between mining activity and life area of the specie must be respected. - Official authorization of surface and groundwater abstractions, predicting and controlling sustainable water management, avoiding unnecessary water consumptions and wastewater production. - Periodic monitoring of water quality. - Waste management, storage and machinery maintenance plan avoiding oil spillages to soil and water bodies and production of (hazardous waste) that must be managed by authorized companies. - Sedimentation particles systems (ditches, natural vegetation to intercept suspended solids, meshes, straw blocks…). - Rainwater cannot be mixed with wastewater, avoiding it using channels, drainpipes and other type of canalizations. - Reducing slope gradient in excavations, dumps and access ways with the aim to reduce water speed that produce erosion and water turbidity. - Protection of mineral piles and accumulations of aggregates which easily disaggregate with other natural materials or artificial systems (canvases, meshes, nets,…). - Immediate reseeding and/or revegetation of exploited and disturbed areas. In reseeding and/or revegetation areas using autochthonous species, better from environment area, avoiding the introduction of invasive non-native species. - Construction of infrastructures for waste water treatment (filter systems, decantation tanks settling lagoons,… - Household sewage treatment, designed, constructed, operated and maintained in such a way as to ensure their filter capacity, stability, as well as the safety and health of workers and the flora and wildfauna of the site. -Building and maintaining a general drainage network for the withdrawal of the external waters of surrounded mining site and a specific drainage network for every dump, landfill, pit wall.

Table 5.6 Potential impacts, avoiding and mitigation measures from quarries and open cast mining – **Site preparation/Mineral extraction/Processing (continue)**

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
2. Site preparation / Mineral extraction/Processing This phase includes: 2.1. Site preparation 2.2. Mineral extraction 2.3. Processing 2.4. Tailings disposal	4.Soil	Habitat loss because of deterioration and fragmentation caused for land clearance. Soil and habitats disappearance because of roads construction , movement of machinery… Mortality of fauna from operations (clearance, excavation) Loss of wild fauna as a result of habitat fragmentation and loss of predators resulting of reduced prey resources. Erosion process may cause significant amounts of sediments (turbidity) to nearby waterbodies with the consequent alteration of aquatic habitats and fauna hosting. Excavations can create potential risks such as lanslides, collapses, slope failures, erosion and subsidences	Avoiding mining activities inside Natura 2000 sites and other sensitive areas for flora and wildlife, specially aquatic flora and fauna. Avoiding modifications of natural water surface courses and over surface drainage. Avoiding mining activities nearby rivers, wetlands, lakes Dewatering or discharges operations from mining activities upstream of a Nature 2000 site can have adverse effects on this site.	- In areas with Recuperation or Reintroduction Plans for rare or endangered species, the distance between mining activity and life area of the specie must be respected. - Official authorization of surface and groundwater abstractions, predicting and controlling sustainable water management, avoiding unnecessary water consumptions and wastewater production. - Periodic monitoring of water quality. - Waste management, storage and machinery maintenance plan avoiding oil spillages to soil and water bodies and production of (hazardous waste) that must be managed by authorized companies. - Sedimentation particles systems (ditches, natural vegetation to intercept suspended solids, meshes, straw blocks…). -Rainwater cannot be mixed with wastewater, avoiding it using channels, drainpipes and other type of canalizations. -Reducing slope gradient in excavations, dumps and access ways with the aim to reduce water speed that produce erosion and water turbidity. - Protection of mineral piles and accumulations of aggregates which easily disaggregate with other natural materials or artificial systems (canvases, meshes, nets,…). -Immediate reseeding and/or revegetation of exploited and disturbed areas. In reseeding and/or revegetation areas using autochthonous species, better from environment area, avoiding the introduction of invasive non-native species. - Construction of infrastructures for waste water treatment (filter systems, decantation tanks settling lagoons,… Household sewage treatment, designed, constructed, operated and maintained in such a way as to ensure their filter capacity, stability, as well as the safety and health of workers and the flora and wildfauna of the site. -Building and maintaining a general drainage network for the withdrawal of the external waters of surrounded mining site and a specific drainage network for every dump, landfill, pit wall.

Table 5.6 Potential impacts, avoiding and mitigation measures from quarries and open cast mining – **Site preparation/Mineral extraction/Processing** (continue)

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
2. Site preparation / Mineral extraction/Processing This phase includes: 2.1. Site preparation 2.2. Mineral extraction 2.3. Processing 2.4. Tailings disposal	5.Land scape	Environment impacts on landscape in this phase are very important because of the important soil modification, land clearance, infrastructures, buildings, landfills…. Permanent impacts because of creation of excavation holes, pits, tailing dumps, overburden piles...	Avoiding mining activities inside Natura 2000 sites and other sensitive areas for flora and wildlife. Prohibited mining activities in areas with priority habitats and habitats of community interest and/or rare or endangered species which depending of that mining site Avoiding areas with risks of landslides, collapses and subsidences nearby inhabitanted areas.	- Reduce as much as possible,the size of the excavation and landfills areas. - Adapt the infrastructures development (power lines, buildings, conveyor belts…) with natural elements of surrounding area (morphology, height, colours…) - Re-contouring of pit walls, quarry faces and waste dumps according previous topography before site closure of mining activity. - Using natural fertile lands from the site land clearance. - Refuse land with waste presence. - Immediate reseeding and/or revegetation of exploited and disturbed areas. -Plantation of native species of trees and shrubs as a vegetable screens. - Protective measures for the existing vegetation avoiding its affection during all the mining activity phases (fencing areas, watering, fertilization,…). - Compensation measures with the construction of green areas, natural corridors, landscape gardens,…) with the aim to improve the aesthetic appearance of installations inside landscape.

Table 5.6 Potential impacts, avoiding and mitigation measures from quarries and open cast mining – **Site preparation/Mineral extraction/Processing** (continue)

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measures
2. Site preparation / Mineral extraction/Processing This phase includes: 2.1. Site preparation 2.2. Mineral extraction 2.3. Processing 2.4. Tailings disposal	6.Social cultural impacts	With respect to social and cultural impacts produced for mining activities, it is necessary to considerer: positive and negative impacts. Positive impacts: -Mining and other industrial activities increases the economy in the area -Reducing unemployment -The value of the land area increases. Negative impacts: -Permanent impacts because of affecting sites and elements with high singular heritage (historical, monumental, cultural, artistic, scientist,…). -High or moderated impact because of personal risks from mining activities. -High or moderated impact as a result of the increase in movements of vehicles, trucks, workers,...with consequent danger of traffic accidents and ways deterioration. -Increasing the cost living in area which adversely affects to inhabitants who are not associated with mining activity	Avoiding mining activities inside Natura 2000 sites and surrounded areas where special heritage is protected.	- Previous removal of singular and genuine elements (historical monuments,…) avoiding their deterioration and/or destruction. - Movement of trucks,vehicles and heavy machinery inside exploitation routes. - Correct signalling in all routes,ways and accesses. - Improvements in existing routes. - Protection of all heritage elements against other impacts (vibrations,dust,water pollution). - Washing trucks and vehicles (wheels minimum) previously going out the exploitation - Restoration disturbed areas according with traditional or new compatible uses. - Employment of workers from surrounding areas,increasing economic and social aspects. - Training courses for workers and inhabitants of the area about environment risks, waste managements,health and safety risks,… - Public information (risks,incidences,accidents about mining activities in the area. Mining website, mining publications…

Table 5.7 Potential impacts, avoiding and mitigation measures from quarries and open cast mining – **Site closure and rehabilitation**

Stages/ activities	Element	Environment impacts	Avoiding measures	Mitigation measure
• **Site closure and rehabilitation** This phase includes: 3.1. Re-contouring of pit walls, quarry faces and waste dumps. 3.2. Decommissioning of roads/dismantling buildings and other infrastructures. 3.3. Covering of reactive tailing dumps. 3.4. Possible treatment for water quality. 3.5. Reseeding and/or revegetation of disturbed areas. 3.6. Fencing dangerous areas. 3.7. Ongoing monitoring. 3.8. Other mine reclamation activities. 3.9. Abandoning the mining site.		Environment impacts on air,soil, water, noise, and flora and fauna in this phase because of soil modifications, dismantling infrastructures, covering landfills, reseeding and revegetation areas decommissioning accesses… All of this operations are necessary to rehabilitate disturbed areas for previous mining activity, but this operations should be made according with the criteria establish in previous phases and with all of mitigation measures mentioned	Avoiding reseeding, revegetation and/or plantation with non- native species that it can produce changes in species composition in the area and also site colonisation by alien and invasive pioneer species Avoiding the use of types of nets and mashes in fencing operations which can produce fragmentation of habitats and problems in displacement of species of fauna.	- All wastes (hazardous,industrial non hazardous,domestic wastes...) have to be stored in health and safety conditions and they have managed by authorized companies. - Re-contouring of pit walls,quarry faces and waste dumps according previous topography before site closure of mining activity. Using natural fertile lands from the site land clearance. Refuse land with waste presence. -Reseeding and/or revegetation of exploited and disturbed areas with native species. Using vegetation to stabilise worked grounds, embankments,covered tailings ponds. - Restoration disturbed areas according with traditional or new compatible uses.

Sources:

Guidance Document. Non-energy mineral extraction and Natura 2000. European Commission.2011.
Manual de restauración de terrenos y evaluación de impactos ambientales en minería. Instituto Tecnológico GeoMinero de España.1989.
Guidebook for Evaluating Mining Project EIAs. Environmental Law Alliance Worldwide. 2010.
Auditing Mining: Guidance for Supreme Audit Institutions. INTOSAI Working Group on Environmental Auditing.2010.

6. Rehabilitation, a mitigation measure for NEEI – Planning and practices in Europe

6.1. Rehabilitation

This chapter provides examples of best practice for the integration of biological and geological conservation principals into NEEI activities, taking into account environmental benefits. It aims to provide the NEEI sector and those that are responsible for the implementation and management of Natura 2000 sites, with information to help restore, improve or in some cases, create biodiverse habitats and species within quarries during and after exploitation. The chapter also provides examples of methodological procedures which can be used when the monitoring process reveals that natural heritage may be impacted.

Open-pit quarries represent one of the major anthropogenic impacts on the Earth surface. The impacts of quarrying activities affect all aspects of the environment, including lithosphere (rock excavation and geomorphic changes of the landscape), atmosphere (dust and air pollution), hydrosphere (changes in ground- and surface water) and biosphere (destruction of habitats and loss of biodiversity) (Bétard, 2013)[48].

However, the growing need for raw materials, and the fact that the resources have locations often driven by geological and technical factors for their extraction has, as a consequence, led to NEEI practices sometimes taking place in, or within the vicinity of, ecologically sensitive places.

For a number of decades, the restoration of NEEI sites was centered on landscape recovery, people safety, the stabilisation of terrain, aesthetic improvement, and the return of the space to something considered 'useful'. More recently, due to the environmental awareness of most stakeholders, and of the public in general, the focus of concern has become the ecological rehabilitation of extraction sites.

Chapter 7 of the NEEI Guidance[49] provides a good overview of the general definitions, recommendations and examples for the design of a rehabilitation plan of a quarry. The guidance defines 'rehabilitation' as the process of converting explored areas to usable land and may include engineering as well as ecological solutions. The restoration of natural habitats is often included as part of the site closure and rehabilitation process.

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[48] Bétard, François (2013). "Patch-Scale Relationships Between Geodiversity and Biodiversity in Hard Rock Quarries: Case Study from a Disused Quartzite Quarry in NW France". Geoheritage (2013) 5:59–71

[49] Guidance Document. Non-energy mineral extraction and Natura 2000. European Commission.2010. http://ec.europa.eu/environment/nature/natura2000/management/docs/neei_n2000_guidance.pdf (access in 15.11.2016)

Rehabilitation implies the recovery of the natural functions and processes within the context of the disruption, assuming the proposed ecosystem is compatible with the surroundings (Bastos *et al.,* 2005)[50]. Site rehabilitation projects have the potential to contribute to the creation of habitats and conservation of various species protected under the EU Nature Directives. When a quarry is rehabilitated, it is not only the rehabilitation of the land affected by the quarry, but also the conditions that the territory presented before its industrial use, were improved (CEMA, 2010) [51].

In-use or post-use extraction sites have been found to contain a number of species protected under the Habitats and Birds Directives, and many old quarries or opencast mines have subsequently been included within the Natura 2000 network (Carpino, 2016)[52]. Europe wide studies have shown that some protected species will find refuge in the new habitats offered by old mining sites based on the preferential change of land use and remnant landscape.

The following discussions around rehabilitation are based on (1) of the approach of existing NEEI guidance, (2) the results of the IMPEL questionnaire, and (3) EU wide experience and feedback.

6.2. Approaches to the rehabilitation

Responses to the IMPEL questionnaire (Annex I) indicated that most of the European countries tend to have within their national legislation, the obligation to submit a rehabilitation plan to the permitting authorities as part of the permitting process. This confirms the increasing importance being placed on the rehabilitation process throughout the EU. Portugal is one such example, where the "Environmental Landscape Recovery Plan" is integrated into the quarry plan and there is a requirement to provide a financial guarantee for recovery work in the event that the operator cannot undertake it.

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50 BASTOS, M.; Azevedo E Silva, I. (2005). "Uma diversidade de soluções para a reconversão, reabilitação e recuperação paisagística de pedreiras". Encontro no Colégio de Engenharia de Minas, Açores. http://www.visaconsultores.com/pdf/Enc_OE_2005_MBIS_artigo2.pdf (access in 15.11.2016)

51 CEMA, 2010. "Manual de restauración de la biodiversidade en entornos calizos (REBECA)_manual técnico". Fundación Laboral del Cemento y el Medio Ambiente, CEMA. file:///C:/Users/liamergulhao/Downloads/Manual_Restauraci%C3%B3n%20de%20la%20biodiversidad%20en%20entornos%20calizos%20(REBECA)_F.CEMA%20(3).pdf (access in 15.11.2016)

52 CARPINO, C., 2016. "Sustainable management and recovery of mining areas". IMPEL Project. (*pers comm*).

Simultaneously, the NEEI sector across the EU is making significant steps towards reducing their environmental impacts as well as contributing to biodiversity conservation, in particular through the rehabilitation of extraction sites. In the UK, this has been extended to events such as the Mineral Planning Association restoration and biodiversity awards (http://www.mineralproducts.org/quarries_and_nature_zone.htm). This may be extended to the conservation of geological aspects also, and several examples can be seen in this chapter.

The final configuration of an area of land post-exploitation is conditioned by a set of technical factors that can be grouped under five generic headings: geological, topographic, geotechnical, landscape and economic. The consideration of these factors can sometimes lead to a variety of solutions which may contradict one another, however the final remodeling must reach a compromise with a view to achieving the following objectives (Jimeno *et al.*, 1996) [53]:

- A profitable mining operation and a high exploitation of rock reserves
- A final structurally stable topography that minimizes the risks of landslide or collapse of the slopes and facilitates the natural drainage of surface water
- An integration of the set according to the characteristics of the *surrounding natural landscape*

For rehabilitation to be a success, good planning of actions and appropriate timescales is essential. The following points are derived from the approaches discussed in IMPEL meetings and workshop, an existing database of evidence on the subject and the existing NEEI guidance:

- The rehabilitation plan should always be an integral part of the NEEI project and part of the permit determination and conditions
- A main instrument in the NEEI rehabilitation project is a good and scientifically supported characterisation of the territory and management plans affected by the quarry, and its surroundings at a local, regional and in some cases, at national scale
- Strategic planning of rehabilitation is even more successful when actions are integrated in a wider conservation strategy fulfilling the objectives of the management plan for Natura 2000 sites
- The rehabilitation plan must be adjusted to the natural needs of the territory and compatible with the uses determined by the land managers, at the end of the life time of

[53] JIMENO, C. LÓPEZ (1996). "Manual de Rocas Ornamentales, prospección, explotación, elaboración y colocación". Entorno gráfico, S.L., Madrid

Manual de restauración de terrenos y evaluación de impactos ambientales en minería. Instituto Tecnológico GeoMinero de España.1989. http://info.igme.es/SidPDF%5C065000%5C106%5C65106_0001.pdf (accessed in 15.11.2016)

the quarry, taking into account factors such as technical viability, socioeconomic elements, and costs amongst others

- In cases where quarries may be closely grouped together, it might be useful to consider if it is possible to undertake a joint rehabilitation plan, in order to favor an integrated conservation strategy
- When considering the rehabilitation of a quarry, especially in or in the surrounding of Natura 2000 sites, ecological criteria should prevail over those strictly about the visual landscape recovery
- It is essential to establish, from the beginning of the NEEI project, the final use for the land and to integrate it into the exploitation project. An appropriate extraction design is essential to supporting the final objectives of the rehabilitation project.

Given that the extractive industry projects have the advantage of being able to determine the morphology of the terrain, the mining and landfill activities can shape the area and prepare it for future use (Bastos *et. al.,* 2005)[41]. An absence of establishing 'future use' before the design of the exploitation plan, may compromise its future rehabilitation. In older quarries where no restoration has been carried out, the area has often favored re-vegetation, by acting as a source of seed dispersion, thus helping to fix slope substrates. The roughness of the walls, with platforms and cavities may also play a relevant role in the process of installation and settlement of the vegetation and in the colonisation of birds (CEMA, 2010)[42]. For example, new aquatic habitats created in quarries represent particularly suitable sites for reproduction of amphibian species listed in Annex II of the Habitats Directive (Carpino, 2016)[43].

- The rehabilitation plan should be designed, and technically monitored in its execution, by a team of specialists. Rehabilitation planning should take into account all phases of the work, for example site preparation, mineral extraction, processing, tailings disposal, etc. Decommissioning of roads / dismantling buildings and other infrastructures, possible covering of waste dumps, treatment for water quality, and fencing dangerous areas, have also to be considered in many cases
- The exploitation and rehabilitation phases must occur simultaneously contributing to the technically, economic and ecologically viability of the quarry and its rehabilitation
- A monitoring program to assess the progress of rehabilitation is crucial to determine the suitability of the designed project, and to make adjustments if it is considered necessary

6.3. Examples of rehabilitation

The case studies described in this chapter represent some practical examples of rehabilitation for NEEI activities taking into account biodiversity, geodiversity and landscape conservation.

There are limited interpretations of rehabilitation and restoration for NEEI activities within existing literature, and as such the authors of this report interpret such terms as presented in the case studies below in the context of the existing guidance.

Case studies are grouped under the following general headings:

6.3.1 EU Life projects

6.3.2 Projects with European financial support

6.3.3 Other European projects

6.3.4 Projects in or near NATURA 2000 sites

6.3.5 Rehabilitation in management plans

6.3.6 Rehabilitation in old quarries

6.3.7 Nature heritage revealed

6.3.1 EU LIFE Projects

6.3.1 (a) EcoQuarry Project ('Ecotechnology for Environmental Restoration of Limestone Quarries') [54]

This project was financed by the European Life Environment Program, and developed between 2004-2011.

54 http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.showFile&rep=file&fil=LIFE04_ENV_ES_000195_AfterLIFE.pdf (access in 26.10.2016). http://www.globalrestorationnetwork.org/database/case-study/?id=185(accessed in 26.10.2016).

The project was carried out simultaneously in eleven limestone quarries located in Catalonia and Valencia, Spain and one in Setúbal, Portugal, under the direction of several academic institutions across both countries.

The objectives of the project were to define an environmental quality system for quarry restoration, and establish restoration guidelines for limestone quarries under Mediterranean conditions, using the best available technologies. The objectives implemented best available technologies in quarry restoration in a field scale trial to improve restoration interventions, develop standardised quality control processes to promote the rational and sustainable use of natural resources and increased atmospheric carbon dioxide fixation, and to transfer the underlying process directly to both big and small mining companies.

Interim goals to achieve the project outcome included the implementation of a pilot plot to test for the most appropriate herbaceous species for each vegetation zone, increasing the diversity and spatial distribution of shrub species, achieve quality control by optimising resources, maintenance and monitoring vegetation development, evaluation of results (effectiveness and efficiency, and the establishment of an environmental quality system for restoration (quality protocols, restoration manual).

The project demonstrated the benefits of using local materials as substrates, native species, and minimum inputs (especially watering) from a cost-effectiveness viewpoint. The project also generated a practical handbook 'Guidelines for limestone quarry restoration in Mediterranean climate' (2011) that provides practical assessment in limestone quarry restoration to the cement and aggregate sectors.

ECOQUARRY also promoted co-operation between the mining sector and the scientists involved facilitating the exchange of experiences, and further networking for future collaboration. General awareness of the relevance of restoration has increased within the industry.

6.3.1 (b) European Quarry Landscapes Network

The European Quarry Landscapes Network is part of the Teruel Life + project held by the city of Teruel, Spain. The network brings together historic quarries and landscapes from across the EU which have special ecological conditions, and rich geological and fossil evidence. The network is based in the restoration of the ancient clay quarries and their cultural landscape near Teruel, integrating them into the urban environment and promoting sustainable mobility.

The project has the support of the European Commission LIFE + Programme and was implemented during the period June 2012 to December 2015[55]. One of the main results of this project is a work titled 'Collected essays from the first meeting of the European Quarry Landscapes Network' (2015), which contributes to the understanding of different approaches to managing quarry landscapes. A second outcome is the production of a database which allows for the comparison of approximately 30 quarry landscapes from across the EU to consider different approaches to rehabilitation[56].

6.3.2 Projects supported through European funding

6.3.2 (a) RESTORE project

RESTORE was a partnership project between four European countries and seven organisations across north west Europe, co-financed by the European Regional Development Fund through the Interreg IVB North-West Europe programme, and was implemented between 2012-2015. The project developed a framework for restoring minerals sites (quarries) to provide benefits for biodiversity, local people and local economies, which would help then to improve the sustainability of north west Europe by reversing biodiversity declines, protecting designated nature sites, enhancing landscapes, providing green infrastructure and improving quality of people's lives[57].

The project was comprised of four goals:

- demonstrating what it is possible to achieve through pilots and case studies
- reviewing existing policies in North-West Europe and showcases best practice
- evaluating the benefits to society that can come from nature focussed restoration
- developing an interactive tool to help with decision making in respect of the future of minerals sites.

The project has developed a number of reports including 'Economic analysis of ecosystem service benefits through quarry restoration' which presents some case studies from Belgium

55 http://213.0.14.154/wordpress/ (accessed in 26.10.2016)

56 http://213.0.14.154/wordpress/wp-content/uploads/2014/07/Quarrylandscapesdatabase.pdf (access in 26.10.2016)

57 http://www.restorequarries.eu/ (accessed in 26.10.2016)

and Netherlands[58]. One of the case studies concerned habitat restoration in 'Schuddebeurze' quarries situated on the Flemish coast (Belgium). Because of acidophile vegetation relics and the presence of great crested newt (*Triturus cristatus*), the site is part of the Natura 2000 network (SAC) and the Flemish ecological network. The site has, in the past been subject to sand and clay extraction after which most of the pits were filled with domestic waste and/or inert materials like building waste. The goal of the restoration plan for this site was to increase biodiversity through appropriate ecological management to meet the Natura 2000 conservation objectives, to integrate several partly-cleaned up pits in the landscape and to promote nature-friendly recreation, in a historic context [59] [60].

6.3.2 (b) Serras d'Aire and Candeeiros Natural Park (PNSAC), Portugal, SIC PTCON0015, Natura 2000

Situated in the Portuguese Estremadura, about 100 km from Lisbon, and with 40 000 ha, the PNSAC is included in the 'Limestone Massif of Estremadura', an area particularly important for its geological and biological heritage. The area is characterised by its Mediterranean species and the karst morphology, and its publicly given symbol (a bat) represents the existences of hundreds of caves with species specific bats colonies. Responsibility for the management of this protected area is the Portuguese Institute of Nature Conservation and Forests (ICNF, I.P.).

The exploitation of limestone materials within the PNSAC is a very important economic activity that has been undertaken for centuries, and the regulation of this economic activity and its compatibility with nature conservation has become one of the most important challenges in the management of this Natural Park. In the 1980's, the ICNF began a systematic programme of work to manage limestone exploitation, and since 1995, has promoted and aided the recovery of a number of abandoned quarries and areas of illegal exploitation within the PNSAC. Involving municipalities, state institutions and authorities, operators and the PNSAC team, it was possible to develop strategies for the rehabilitation of old and abandoned quarries which no longer have economic viability or other abandoned exploited spaces that were never licensed. The main objective was to integrate the exploited area with the surrounding ecosystems and use it as an

[58] file:///C:/Users/Utilizador/Downloads/RESTORE%20economics%20of%20ESS%20report.pdf (accessed in 26.10.2016)

[59] http://www.restorequarries.eu/schuddebeurze/4579588706

[60] file:///C:/Users/Utilizador/Downloads/Schuddebeurze%20WP2%20site%20Leaflet%20(Dec%202014).pdf(access in 26.10.2016)

example for operators to show that rehabilitation may not be complicated or expensive if good practices were followed during the exploitation phases.

The project resulted in a good regional and national example of an economically viable activity that integrated environmental concerns into an appropriate rehabilitation plan. The project developed a guidance document entitled 'Rehabilitation Guide for Environmental Degraded Areas' (Almeida *et al.,* 2006)[61].

Example of the rehabilitation in a limestone quarry in PNSAC (Duarte, M. 2016[62]): 2003 - End of the exploitation, 2005-2014 rehabilitation work and its result after 9 years of implementation.

6.3.3 Other European Projects

6.3.3 (a) Biodiversity Stewardship in Gypsum Quarrying

The European Gypsum Industry are an industrial association that gathers operators from across European countries such as Germany, Italy, Portugal, and the United Kingdom as well as others, to publish a collection of best practices implemented throughout Europe for conserving and adding value to the biological eco-systems during and after quarrying. The document is entitled 'Biodiversity Stewardship in Gypsum Quarrying' (2015). Some of this quarries listed within this document are found to be within the boundaries of Natura 2000 sites[63].

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61 Almeida, F., Mira, J., Duarte, M., 2006. "Rehabilitation Guide for Environmental Degraded Areas". ICNF. Lisboa. (Not posted, sent if requested to the email pnsac@icnf.pt).

62 Duarte, Manuel (2016). "RECUPERAÇÃO AMBIENTAL DE PEDREIRAS NO PARQUE NATURAL DAS SERRAS DE AIRE E CANDEEIROS". XVII JORNADAS NACIONAIS CONSERVAÇÃO NATUREZA E EDUCAÇÃO AMBIENTAL ALCANENA. (Not posted, sent if requested to the email pnsac@icnf.pt).

63 http://www.eurogypsum.org/wp-content/uploads/2015/04/EUROGYPSUMBIODIVERSITYEN.pdf (accessed in 26.10.2016)

6.3.4 Projects in or near NATURA 2000 sites

6.3.4 (a)Birdlife International – Heidelberg Cement Partnership Project Restoring ecological networks: habitat restoration in limestone quarries in Lengfurt, Germany

The limestone quarries in Lengfurt are within the boundaries of Natura 2000 site. Under the responsibility of Heidelberg Cement and Bird Life, Germany, a plan of habitat restoration in limestone quarries in Lengfurt, Bavaria, Germany was developed which included an integrated model for sustainable land use and nature protection that requires restoration and maintenance of ecological connectivity in the landscape, and the conservation status of the Red List species (for example, the species *Bubo bubo* should increase by 50%)[64]. The plan also requires that by 2020, protected and endangered habitat types should be significantly preserved, and as much as possible, this should be completed through voluntary measures. The work also has to complement the European and national network of protected areas of core zones, corridors and stepping stone habitats.

The project was particularly important because operators were aware that the quarries at the Lengfurt cement plant were indispensable in terms of optimisation of the target habitat types as well as corridors for habitat networking among Natura 2000 sites. The overall success of this project could double the size of the protected habitats within the nearby Natura 2000 site.

The objectives of the project were to maintain the important calcareous low-nutrient meadows intact and open by use of appropriate strategies, and to restore connectivity of natural habitats. In practice, Heidelberg Cement dedicated a significant part of its land as test areas for active and passive habitat restoration. These areas are adjacent to already protected Natura 2000 sites (SCI Magerstandorte bei Marktheidenfeld und Triefenstein) to ensure continuity of biodiversity and the morphological structures of the disused quarries and natural succession worked hand in hand to accommodate a suite of sensitive plants and animals (priority habitat types).

Reconnecting remnant grassland patches into an effective ecological network is essential for their conservation and recognising their responsibility and strategic position, the company committed to helping to restore and conserve calcareous grassland on their grounds and the immediately adjacent Natura 2000 areas ('Site of community importance' DE6123371

64 http://www.birdlife.org/sites/default/files/attachments/HC_Lengfurtproject_factsheet.pdf (access in 26.10.2016)

Magerstandorte bei Marktheidenfeld und Triefenstein and SCI DE6123302 Maintrockenhänge am Kallmuth und am Hübschenberg)65.

This, and other examples, can be consulted in the Eco-restore site[66], a space for conservation professionals to share their knowledge on nature restoration with like-minded colleagues.

6.3.4 (b) Rehabilitation in Limestone Quarries in Arrábida Natural Park (PNA), Portugal SICPTCON0010 Arrábida/ Espichel and PTZPE0050 Cabo Espichel , Natura 2000

Situated in Portugal, about 40 km from Lisbon, and with 17,940 ha (12.328ha terrestrial, 5612ha marine), the PNA includes the Arrábida mountains, which are very important for their geological and biological heritage. Arrábida Natural Park (PNAR) includes SIC Arrábida/ Espichel PTCON0010 and PTZPE0050 Cabo Espichel. The Institute of Nature Conservation and Forests (ICNF, I.P.) is responsible for its management.

Characterised by its Mediterranean species and the karst morphology, in this protected area it is possible to observe one of the last vestiges of best preserved Mediterranean vegetation in Europe, which developed in a limestone substrate. Within the protected area two main cores of limestone quarries can be found: the "Achada and Calhariz Core", and the Outão Core. They are covered in total by eleven licensed quarries, affecting a total area of 323 hectares (about 2.6% of the PNA's land area).

The examples presented below are related quarried which have been previously licensed before the classification as a protected area and Natura 2000.

6.3.4 (b)(i) Achada and Calhariz Core67

For the purpose of better planning of the exploitation phase of the quarry work, for the reformulation of the respective rehabilitation plans, and with an ecological integration perspective, a strategy was implemented that first took shape in 1997. The strategy includes:

- constitution of a committee of operators, permitting authorities and municipalities

65 https://eco-restore.net/tag/natura2000/ (access in 26.10.2016)

66 https://eco-restore.net/about/)(accessed in 26.10.2016)

67 Monteiro, C. (2014). "Rehabilitation in PNAR". ICNF. Lisboa. dcnflvt@icnf.pt (Not posted, but sent if requested to the email)

- an integrated diagnostic study of the environmental impacts of the quarries
- the approval of a new integrated exploration plan and rehabilitation of the quarries of Calhariz and Achada
- the guidelines of the mining and rehabilitation plans were transposed into the quarry plans.

In the context of the rehabilitation plan, a number of environmental measures were implemented to minimise the impacts of the activity, including management of dust and noise emissions (for example installation of washing systems of vehicles (wheels), improvement of access, installation of dedusting systems, and the improvement of the structural crushing system).

Whilst the strategy accounted for a more orderly and efficient exploitation process in as yet untouched areas, the areas already explored were also rehabilitated, according to a landscaping integration and ecological continuity.

These quarries occupy an area of 223 ha, of which 35 ha have been rehabilitated.

Different perspectives of the rehabilitation going on the Achada e Calhariz Core (Monteiro, C., 2014)[68].

[68] Monteiro, C. (2014). "Rehabilitation in PNAR". ICNF. Lisboa. dcnflvt@icnf.pt (Not posted, but sent if requested to the email)
http://www.secil.pt/pdf/valorizar_6_2009.pdf (accessd in 26.10.2016)


Exploitation and rehabilitation – two process side-by-side (Monteiro, C., 2014) [59].

6.3.4 (b)(ii) Outão Core [69,70]

One of the quarries participating in the EcoQuarry project (See 6.3.1 (A)) is situated in Outão Core, Setúbal, Portugal, belonging to the Secil - Cal and Cement company. The Secil - Cal and Cement company is the owner of a group of quarries (generally designated by Outão quarries).

In 1965, the first studies for the landscape rehabilitation of the Outão´ quarries was carried out, and in 1981 the PNAR approved the first project of landscape rehabilitation for Outão, according to the Portuguese legislation as well as the management plan for the protected area, whose implementation began immediately in 1982[61].

In 1998, the operating company established a collaboration with the Centre for Ecology and Biology Vegetal (Faculty of Science, University of Lisbon), with the main objectives of evaluating the quality (ecological) of landscape rehabilitation already developed, increasing the biological and ecological information on the Mediterranean species of different functional groups, potentially useful for re-vegetation of these affected areas, proposing and testing these plant species and new processes for improving recovery interventions at the level of the substrate and vegetation.

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69 http://www.secil.pt/pdf/valorizar_6_2009.pdf (accessed in 26.10.2016)

70 Oliveira, J. (2011) "Explorações a Céu Aberto Novos Desenvolvimentos_ Recuperação Paisagística das Pedreiras do Outão". Colégio de Engenharia Geológica e de Minas. Lisboa.

Studies and tests were carried out and are ongoing concerned not only on vegetation, but also the soil (substrate). The work indicated that the recovery work carried out in that quarry since 1983 had favored the more rapid establishment of an autochthonous, healthy, balanced and potentially sustainable flora community. This vegetation is structurally and functionally diverse, capable of self-propagation and resilient to natural disturbances (for example fire). Thus, it can be considered that the ecological environment of re-vegetated quarry is potentially better than might suggest the mere perception landscape (Oliveira, J., 2011) [61].

Through experience and knowledge acquired over the years, and in a collaboration with research centres (including the participation in the EcoQuarry project), Secil introduced the concept of biodiversity into their management plans. They sought eco-rehabilitation of the structure and function of the ecosystem, integrating environmental and aesthetic qualities.

Perspective of Outão quarries core (GoogleEarth, 2016).

Some aspects of Outão quarries rehabilitation (Correia, A., Ranger on the PNA).

6.3.4 (c) Cava di Ponte Oliveti, Italy [71]

The quarry of marl and limestone in Trentino-Alto Adige, is an example of modified planning to minimise visual impacts and implement a gradual environmental recovery.

The first project (circa 1960) planned the cultivation on the quarry by stages from the bottom up, of two different materials. Furthermore, two more excavation faces were opened with a significant visual impact. In the 1990's the cultivation of the quarry was modified with cultivation from top to bottom and realising escarpments and variable slope so as to harmonise with the surrounding landscape morphology.

The modification of the project between 1960 and the 1990's allowed the minimisation of visual impacts and a more harmonious and rapid environmental recovery. By proceeding with a 'bottom up' approach, it was also possible to start the environmental restoration measures at the same time as cultivating the underlying fronts.

71 Carpino, C. (2016). "Sustainable management and recovery of mining areas". IMPEL Project. (Not posted, informations to the email carpino.claudia@minambiente.it)
http://www.italcementi.it/NR/rdonlyres/2E7287F4-0304-4491-A27C-CD6666514F48/0/coltivazione_cava_Ponte_Oliveti.pdf

Aspects of quarry recovery and minimization measures [62].

6.3.4 (d) Oasi di Baggero - creating a new environment with characteristics similar to those of the surrounding landscape, Italy [72]

In this case study, the mine provides an example of creating a new environment with characteristics similar to those of the surrounding landscape through a naturalistic recovery with the creation of a natural park. The main environmental recovery actions implemented to realize the project are listed below:

- creation of small lakes by the deviation of the Roggia Cavolto
- contribution of topsoil for re-naturalisation of the isthmus that separates the lakes
- interventions of hydro-seeding on new surfaces resulting in the excavation phase
- greening of the cliffs with biologically undemanding species
- laying of rows of plants to prevalent vertical development at the base of the walls

72 Carpino, C. (2016). "Sustainable management and recovery of mining areas". IMPEL Project. (*pers comm*) http://www.holcim.it/sviluppo-sostenibile/performance-ambientale/gestione-sostenibile-attivita-estrattiva-e-tutela-biodiversita.html (accessed in 26.10.2016)

- placing of aquatic plants and animal species that have led the formation of a new ecosystem similar to the other lakes in Brianza area
- introduction of various species of ducks and swans
- activation of an appropriate service to regulate the conservation of fauna and flora in the years after completion of mining
- Oasis arrangements with access road, natural internal paths, reception points and scenic route perfect for bird watching

Aspects of the evolution of the rehabilitation of the quarry [63].

6.3.4 (e) Botticino extractive basin, Italy - A multidisciplinary approach [73]

Botticino is Italy's second largest extractive basin, and famous worldwide for the limestone extraction.

The case study focuses on hill limestone quarries and proposes a multidisciplinary approach, mainly based on vegetation analysis, for their study and restoration. Specifically, the aim of this work was the identification of the most suitable restoration practice, applicable on large-scale, in order to ensure the establishment of a long term and self-sustaining vegetation with high naturalistic value. In order to reach such an aim, the following aspects were investigated:

- the vegetation dynamics on the quarries over the whole Botticino extractive basin, in order to identify the local vegetation succession and the main plant functional traits that are selected according to geomorphological features
- the specific composition and density of the tree/shrub layer of the semi-natural vegetation in the surrounding of the Botticino quarries. The seed germination of some common species was also considered in order to select the most suitable plants for a pilot field restoration experiment
- the root systems of selected herbaceous species which can contribute to the stability of superficial soil layers
- three different restoration techniques through a pilot field experiment, planned on the basis of the results from preliminary analyses, in order to select the most successful restoration approach from a naturalistic and economic point of view

The study highlights the importance of an experimental phase before the start of the restoration process in a quarry area.

73 Carpino, C. (2016). "Sustainable management and recovery of mining areas". IMPEL Project. (*pers comm*) http://www.recuperocave.it/pdf/Gilardelli_25ott2013.pdf (accessed in 26.10.2016)

Aspects of the evolution of the rehabilitation of the quarry space [64].

6.3.4 (f) New wetland areas suitable for different species of flora and fauna developed from sand ponds exploitation, Spain[74] ES0000436 A Limia, NATURA 2000

During the last century the Laguna of Antela, located in the province of Ourense, Region of Galicia (Spain), was one of the biggest lake of Spain. In 1959 it was dredged to extend the cultivated surface area. Now, Limia region has a strong rural character and this alluvial area has an enormous deposit of high quality sand. Floating dredges are used to mine alluvial deposits of sand, creating artificial lakes which must be restored in line with an official 'Master Management Plan of Restoration' for this area, and with a specific restoration plan for every sand pond exploitation.

In this context, a rehabilitation project was developed in an old sand extraction from the alluvial area of the Limia River Basin, in a Peripheral Protection Area of SPA "A Limia (ES0000436)" with the intention of further enlarging the SPA by providing new wetlands out of mining activities, resulting in positive contributions to biodiversity and bearing in mind the sustainable development. The plan targeted eight Habitats Directive habitat types (three priority habitats) and 125 species of birds (32 species of which are included in annex I of Birds Directive and 75 species of birds are breeding in this area).

Prior to the exploitation it was necessary to obtain an environmental permit and as a result of an Environmental Impact Assessment (EIA), measures to avoid, eliminate or reduce the

74 Vazquez Quintela, J.A(2016). IMPEL Project. (*pers comm*)

environmental impacts were included within the permit. These avoidance measures, as well as biodiversity indicators, are monitored during all activity at the site.

When extraction activities are concluded (even during the extraction process) the restoration process may begin. The main stages of the restoration process include:

- survey field works and specific environmental restoration plan for the mining site; design and re-contouring sand pond faces according to the needs of flora/fauna
- conditioning banks and re-vegetation and/or reseeding using autochthonous species
- creation of new natural and/or artificial islands and building birds observatories using traditional constructions
- elimination of unnecessary ways and dismantling infrastructures with a correct waste management
- fencing and signing restored areas

Wildlife returns to a new rehabilitated area from extractive activities.

In this area, some abandoned sand ponds are being restored through partnership between mining companies, mining authorities, Galician Society of Natural History (NGO) and environmental authorities.

6.3.4 (g)Restoration of old abandoned quarry for an authorised landfill use, Spain. No. Close to SPA ES0000436 A Limia, NATURA 2000 [75]

At the Limia site, Province of Ourense, Region of Galicia (Spain), a restoration project of old abandoned quarry for use as an authorised landfill was undertaken. In the past this old abandoned quarry had been used as an area where individuals had illegally deposited domestic waste.

The State bought the property to implement a treatment and recycling system for building and demolition waste, with an associated landfill. This was considered particularly useful for avoiding uncontrolled and illegal landfill sites in the surrounding area.

Aspects of the evolution of the rehabilitation of the quarry, over time.

75 Vazquez Quintela, J.A.(2016). IMPEL Project. (*pers comm*)

6.3.5 Rehabilitation in management Plans

6.3.5 (a) Serras d'Aire and Candeeiros Natural Park (PNSAC), Portugal SIC PTCON0015, Natura 2000

Situated in the Portuguese Estremadura approximately 100 km from Lisbon, and with 40 000 ha, the Serras d'Aire and Candeeiros Natural Park (PNSAC) is included in the "Limestone Massif of Estremadura", which is very important for its geological and biological heritage.

The Serras d'Aire and Candeeiros Natural Park has in its planning and management objectives, the requirement to 'promote the managing and valorisation of natural resources empowering the maintenance of ecological systems and life support, ensuring their conservation, the geodiversity conservation, the biodiversity and the rehabilitation of depleted resources or exploited'.

One of the concerns for the planning and management of the protected area was to requalify degraded or abandoned areas due to illegal exploitation, and to create the continuity between the intervened areas and their vicinity, namely through renaturation and rehabilitation of natural habitats.

In this protected area there are mandatory measures of environmental protection and landscape rehabilitation of mineral masses exploitation areas as, for example, the preservation of the rock habitats associated with species *Coincya cintrana* and *Narcissus calciola*, and the prohibition of debris with a height of more than 3 m, in relation to the maximum area of the holding to ensure the preservation of landscape quality.

According to the national legislation, inside the natural park, and in areas with no natural values, the expansion of mineral mass licenses can be allowed according to constraints imposed by rehabilitation mechanisms, as the following examples show:

- licences of mineral masses exploitation with a minimum of 1 ha, up to 10 % of the licensed area before the date of publication of the Management Plan of PNSAC, and to the area of expansion plus the rehabilitated area
- in licenses of mineral masses with a lower area or 1 ha, up to 15 % of the licensed area before the date of publication of the Management Plan of PNSAC, and to the area of expansion plus the rehabilitated area

- the expansion may include a higher area, provided that the quarry plans consider phased mining and rehabilitation process, so as to comply with the provisions of the previous paragraphs.

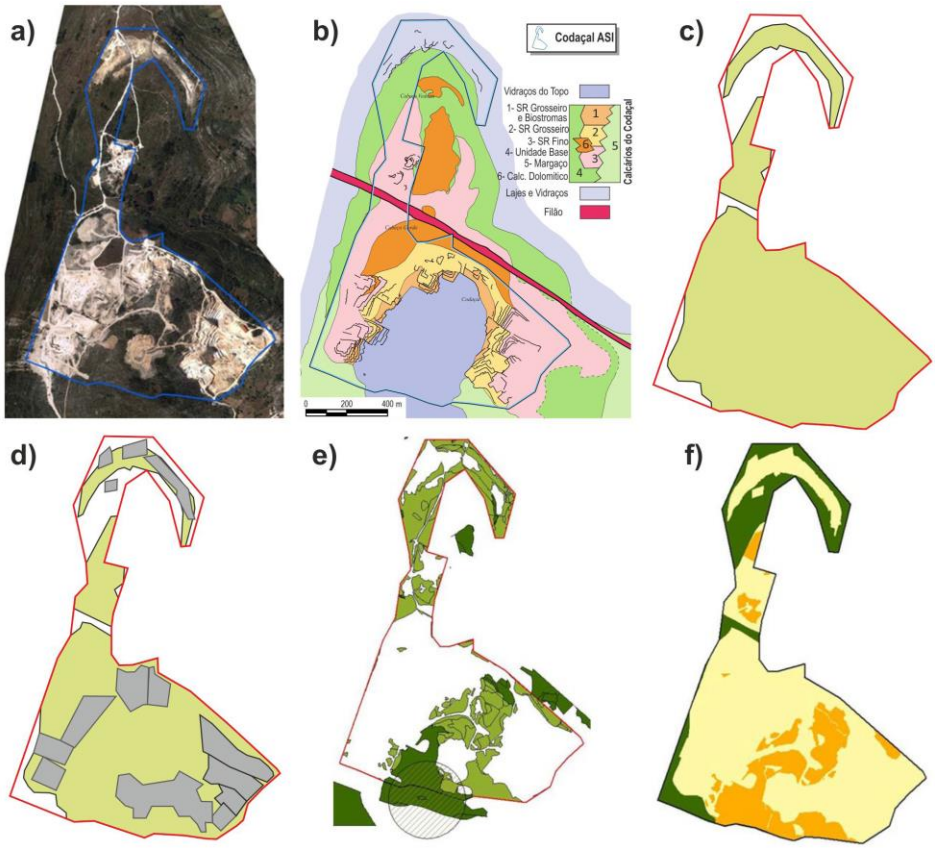
This protected area has a number of quarries within its boundary, with acquired rights being granted prior to being established as a natural park, and operators who wish to expand their activities. In this way, six specific intervention areas were defined in the management plan, aimed at rationalising management of the extraction of mineral masses and the rehabilitation of degraded areas. For those referred areas, detailed intervention plans were drawn up aimed at the establishment of compatibility measures between the rational management of the exploitation of minerals, the rehabilitation of degraded areas and the existing natural heritage taking into account the values and the landscape and environmental sensitivity of the surrounding zone. Under this scope, a project was developed and in accordance with Portuguese national law, it may be possible to expand the installation of NEEI, under the terms of the conclusions of this project.

So, following the application of the national and environmental legislation, an example of a good practice was developed for the Natura 2000 network inside the PNSAC, seeking the minimisation of conflict between the mining activity and nature conservation. In this regard, the competent authority for the management of the Natura 2000 Network area and an industrial association representative of the mining stakeholders worked together in a project aimed at the conciliation of exploitation activities in the protected area through improvement in their economic and environmental performance (Carvalho *et al.,* 2016)[76].

Based on a qualitative evaluation methodology, natural value maps were produced for flora, fauna, habitats and geological heritage. They resulted from the evaluation of criteria such as the occurrence of species and habitats listed in the birds and habitats directives (2009/147/EC and 92/43/EEC). Natural values in the maps were expressed as an ecological relevance scale, from 'low' to 'exceptional'. The second phase focussed on the integration of all spatial data, and making use of GIS support. The main focus was the coexistence of limestone suitable for ornamental purposes and other natural assets previously valued by means of qualitative and/or quantitative criteria. The planning map proposal yielded, for the Codaçal area, is an example of

[76] Carvalho, J. M. F.; Meira, J.; Marques, C.; Machado, S., Mergulhão, L. M. and Cancela, J. , 2016. "Sustainable exploitation of mineral resources within an area of the Natura 2000 network". EuroGeolJournal.

what had been done for five specific intervention areas of PNSAC. This process involves the implementation of joint exploitation projects for each specific intervention area, as well as a general waste management plan and an environmental impact assessment (Carvalho *et al.,* 2016)[20]. For the mining stakeholders this is one step for the inclusion of PNSAC areas hosting significant mineral resources in land use planning. For the environmental authorities it is a means to ensure operators meet nature conservation policy. In the near future, it is hoped this project will be a proven example of good practice.



Intermediate results from geological and environmental studies carried out at the Codaçal Area of Specific Intervention ASI: a) aerial view of the Codaçal ASI; b) geological thematic mapping; c) delimitation of the suitable areas for limestone quarrying; d) existing licensed quarries; e) GIS integration of the natural values evaluation process; and f) land use spatial planning proposal for the Codaçal ASI (Carvalho *et al.,* 2016)[(67)].

6.3.6 Rehabilitation in old quarries

6.3.6 (a) Călimani National Park, Romania Site of Special Areas of Conservation Călimani – Gurghiu (ROSCI0019) Site of special avifauna protection in Călimani Mountains (ROSPA 0133) Călimani sulphur quarry [77]

Located in the Northern side of Eastern Carpathians (Bistrita – Nasaud, Harghita, Mures and Suceava counties), with 64,000 acres, its landscape is characterised by the volcanic plateau dominated by the Calimani caldera.

The Calimani Mountains are an immense and natural frontier between the two former provinces of Moldavia and Transylvania. A mountain with volcanic origins, Calimani is the biggest crater (without activity) in Europe, measuring about 10km in diameter. The highest peak is Pietrosul Calimani (2103), but there are also other formations of more than 2000m height, like Retitis, Calimani Izvor, Calimani Cerbuc [78].

Calimani National Park is the territory of several endangered species, such as bear (*Ursus arctos*), elk (*Cervus elaphus*), wild boar (*Sus scrofa*), roe deer (*Capreolus capreolus*), wolf (*Canis lupus*), tree marten (*Martes martes*) and lynx (*Lynx lynx*). The cedar forest and juniper area on the western slope of the Calimani Mountain is home to black grouse (*Tetrao tetrix*), which is a very rare species in Romania. In terms of flora, the Calimani National Park hosts 774 species of plant, many of them marked as rare including alpine leek (*Allium victorialis*), narcissus anemone (*Anemone narcissifolia*), and mountains soldanella (Soldanella Montana). Within the juniper forests or on soils of volcanic nature, the rose bay (*Rhododendron myrtifolium*) is also frequently encountered [79].

[77] Constantin, I.H. (2016). "Călimani sulphur quarry". IMPEL Project. (Not posted, but sent if requested to the email crsuceava@gnm.ro)

[78] http://www.calimani.ro/index.php?lang=en&p=home_en (access in 26.10.2016)

[79] http://romaniatourism.com/national-parks.html#CalimaniNationalPark(consulted in 26.10.2016)

The landscape of Călimani sulfur mining exploitation area in the Calimani National Park [80]

The mining of sulphur is responsible for the destruction of wildlife and vegetation in the northern part of Călimani Mountains, and central to the protected Călimani National Park. Exploration activities began only in 1969, and the mine was closed by government decision in 1997. The sulphur exploitation from the Călimani Mountains is an ecological problem in Romania. An intensive mining activity have led to the physical destruction of a mountain (Negoiul Românesc), 300 hectares of highly damaged land, heavily polluted water and soil and a threat for the health of exploitation workers and local population of the region.

Within waste dumps, degraded soils are often very unstable and become sources of pollution, the direct effects are related to the loss of forest or grazing land, while the indirect effects include air, soil and water pollution (Rojanschi et al., 1997, in Gorea et al., 2014). Studies have demonstrated that the pollution potential in the Călimani Mountains former mining area is extremely high, even after a period of more than 15 years since the mine closed. Thus, the main objective should be to reduce acid mine drainage generation, which has severe impact on the quality of surface and groundwater, and thus on the whole environment. Post mining activity, the forest vegetation has been affected, both a direct impact through vegetation removal, and also an indirect one, materialised by the devastating effects on the forest situated near the slopes of the waste dumps, because of highly acidic waters, which wash the dumps. The water

80 Andrei Vrabie, http://www.panoramio.com/photo/78647575 (accessed in 26.10.2016)
Forum geografic. Studii și cercetări de geografie și protecția mediului Volume XIII, Issue 2 (December 2014), pp. 212-218 http://dx.doi.org/10.5775/fg.2067-4635.2014.166.d Quality assessment indicators of surface waters and soils in the vicinity of the former sulfur mine in the Călimani Mountains
https://www.researchgate.net/figure/274254549_fig1_Fig-1-Map-of-the-former-Calimani-sulfur-mining-exploitation-area-and-its-vicinity-2)

from Neagra Şarului stream, is characterised by a strong acidic pH (2-4), high mineral total load (high conductivity), increased turbidity, hardness, and high content of sulphates, sulphites, iron and heavy metals. The soil quality has also undergone significant changes in the mining area, it is acidic, has the presence of numerous chemical impurities and also lacks vegetation in the proximity of the mine. There is also evidence of acidic rain due to the high content of sulphur of the tailing storage, which after photochemical reactions it is oxidised into sulphur dioxide, and subsequently into sulphuric acid aerosols.

The ecological rehabilitation of the land has been inconsistent over a number of years. It is possible to see

a) some environmental works within mining premises (for example quarry tank filling with material resulting from reshaping dumps, gabion dams to protect the perimeter access road, construction of a tower to drain and drainage of rainwater from the tank outside dump deposits, a metal railing protection for the quarry vat),

b) works on damaged ponds (for example gabion dam protection at the base of the pond, sowing works on the pond platform, concrete channels for directing storm water pond outside contour damage pond), the Dumitrelu pond (concrete diaphragm based filtering pond seepage from the pond, building (rakes antifloating)

c) on the main and secondary valley of Dumitrelu creek and on the right side torrent of the pond, desilting works upstream of the overflow of waters and rehabilitation of exhaust tower, sowing works on the pond platform,

d) re-profiling works landfill dump reshaping to increase stability of dump deposit, sowing and planting works on the platform dump and partially on its slope,

e) works for directing rainwater (for example guard ditches on berms and concrete canals to collect rainwater and direct them out of the dump deposit), and

f) building demolition, land preparation works with ecological material amendment resulting from demolition, topsoil and manure, sowing and planting works.

6.3.6 (b) Natural Park of Serra da Enciña da Lastra, Spain ES1130009 Special Conservation Area and Special Protection Area of "Serra da Enciña da Lastra, Cooperation between the Permitting Authorities (Environmental and Mining Authorities) and the Mining Company([81])

The Natural Park of Serra da Enciña da Lastra, declared in 2002, is located in the province of Ourense, Galicia (Spain). This natural park has an Environmental Management Plan (18 March 2002) with only one quarry to extract of aggregates for the building sector – it is currently still operating, and has been authorised since 1987. The targeted habitats and species identified for consideration were: 10 habitat types of Habitats Directive (two priority habitats), 451 vascular catalogued plants (9% Iberian endemics of flora), 194 species of vertebrates and 4 Iberian endemics of invertebrates. The main species in this protected area are birds of prey (*Aquila chrysaetos, Neophron percnopterus, Bubo bubo, Falco peregrinus, Circus pygargus,* among others), and more than ten different species of bats.

The exploitation of this quarry has caused problems for nature conservation due to the existence of a small zone within the quarry that has high nature conservation value and hence this area has been zoned as 'reservation area'; it was necessary to avoid the exploitation of this area, despite the existing mining authorisation primarily due to its high conservation value. Given that the permit was originally granted in 1995, the conditions applicable to the permit were also now obsolete with respect to the environmental management plan for the natural park and as such it was necessary to update the mining restoration plan.

For this purpose, a technical working group was formed to update the mining rehabilitation plan according to the environmental management plan of this nature conservation site and the legal requirements of the mining legislation. The group consisted of representatives of the mining company and of the mining and environment authorities.

The main objective was to avoid the mining exploitation inside the natural reservation area, increasing the exploitation over the existing mineral benches and, with the final objective to determine the best future land use of this site and its restoration. Consequently, the mining company will be able to exploit similar quantities of mineral according to the mining authorisation, avoiding a sensitive area of nature conservation and taking into account the future quarry restoration.

[81] Vazquez Quintela, J.A. (2016). "REHABILITATION FOCUSING ON HABITATS RESTORATION_ A PRACTICAL CASE ABOUT COOPERATION BETWEEN COMPETENT AUTHORITIES AND MINING COMPANY". IMPEL Project. (*pers comm*)

An alternative to the rehabilitation of the area was the consideration of habitat recreation. Under this alternative, the following objectives could be obtained:

- improving the conservation status of the habitats and species for which this Natura 2000 site was designed
- the restoring of the functional connectivity for these habitats and species within the site and between this site and other Natura 2000 sites
- a specific habitat recreation for birds of prey (nesting areas) (this area hosts the highest number of nesting species of birds of prey in Galicia, many of them are listed in annex I of the Birds Directive (*Aquila chrysaetos, Neophon percnopterus, Circus cyaneus, Circus pygargus, Falco peregrinus, Bubo bubo, Hieraaetus pennatus, Circaetus gallicus*)

Simultaneously, the operators should be opening holes and gaps of various sizes on the pit wall. These gaps should be covered with fertile land, reseeding and revegetation using native species according surrounding area. And finally, fencing the area avoiding human transit, safety risks and wildlife disturbance.

6.3.6 (c) Cava di Monte Noroni

Environmental rehabilitation to ensuring variety of uses, with the enhancement of native species, biodiversity monitoring plan, enhancement of habitats and establishment of an inter-municipal park [82]

This case study is an example of environmental rehabilitation aimed at ensuring the variety of uses, with the enhancement of native species, biodiversity monitoring plan, the enhancement of habitats and the establishment of an inter-municipal park.

The restoration has focused on integration of viticulture with more natural management of the territory and its possible tourist use. The prevailing naturalistic and ecological destination has been harmonised with the restoration of traditional farming and the public use of the area controlled by the establishment of an inter-municipal park.

82 Carpino, C. (2016). "Sustainable management and recovery of mining areas". IMPEL Project. (Not posted, informations to the email carpino.claudia@minambiente.it)
http://www.aitecweb.com/Sostenibilit%C3%A0/Attivit%C3%A0Estrattiva/CasidiStudio.aspx

Various measures to increase the genetic diversity have been implemented. This has been done in order to enhance the typical hilly environment native species.

Today, the site hosts 54 species of nesting birds, including the *Lullula arborea* and *Pernis apivorus*, 8 species of mammals, 6 of reptiles and 6 of amphibians, including the *Bombina variegate*.

Definitively, the results of the investigation led to the identification of 26 potential topographical habitats.

Aspects of quarry rehabilitation.

6.3.7 Nature heritage revealed

Usually the discovery of scientifically important elements (archaeological, paleontological, mineralogical or a karst cavity of unusual interest), during the exploitation results in the alteration of the quarry plan, or even the closure of the quarry.

6.3.7 (a) "Algar do Pena" Cave

Serras d'Aire and Candeeiros Natural Park [83]

83 MERGULHÃO,L.M. (2016). "Chapter 7. SOME NEEI PRACTICES AND THEIR RELATIONS WITH THE PROVISIONS OF ARTICLE 6.3 AND 6.4" IMPEL Project. (Not posted, informations to the email pnsac@icnf.pt)
WWW.ICNF.PT

Aspects of the “Algar do Pena Cave”, in PNSAC.

Discovered in 1985 by Mr. Joaquim Pena (also the name of the cave), following the dismantling of a limestone layer during the exploitation of a small limestone quarry, the “Algar do Pena” is a cave with the largest underground room known in Portugal with a volume of about 125,000 m^3 that extends over 86 m long and 30m wide. Given its biophysical characteristics and geographic location, the first underground interpretation center in Portugal was built here. After 3 years of studies it was inaugurated on June 5, 1997.

The “Algar do Pena” presents an unusual profusion of concretions (stalagmites, stalactites, etc.). It is home to life forms that depend entirely on the cavity during its entire cycle of existence (troglobes) of which stands out the *Trechus gamae* that is a new species of coleopteran (beetle) discovered in 2007.

Mr. Joaquim Pena worked for a time, in the Underground Interpretation Center, helping to explain some of the wonders of this underground world.

6.3.7(b) “Pedreira (quary) of Galinha” Natural Monument

Serras d’Aire and Candeeiros Natural Park [74]

Aspects of the “Natural Monument Serras d’Aire”, in PNSAC.

During the exploration of a quarry for industrial use, hundreds of very important ichnites of sauropods with around 168 millions of years (Ma) old were found. Studies have shown that this deposit is one of the most important on world record, with more than 1500 footprints on at least 20 tracks, two of which are the longest in the world (147m and 142m). The importance of this finding is associated with a very good state of conservation, despite its exceptional antiquity, being the oldest deposit in the Iberian Peninsula and probably in Europe. The Portuguese government, due to its international scientific importance, ordered the closure of the quarry, and the activity was subjected to a financial compensation process. This geosite was classified as Natural Monument in 1996. Currently this is a very important place to the environmental education and paleontological divulgation.

6.3.7(c) Ichnites of dinosaurs in "Vale de Meios" quarry, Serras d'Aire and Candeeiros Natural Park [74]

In "Vale de Meios" there was a quarry of "calçada portuguesa" (cubes of limestone used in Portugal especially in the paving of sidewalks) with an area of about 7500 m^2. During the exploitation, hundreds of dinosaur footprints were identified in a lithological layer in about 10 m deep.

According to the Portuguese law, if any paleontological, mineralogical or karstic cavity of unusual interest is discovered during the exploitation of the quarry, this information must be reported to the permitting and scientific competent authorities. Thus, after scientific studies by the competent authorities, it was decided to continue exploitation, with modification of the respective plan.

It was possible for some years to bring together the exploitation of limestone with the study and safeguard of this paleontological heritage, through the alteration of the exploitation plan. The conciliation of the exploration with the paleontological investigation had the main intention to expose more ichnites of dinosaur for study.

Aspects of the “Ichnites of dinosaur in Vale de Meios”, in PNSAC.

Currently it is possible to identify thousands of tridactyls impressions (about 3750), some on hundreds of tracks (about 460) with different dimensions, most of them parallel, in a preferred direction NW-SE, left by large and small theropodous dinosaurs, on a flat, horizontal, flooded and muddy ground, possibly near the shores of a coastal lagoon, there are about 170 Ma. The operators decided to stop the exploitation and the initial plan for the rehabilitation of the site was changed. Interventions have already been carried out by PNSAC with the support of a portuguese industrial association, and the place is visited by a large public, both national and foreign. The scientific studies continue.

6.3.7 (d) Ichnites and fossils of echinoderms in "Cabeço da Ladeira" quarry, Serras d'Aire and Candeeiros Natural Park [74]

The "Cabeço da Ladeira" echinoderm fossil deposit is located in the Natural Park of the Serras de Aire e Candeeiros. Three of the contiguous sedimentary layers, dating from the Upper Jurassic and exposed by a stone slab exploration, revealed several fossilised remains of echinoderms (sea stars, crinoids and sea urchins), including different parts of the endoskeleton of these animals, in addition to numerous external molds.

This paleontological heritage has been known since 2003, and a series of contacts have been initiated between permitting authorities, the municipality, scientific experts and the exploitation company, in the purpose of monitoring and safeguarding of this paleontological remains. In 2010, the Management Plan for the Natural Park of the Serra de Aires and Candeeiros (PO PNSAC) confirms the relevance of this site, placing it on the list of "Geosites" (places of geological importance), and commits the ICNF to the development of the actions considered necessary to safeguard the values in presence.

With the purpose of ending the exploration, the rehabilitation plan of the quarry was modified by the nature conservation authorities, placing the heap materials to create a limit to the paleontological deposit and leaving exposed the exploitation areas.

The ICNF as responsible for the conservation of the paleontological heritage began in a close dialogue with the above-mentioned entities to implement the conservation and valorization strategy.

Aspects of the Ichnites and fossils of echinoderms in “Cabeço da Ladeira”, in PNSAC.

6.3.7 (d) En Cava Lustrelle, Example of recovery with the creation of a fossil park with scientific and educational purpose in a former clay pit [84]

The park, which covers about 12 ha, was built in the late 1990s in a former clay quarry abandoned in the late 1970s. During recovery, 8000 trees were planted along the gentle slope. In the quarry various geological strata with high fossiliferous content and marine origin were exposed. The routes were plotted for the visitors, with the intention of transforming the area

84 Carpino, C. (2016). “Sustainable management and recovery of mining areas”. IMPEL Project. (Not posted, informations to the email carpino.claudia@minambiente.it) http://www.japigia.com/parcodeifossili/

into a tourist - scientific park. The seventeenth-century farmhouse found at the site has been recreated in the Malacological Museum of Clay.

Aspects of the quarry rehabilitation.

7. The derogation tests for NEEI activities

Article 6(4) of Directive 92/43/EEC (Habitats Directive) states: *"If, in spite of a negative assessment of the implications for the site and in absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence or Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted".*

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest".

The European Commission has published a guidance "*Managing Natura 2000 Sites. The provisions of Article 6 of the "Habitats" Directive 92/43/EEC"*[85] which provides clarification about the concepts of alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence and the opinion of the EC.

The provisions of Article 6(4) are not just restricted to plans and projects which exclusively occur within a Natura 2000 site; they also target developments situated outside the site boundary but are likely to have a significant effect upon it (for example, a discharge of wastewater from a mining activity can affect a downstream wetland or an emission of aerial pollutants can be transported through the atmosphere).

Any impact assessment should be based on the best available data and a rigorous survey field work have to be necessary to supplement existing data. The lack of scientific knowledge and information about a potential risk or significance of impacts cannot be a reason to proceed with the plan or project.

Consultation with nature conservation bodies to assess whether the plan is likely to affect the integrity or any Natura 2000 site should start as early as possible in the planning or permitting process. Public consultation (NGOs, Stakeholders) can also help provide further detail even

[85] Available at http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm.

though the Habitats and Birds Directives do not indicate the appropriateness of obtaining the opinion of the general public. Such consultation should be considered in light of the provisions of Directive 85/337/EEC and the Aarhus Convention *(Convention on Access to Information,Public Participation in Decision making and Access to Justice in Environment Matters).*

There is no legal possibility to short cut the AA. The AA is the right assessment step for reducing impacts (mitigation measures, quantifying unavoidable impacts that may need compensation, if the provisions of Art 6(4) are fulfilled.

Article 6(4) is only applicable under strict conditions. The provisions of Article 6(4) apply where the outcome of the assessment under Article 6(3) are negative or uncertain. A sequential order of steps must be followed, and these are shown in Figure 7.1:

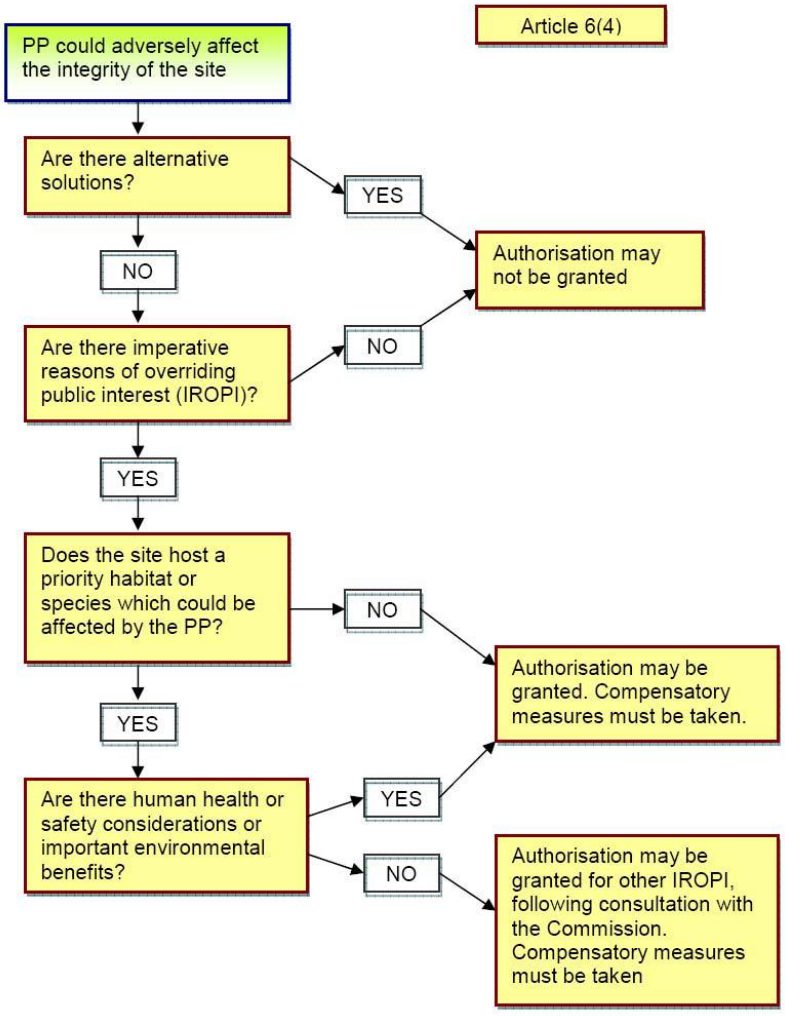


Figure 7.1: Flow chart of the article 6(4) (habitats directive) conditions (EC, 2010). EC Guidance on undertaking new non-energy extractive activities in accordance with Natura 2000 requirements.

7.1 Examining alternative solutions.

Alternative solutions are different ways of achieving the objectives of a plan or project that they could involve alternative locations, alternative mineral processes, different designs of development, alternative time scales, different methods of construction (roads, power lines, dump), alternative solutions for biodiversity impacts, different types of waste management and/or different ways of achieving the objectives of a plan or project.

7.1.1. Identifying alternative solutions

The first step is to identify a range of alternative ways of achieving the objectives of a plan or project and alternative solutions which better respect the integrity of the site (site´s conservation objectives, and specially on the species and/or habitats types for which the site was designated Natura 2000).

A number of aspects of the NEEI process should be well understood to identify alternative solutions for the activity. Such an understanding will allow the operator to make feasible suggestions as to alternative methods which may be utilised in order to reduce environmental impacts. Such aspects include a sound knowledge of the mineral resources in question, location, accessibility and quality or other deposits within the area, scale or design of the activity, range of available equipment to undertake the activity, alternative methods of extraction, waste management and decommissioning as well as a consideration of alternative mineral types. The 'do-nothing' or zero alternative should also be included as part of the consideration of alternatives because even though this may not meet the requirement to fulfil the objectives of the proposal, it does allow for the establishment of a baseline from which to measure other alternatives.

Where it is expected to be necessary, applicants should consider alternative solutions and their environmental impacts at the earliest stages of development in the planning/permitting process. National or regional competent authorities must only assess alternative solutions, once the appropriate assessment stage has concluded, and that it cannot be ascertained that the plan or project will not have adverse effects on the integrity of the site concerned or any other Natura 2000 site that might be affected.

7.1.2. Assessing alternative solutions

For each alternative solution considered, the applicant should provide detail on the nature of the alternative, how it was taken into consideration and the relative impacts (or relative changes from the proposal) on impacts to the Natura 2000 site.

The assessment should be made by taking into account the site´s conservation objectives, with a minimum content as shown in Annex VII and must be made with consideration of an alternative solutions matrix (see tables 1-4 in Annex VII).

The recommendations set out in box 1 below are extracted from *Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission),* and provide a sound basis for consideration of alternative solutions within a plan or project.

Alongside these recommendations, a rigorous field work survey is imperative for to verify whether the alternative proposed is a good choice *in situ* for the project or plan also.

Box 1. Recommendations about how to assess alternative solutions

- *Consult relevant agencies and other bodies.*
- *Make use of the information gathered to complete the screening and appropriate assessment*
- *Identify and characterise the key objectives of the project or plan.*
- *Identify all alternative means of meeting the objectives of the project or plan.*
- *Provide as much information as possible,acknowledge gaps in information, and provide sources of information.*

- *Assess each alternative against the same criteria used in the appropriate assessment to assess the impact of the proposed project or plan on the conservation objectives of the site.*
- *Apply the precautionary principle to the assessment of all alternatives.*

7.1.3. Conclusions

The alternative solutions assessment has to follow a systematic procedure and a final written report of outcomes of the evaluation has to be produced. Table 1 of Annex VII provides information about the minimum considerations and contents of the study of alternative solutions for a plan or project.

7.2. Examining imperative reasons of overriding public interest (IROPI).

In the absence of alternative solutions (or solutions having even more negative environmental effects on the site concerned), the second stage of assessment by the competent authorities is to examine the existence of imperative reasons of overriding public interest (IROPI).

IROPI is a requirement set out in Article 6(4) which, in limited circumstances, allows a plan or project to go ahead even after an appropriate or environmental impact assessment has failed to ascertain that the integrity of Natura 2000 site will not be adversely affected.

IROPI most often refers to situations where plans or projects envisaged prove to be indispensable within scenarios such as:

- actions or policies aiming to protect fundamental values for the citizens´ life (health, safety, environment)
- fundamental policies for the state and/or society
- activities of economic or social nature, fulfilling specific obligations of public service (services in transport, energy, communication networks)

The conditions of IROPI are also somewhat stricter with plans or projects likely to adversely affect the integrity of a Natura 2000 site that hosts qualifying priority habitats and/or species. In these cases, plans or projects can be only justified if the imperative reasons of overriding public interest concern:

- human health and public safety
- overriding beneficial consequences for the environment
- for other imperative reasons if, before granting approval to the plan or project, the Commission has been consulted and has given a favourable opinion.

With respect to economic nature of mining activities, only those minerals included in the Communication on the Raw materials Initiative (COM (2008) 699 final, SEC(2008) 2741) can be taken into account.

The balance of interests between the conservation objectives of the site affected by those initiatives and the imperative reasons of overriding public interest must weigh in favour of the latter.

The public service obligations are characterised for the respect of some essential principles of operation such as continuity, equal access, universality and transparency but can vary from one Member State to the other, according to different situations, such as geographical or technical constraints, political and administrative organisation, history and traditions.

7.3. Adopting compensatory measures.

Compensatory measures is a requirement set out in Article 6(4) of the Habitats Directive where damage to a European site has been justified in the absence of alternative solutions and for imperative reasons of overriding public interest (IROPI). Such measures are used only when the decision has been taken to proceed with a plan or project that could have an adverse effect on the integrity of the Natura 2000 site because no alternatives exist and the project has been judged to be of overriding public interest.

EC guidance *"Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC"* makes the following distinction between 'mitigation measures' and 'compensatory measures':

- Mitigation measures aim to minimise or even cancel adverse effects on the site. They have to be taken into account in the AA persuant to Artcle 6(3).
- Compensatory measures are intended to compensate for the effects on habitats and/or species affected negatively by the plan or project

Well-implemented mitigation measures prior to the appropriate assessment and prior to subsequent application of the derogation tests may limit the extent of the necessary compensatory measures. Thorough mitigation reduces the damaging effects which require compensation in the first place. It is considered good practice to take compensatory measures as close as possible to the affected area in order to maximise chances of protecting the overall coherence of the Natura 2000 network, however there are cases where areas deemed favourable for compensation have been situated at considerable distance from the existing Natura 2000 site which may be adversely affected.

It is necessary to bear in mind that compensatory measures must be considered as a last resort and should only be adopted when the outcome of the appropriate assessment cannot conclude no adverse effect on the site integrity of the Natura 2000 site, there is an absence of alternative solutions and the proposal has been appropriately justified in terms of the requirements of IROPI.

7.3.1. Requirements of compensatory measures

Compensatory measures proposed for a specific plan or project must fulfil the following criteria:

- offer a specific compensation addressed according to the conservation objectives of the Natura 2000 site concerned
- be focused on the damged habitat types and species for which the site was designated
- ensure the global coherence of Natura 2000 Network
- be directly proportional to the affection degree caused to each habitat type and species of community interest and their conservation status. This proportionality must be qualitative and quantitative
- provide similar ecological functions with those for which the Natura 2000 site was designed
- be implemented before the commencement of NEEI activities to ensure the Natura 2000 site coherence prior to any damage being caused

The effective implementation of compensatory measures should be operational before the plan or project damages the existing Natura 2000 site. If this is not possible, it will occasionally be necessary to adopt additional measures to counteract this temporary damage until the compensatory measures provided become fully operational. This is often done through an environmental management plan which is considered "live" and can be updated frequently to ensure the correct measures are implemented in both the short and long term.

The design and implementation of compensatory measures must take into account the Natura 2000 sites, conservation objectives and remain in line with the Natura 2000 site management plan where one is available.

The data which should be submitted by the applicant when proposing compensatory measures is included at Annex I of this document.

According to existing EC guidance (EC 2007b), compensatory measures under Article 6(4) can consist of one or more of the following:

- Habitat recreation: recreating a habitat on a new or enlarged site, to be incorporated into the Natura 2000 network
- Habitat restoration: improving a habitat on a part of the site or on another Natura 2000 site, proportional to the loss due to the project
- Designation of new sites under the Birds and Habitats Directive (Although this may take considerable time to implement)

Key issues to address in designing compensatory measures include:

- Targeted objectives to address the unavoidable adverse effects and to ensure that the overall coherence of Natura 2000 is protected
- Ensuring the compensation is feasible and effective
- Assessment of technical feasibility
- Extent of compensatory measures
- Location in relation to damage
- Timing in relation to damage
- Long-term implementation
- Monitoring programme with focus on key issues or indicators for the success of the measures

Information on proposed compensatory measures should be submitted to the European Commission before they are implemented, and indeed before the realisation of the plan or project concerned.

8. Permitting of non-energy extractive industries (NEEI)

8.1 Authorising bodies

One of the clear differences documented between countries, and as highlighted as part of this project[86] was the division of workload in terms of determining authorisations. In many member states determination of authorisations for spatial planning and environmental issues are undertaken by a single authority and granted as either one single or two separate authorisations. In England, planning permissions and environmental permits are undertaken by two separate and distinct authorities, whereby planning permissions are granted through the local authority (as part of area/regionally based MPA duties), and environmental permits are granted by the Environment Agency (EA) who are the overarching national competent authority for environmental regulation. In Wales, environmental permits are determined and granted by Natural Resources Wales (NRW), and in Scotland by the Scottish Environmental Protection Agency (SEPA).

In countries where planning permissions and environmental permits are issued by separate authorities, systems of parallel (twin) tracking are often implemented so that appropriate assessments (Habitats Directive) as well as other statutory assessments required as part of the determination are not duplicated. These systems help to reduce duplication of workload and can also help to reduce delays in determination time. In England, this is particularly important where there is currently a drive to reduce environmental permit determination times as far as possible.

The following sections of this chapter focus solely on the process of permitting NEEI activities in terms of their impacts on the environment and implications from the implementation of the Habitats Directive. It does not consider the requirements of the Environmental Impact Assessment (EIA) Directive or Strategic Environmental Assessment (SEA) Directive which are already discussed in existing NEEI guidance[87] and does not consider the impacts of general land use planning law.

[86] IMPEL Project 2016/15: Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive (*Questionnaire response document – information about respondents and their relevant organisations*)

[87] http://ec.europa.eu/environment/nature/natura2000/management/docs/neei_n2000_guidance.pdf

8.2 Obtaining Permissions - what is required?

There are differences in procedures for permitting exploration and mineral extraction across member states primarily due to the structure of authorising public bodies, mineral ownership and the nature of the principal legislation governing mineral extraction. These differences were also evidenced by the responses provided to the project questionnaire[88]. There is however, normally a requirement across all member states, for an operator to obtain more than one authorisation before operations for either exploration or extraction can legally commence. Indeed, authorisation must have been obtained for all aspects of the process (mineral rights, land use planning and environmental permitting) before the activity can legally commence. Typically, in England, an operator would need both planning permission and an environmental permit before operations could begin, but as noted earlier in this document, the status of land ownership in England means that a mineral rights permit is often not required.

As far as state owned minerals are concerned, an exploration permit or equivalent is required in all Member States[89], however a similar consistency of approach is not always the case for landowner minerals. The requirement for an exploration permit in landowner cases is not required in all member states, and in countries where this is required, there are often caveats to this requirement (for example deposits of non-hazardous waste generated from mineral prospecting in England[90]).

The process of applying for an exploration permit, is in principle, the same as applying for a permit to extract. Even though the potential impacts and mitigation measures for exploration activities may be slightly different from those raised as part of an extraction application, the principle of undertaking an appropriate assessment to determine the possibility of adverse effect still applies. A list of potential impacts and appropriate mitigation for exploration activities is listed in Table 5.1 of this document. Exploration activities are not covered any further in this chapter, suffice to note that the process of authorisation application is similar to that described below for extraction authorisation.

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88 IMPEL Project 2016/15: Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive (*Questionnaire response document – information about respondents and their relevant organisations*)

89 IMPEL Project 2016/15: Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive (*Questionnaire response document – questions 9 & 10*)

90 Environmental permitting Guidance: The Mining Waste Directive (2010) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69323/pb13636-ep2010miningwaste.pdf

8.3 Application for mineral extraction

8.3.1 Gathering information

In all member states, there are a variety of organisations that will provide relevant reference data for an application; however it is ultimately the responsibility of the operator to gather and assess all of the relevant information required for the authorising body to determine the application. Examples of such bodies include the geological survey body for the country or equivalent (British Geological Survey[91]) which is responsible for making general information on geology and mineral resources available[92], existing area mineral plans (MPA), statutory nature conservation bodies (Natural England[93]) providing information on locations and conservation status of Natura 2000 sites and species as well as nationally designated conservation sites, and organisations that can provide information on local conservation sites (Local Records Centres (LRC)[94]). In some cases, information may be charged for, and it is the responsibility of the operator to cover this cost (for example English LRCs will charge for their data).

In Germany data about habitats and species should not be older than 5 years at the date of issue of the permit. If data provided by nature conservation authorities are not detailed and up to date enough, the applicant has to carry out detailed baseline inventories of habitats and species in the sections of the Natura-2000 site which may be subject to direct or indirect impacts. The extend of the investigation area, the targeted issues and methods of the baseline studies are set up after having consulted the authorising institutions.

Authorising bodies may also provide supporting information to operators when making applications; e.g. through the German online system "Appropriate Assessment Information System" [called FFH-VP-Info (see section 4.3.1) – delivering a general knowledge base] or the nature conservation and heritage screening service [95] and risk assessment tools[96] in England.

8.3.2 Submitting an application

In many countries (for example Albania, Croatia, Portugal, Italy, Spain and England)[97] standard application forms have been developed which assist the applicant by clearly identifying what

91 http://www.bgs.ac.uk/

92 https://www.bgs.ac.uk/mineralsuk/exploration/guide.html

93 https://www.gov.uk/government/organisations/natural-england

94 http://www.alerc.org.uk/

95 https://www.gov.uk/government/publications/environmental-permit-nature-and-heritage-conservation-screening

96 https://www.gov.uk/government/collections/risk-assessments-for-specific-activities-environmental-permits

97 IMPEL Project 2016/15: Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive (*Questionnaire response document – question 11, 12 & 13*)

information is required in an application. In some instances, this can also include providing information on how data should be interpreted/assessed (air quality modelling[98]).

As noted earlier in this chapter, it is likely that an NEEI activity will need to obtain more than one permit before operations can commence. Typically in England, an operator would need both planning permission and an environmental permit before operations could begin and these authorisations are granted by two separate authorities. In such cases, where a number of authorisations require input from several public bodies, significant time savings and reduced duplication of work can be gained by carrying out the authorisation processes in parallel (twin tracking). Considerable differences between member states still exist on the extent of which this integration of determination processes has taken place. Well integrated systems however, have shown significant advantages in streamlining.

Where parallel determination occurs, there must be clear guidelines as to the quality required in the application – both in terms of minimum information content and level of expertise employed to write the application and undertake any necessary assessments. In many member states, a minimum level of expertise is expected where specific specialist assessments are required; for example qualified ecologists to undertake species surveys and write environmental statements or specific software validation to undertake modelling for air quality or surface and groundwater quality detailed modelling[99]. Such guidelines for application quality may also cover aspects such as application formatting (for example providing evidence in clearly documented tables or graphs where appropriate) and supporting evidence (for example requesting isopleths as part of air quality modelling assessments, inclusion of maps covering specific areas of land when submitted with environmental surveys/statements or appropriate references to research where proposals may be novel or complex).

As well as determining and authorising specific permissions, bodies determining applications in parallel are in some instances, required to act as statutory consultees for permissions granted by each other (for example English local authorities act as statutory consultees for environmental permit determinations made by the EA). In these cases, clear guidelines on the requirements for an application are particularly important as it allows consultees to have confidence that the information being used by the determining authority to make the determination is robust and well evidenced.

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98 https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit

99 IMPEL Project 2016/15: Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive (*Questionnaire response document – question 12*)

In countries where standard application forms have been developed, applicants are often provided with checklists to help inform the application, for example in England, some of these checklists are provided as part of pre-application screening services[100] to ensure the application is as good as it can be when submitted to the permitting authority, thus reducing delays by the need to request further information. An EU example can be found in *Annex VI. Check-list for to review (Environment Authority) the quality about the study of environmental impacts presented by the project propose*.

In Romania, the required documents for an environmental permit are listed in Annex 1 of the Order Nr.1798 / 2007. The documents will include references such as notices to the forest guard (in instances where deforestation occurs), financial guarantee (Chapter 8.3.4 below), proof of fee payment, proof of land ownership or lease, environmental restoration plan and initial outcome or decision of the appropriate assessment. In Croatia for mineral extraction it is needed to undergo a concession tender procedure (Ministry of Economy) for which procedure you are required an executive location permit from the competent body (Ministry of spatial planning and construction), a proven mining project and proof of land property or possession for concessional time period.

There are also a number of differences to the process of undertaking a Habitats Directive assessment across member states. Many countries (for example Spain and Portugal) expect the applicant to undertake the appropriate assessment themselves and submit the outcome to the competent authority for agreement; whilst in others (for example England), the information required to support an assessment is submitted with the application, and the competent authority undertakes the appropriate assessment. In either case, it is the competent authority who are responsible for making the final decision in terms of adverse effect on site integrity. There is a case (for example Croatia) that appropriate assessment is integrated in environmental impact assessment (Ministry for Environmental Protection and Energy) which is required for extraction and undertaken prior to location permit.

8.3.3 Mitigation proposals

Regardless of who undertakes the appropriate assessment, where a conclusion of no adverse effect cannot be reached the applicant must provide mitigation proposals to eliminate or reduce

[100] https://www.gov.uk/government/publications/environmental-permit-nature-and-heritage-conservation-screening

as far as possible, the impacts of the application on the Natura 2000 site. A table outlining the main risks to Natura 2000 sites from NEEI activities can be found in Chapter 5. (Table 5.1 – 5.4) of this document. There are a large number of potential options for mitigation, the use of which will depend on the type of impact expected. For example, mitigation for disturbance to nesting birds could be as simple as optimising operational activities to reduce light, noise and vibration at key times; to more complex requirements for air and water emissions such as dust suppression technology or water filtration and monitoring prior to discharge. A list of potential impacts and associated mitigation measures for NEEI activities on nature and wildlife can be found in Chapter 5. (Table 5.5 – 5.6) of this document.

Quite often, the proposed mitigation measures will be written into the permit ahead of authorising. Mitigation proposals will be written into the permit as conditions, which can be required prior to commencement of operations (pre-operational conditions) or during the operational lifetime of the permit (improvement conditions). Conditions relating to biodiversity are often flexible (or 'live') in their approach, as the plans and subsequent actions may change depending on how an environment reacts and progresses in terms of habitats and species 'bedding in' to changes implemented by the mitigation.

It should be noted that mitigation measures are not the same as compensation measures which are discussed in Chapter 7.3 of this document. Mitigation measures are those measures which are able to reduce or eliminate the impacts raised by an activity at a Natura 2000 site. Compensation measures are by definition, measures which are employed when mitigation measures cannot resolve residual adverse effects on site integrity. Mitigation will normally involve measures such as changes to design, timing and techniques to reduce or minimise impacts from within a site boundary, whereas compensation measures typically involve habitat recreation beyond the site boundary to offset unavoidable losses within the site boundary[101]. Where the granting of an authorisation involves compensation measures as part of the Habitats Directive assessment, the compensation is expected to be in place before the activity begins operating. In the case of mitigation however, measures can be implemented before, during or after the operational lifetime of the activity. A waste management plan with provisions for avoidance of spillages of oil to soil and water bodies is an example for mitigation measures to be implemented before, during or after(e.g. with dismantling of installations during the closure phase) the activity.

[101] http://www.cieem.net/mitigation-compensation-and-enhancement

8.3.4 Financial provision

Financial provision is the process by which a permit holder ensures adequate financial security is in place to discharge the obligations of their permit for as long as the activity poses a hazard to the environment. This includes ensuring that funds are sufficient (in monetary terms), secure (for the duration of the permit) and available as and when required. In most countries, financial provision is written into domestic legislation and is required for:

- An application for an authorisation
- An application to vary an authorisation where additions (or reduced) obligations result
- An application to transfer an authorisation
- An authorisation review where financial provision calculations and assumptions may change.

These provisions are likely to include funds to cover aspects such as environmental monitoring, surface water management, security (such as gates and fencing), and monies to cover unforeseen events such as environmental incidents. This list is not exhaustive and financial provision can be made for a variety of different aspects depending upon the nature of the activity. In most countries financial provision must be in place before an authorisation can be granted and will cover the periods of operation, closure, post closure, aftercare and final surrender of the permit.

Financial provision in Spain

In Spain, the Regional Law of Galicia 3/2008 of 23th May 2008 on the Planning of Mining Activities in Galicia (Spain) dedicates an article (32) to financial guarantees. Financial guarantees can be provided by cash deposits, bank guarantees or '*Titles of public emissions'*. Article 32 establishes that the owner of any mining rights should provide sufficient guarantee within one month of the mining rights being notified.

The total amount of guarantee required will be the sum of the following:

Static amount – a fulfilment of the financial obligations and the viability of the mining operation

Variable amount – depending on the fulfilment of the Environmental Restoration Plan. The variable amount is calculated using the actual cost of the restoration process, the annual area

size affected by the exploration or exploitation activity, proposed implementation programme timescales and current / future land use proposals

The owner of the mining rights should also obtain civil liability insurance

8.3.5 Determination

Once all relevant and appropriate documentation has been submitted to the competent authority, the process of making a determination of the application can begin. This routinely will include a consideration of the information provided as part of the application in terms of its proposed design, operation, management and location (in cases where planning usage is determined at the same time as environmental issues) and impacts to surrounding sensitive receptors. As noted earlier in this chapter, the assessment of impacts may be done by the applicant and reviewed by the competent authority (Spain, Portugal) or supporting information submitted to allow the competent authority to make the assessment (England). In England, determination is preceded by a step known as 'duly making', which is the point at which a determining officer decides whether the application can be accepted as 'complete' and contains all of the information required to begin determination. This is not however, a step towards assessing the sufficiency of the information supplied with the application, but simply a quick check to ensure that all of the relevant documents have been submitted[102].

The assessment of different parts of the application can be complex and take a considerable amount of time, especially if other authorities or departments need to be consulted and provide specialist advice (for example, for appropriate assessments – in England this would be Natural England, and in Spain, the General Directorates of Nature Conservation, Forests and Cultural Heritage, and in some cases the Commission). Some member states will have set target times within which an application should be determined unless there are extenuating circumstances (for example in England, permits should take no longer than 13 weeks to determine to ensure it remains in line with the recommendations of the Penfold review[103], in Romania an environmental permit must be issued within 45 days provided all relevant documents have been supplied). There are many informational parts to an authorisation application covering a host of different aspects such as location and land usage, financial provision, operating techniques, management and control of emissions, site closure and not least long term port-operational aftercare and restoration. It is at this point in the application determination that a Habitats

[102] EA operational instruction 203_08

[103] https://www.gov.uk/government/publications/penfold-review-of-non-planning-consents-for-development-government-reponse

Directive assessment would be undertaken (England) or reviewed (Spain, Portugal) by the competent authority. The process of undertaking an appropriate assessment is documented in the existing NEEI guidance[104] and further in this supporting document, and is therefore not repeated here.

All Member States require a permit or equivalent for mineral extraction[105]. Depending upon site specific circumstances, a permit will be drafted on the basis of information submitted in the application. In some cases to make the drafting process quicker and more consistent, some countries will have an authorisation template which will cover general conditions, to which specific conditions can then be added to so that it ensures site specific protection. This is routinely the case for applications submitted for environmental permits in England (see tables 8.1.1 and 8.1.2 below). The permit usually contains a number of general and site specific conditions that have to be met by the permit holder. Specific conditions will normally cover technical aspects of mineral extraction, general health and safety requirements, environmental and land use planning matters, and restoration. Depending on site specific circumstances, the various authorities involved in the authorisation process can impose (or in the case of statutory consultees recommend) specific conditions be added to the authorisation(s).

8.3.6 Examples

8.3.6.1 (a) England – Example of permit templates

England uses a permit template consisting of generic conditions which can then be added to for site specific circumstances. Wherever possible 'objective-based' conditions are used, which are then supported by guidance. Objective-based conditions specify what the operator needs to achieve, but not specifying how to achieve it. If permits contain prescriptive conditions that specify the processes and equipment to be used, they start to define how the operator should run their business, instead of concentrating on the environmental results that the EA want to achieve. Furthermore, where prescriptive conditions are used, an operator must apply for a variation if they wish to use alternative processes and this may limit options for cost benefit analysis as technology moves ever forward (for example if alternative equipment has better environmental performance or cheaper operational costs).

104 http://ec.europa.eu/environment/nature/natura2000/management/docs/neei_n2000_guidance.pdf

105 IMPEL Project 2016/15: Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive (*Questionnaire response document – question 8, 9 & 10*)

The generic permit template adopts a hierarchy of generic, regulated facility-specific and activity-specific conditions. The starting point for all bespoke permits is the generic conditions. Other conditions from the regulated facility-specific or activity-specific annexes are added as appropriate to ensure that the permit provides the appropriate standards of environmental protection. The generic conditions allow the EA to deal with common regulatory issues in a consistent way and help the regulator to be consistent across the different regulated sectors. The hierarchy then focuses on conditions encompassing specific regulated facility types (for example non-landfill installations) and finally on sector or activity specific conditions (for example the ultraviolet disinfection of water discharges). Bespoke conditions may be necessary for novel facility types or activities, or to address site-specific regulatory issues. They will be decided as part of the application assessment and do not appear in the generic permit template. To ensure consistency, the use of bespoke conditions would be subject to internal agreement to ensure that legal requirements are met and Government policy is implemented ahead of adding them to a permit[106].

An example of generic, regulated facility specific and activity specific conditions are shown in Tables 8.1.1 and 8.1.2 below.

Table 8.1.1 – English permit condition examples

Generic condition	
General management (all activities)	The operator shall manage and operate the activities: in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances [closure] and those drawn to the attention of the operator as a result of complaints; and using sufficient competent persons and resources. Records demonstrating compliance with condition 1.1.1 shall be maintained. Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where

106 EA operational instruction 233_08 SD98

	those duties are carried out.
Regulated facility specific condition	
Noise and vibration (any non-landfill installation)	Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration. The operator shall: if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration; implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.
Activity specific condition	
Operating techniques (Mining waste operations)	1. (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule A, table B (*Table 9.1.2) unless otherwise agreed in writing by the Environment Agency. (b) If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation ("plan") specified in schedule A, table B (*Table 9.1.2) or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan , and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency. 2. The operator shall review the waste management plan every five years from the date of initial approval.

Table 8.1.2 – Associated operating techniques table example

Schedule A, Table B: Operating techniques		
Description	Parts	Date Received
Waste Management Plan	All Parts	01 January 2000
Environmental Development and Management Plan as approved under pre-operational condition POx and updates to it approved under improvement condition ICx	All Parts	As received and approved under pre-operational condition POx with subsequent updates approved under improvement condition ICx
Ecological Risk Assessments	All Parts	01 January 2000
Ecological Habitat and Species Mitigation and Enhancement; Restoration and Compensation Plans (ddmmyy)	All Parts	01 January 2000

As noted earlier in this chapter, mitigation proposals may also be written into an authorisation. In England, this can be done either as a pre-operational condition (prior to commencement of operations) or as an improvement condition (to be undertaken during the operational lifetime of the permit). Conditions relating to biodiversity are often flexible (or 'live') in their approach, to accommodate the 'bedding in' of habitats and species changes implemented by the mitigation. An example of a flexible pre-operational and improvement conditions are shown in Table 8.2 below.

Table 8.2 - English pre-operational and improvement condition examples

Table 8.2 Pre-operational and improvement conditions	
Reference	Pre-operational measures
Pre-operational condition (POx)	Prior to the commencement of tipping waste materials within the mining waste facility, an Environmental Development and Management Plan shall be submitted to the Environment Agency for approval in writing. The plan shall include, but not be limited to: Measures to minimise the environmental impact on protected and priority habitats and species from the permitted activities including, monitoring, mitigation and compensation and enhancement measures. Success criteria and targets, against which the effectiveness of the conservation measures can be judged. In the event that previously unidentified protected or priority species are identified during the course of the permit lifetime, the plan shall be updated to include details of the proposed monitoring, mitigation, compensation and enhancement measures for these species. Where the implementation of mitigation or compensation prior to the destruction of existing habitat is essential for the protection of protected or priority habitats and species, the operator must provide detail of how, where, and over what timescales this will be achieved, as well as demonstrating the suitability of replacement habitat prior to existing habitat destruction. Details of stripping, storage, spreading and aftercare methods for existing onsite soils for the purposes of maintaining existing natural habitats. The establishment of 'Biodiversity Protection Zones' across the permit area to protect retained and created habitat features during construction

Table 8.2 Pre-operational and improvement conditions	
Reference	Pre-operational measures
	including (but not limited to) implementation of the British Standard 5837 (Trees in relation to construction) across the whole of the permitted area. A detailed final restoration plan to be included 12 months before the start of any final restoration phase
Improvement condition (ICx)	Within 6 months of permit issue and thereafter annually to coincide with the Annual Restoration Land and Water Management and Landscape Review, an updated Environmental Development and Management Plan taking account of monitoring results to date and the phased nature of the permitted activities shall be submitted to the Environment Agency for approval.

The example conditions described above are then supplemented with specific emission limits and monitoring to ensure the permit remains protective for the environment. Examples of emission limits and monitoring conditions for point sources to water and ambient air (Mining waste operations) are shown in Tables 8.3 and 8.4 below. The English permit also provides recommended frequencies, start dates and reporting forms for reporting the results of monitoring – examples of reporting requirements are detailed in Tables 8.5 and 8.6 below. Further discussion of monitoring conditions can be found in Chapter 9 of this document.

Tables 8.3 and 8.4 - English emission limits and monitoring condition examples

Table 8.3 - Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	Parameter	Source	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method

Table 8.3 - Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	Parameter	Source	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
W1 (On Plan AB1234)	Suspended Solids	Settlement lagoon	50 mg/l	Spot Sample	Monthly	ISBN: AB1234
W2 (On Plan AB1234)	pH	Settlement lagoon	>5 and <9 pH units	Instantaneous	Continuous	ISO XY5678
W3 (On plan AB1234)	BOD	Surface water	20mg/l	Spot sample	Monthly	Ref: XYZ123 (Blue Book)

Table 8.4 Ambient air monitoring requirements				
Location or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
A1 (On plan AB1234)	Particulate matter	Continuous	BS 1747	Use directional dust deposit gauge. Contents of deposit gauge to be measured weekly

Tables 8.5 and 8.6 - English reporting condition examples

Table 8.5 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to water Parameters as required by condition 1.2.3	W1	Every 6 months	1 January, 1 July
Ambient air monitoring Parameters as required by condition 1.2.4	DM1	Every 6 months	1 January, 1 July
Surface water monitoring Parameters as required by condition 1.2.5	SWMP 1 and SWMP2	Every 3 months	1 January, 1 April, 1 July, 1 October

Table 8.6 Reporting forms		
Media/parameter	Reporting format	Date of form
Air	Form air 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Water	Form water 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY

Once the permit is drafted, and prior to granting final approval (or refusal) for the permit, a permitting officer will discuss the final permit conditions with the individual (usually an Environment Officer) who will be responsible for inspecting the activity throughout the operational lifetime of the permit to make a final check that the conditions are enforceable and achievable. After this has been agreed the permit is approved (or refused).

8.3.6.2 Germany

Table 8.7 provides an overview of the legal system for permitting the exploration and extraction of raw materials in Germany. Depending on the ownership of the material it is divided into three groups (freely mineable resources, freehold mineral resources and landowner mineral resources) and two permit regimes (procedure under the German Federal Mining Act and systems of the federal states for near surface resources). The Federal Mining Act regulates the exploration, extraction and treatment of freely mineable and freehold mineral resources, including loading, transporting, unloading, storing and depositing resources, by-products and other materials, to the extent that these activities are directly related to operations of exploration, extraction or treatment.

Freehold resources are the property of the owner of the 'real' property, whereas freely mineable resources are not the property of the landowner. Ownership in a piece of land does not extend to freely mineable resources. Freely mineable resources are of main importance for the economy of the country, such as coal, hydrocarbons, industrial minerals and precious ores.

According to the Federal Mining Act an exploration license is required for exploring freely mineable resources, and an extraction license or mining proprietorship for extraction. Only the owner of these licenses has the right to carry out the activities of exploration and extraction in a specific field. Apart from these licenses the companies need the approval of the competent authority for the operating plan before they can start their activity.

Generally, licenses according to the mining act are not required for extraction of freehold resources, but regardless to the kind of resource the Federal Mining Act applies to underground mining activities. For freehold resources the approval of the operating plan is required too and the operator has to prove that he has access to the specific field through notarial sales contract or lease contract.

The licenses according to the Federal Mining Act include permits, licenses or consents necessary acc. to other legislation (e.g. Building Act (excavation incl. mineral resources), Federal and State Water Management Act, Federal Immission Control Act, Federal or State Nature Conservation Act). If licenses according to the Federal Mining Act are not required, the mining company has to apply for a permit(s) according to these other regulations. The procedure for extraction of stone and earth material is described in the next section.

The operator has to notify the competent authority of construction and commencement of exploration, extraction and treatment operations in due time, at latest two weeks prior to commencement of the intended activities. Attached to the notification the operator has to

submit an extraction plan that includes all significant information on the planned extraction, in particular:

- a description of the resources to be extracted
- a map drawn to a suitable scale with an extract indication of the field in which resources are to be extracted
- information regarding the planned work program, facilities both underground and on the surface and the schedule
- information for restoring usability of the surface during extraction and related preventive measures for the period after termination of operations

Additionally, conditions concerning the safety of the operation, work safety and preventive measures concerning negative impacts have to be fulfilled for the approval.

Table 8.7 - Raw materials / mineral resources in German legislation

Legal system concerning raw materials in Germany			
	Mineral resources		
Types of mineral resources in German legislation	Freely mineable resources (under Federal Mining Act)	Freehold mineral resources (under Federal Mining Act)	Landowner mineral resources (not under Federal Mining Act)
Mineral resources – technical classification	Fuel mineral resources, industrial minerals, metal ores	Industrial minerals, stone and earth	Stone and earth
Power of disposition for the resources	"free"; this means they are not the property of the landowner, for their exploitation an authorization/consent of the competent mining authority is necessary	These mineral resources are the property of the owner of the real property; the landowner has the right of exploitation	
Kind of permit/ consent/license	Mining licenses acc. to Federal Mining Act, part II		Regulated in other legislation; e.g. Building Act (excavation incl. mineral resources), Federal and State Water Management Act, Federal Immission Control Act, Federal or State Nature Conservation Act

Legal system concerning raw materials in Germany			
	Mineral resources		
Kind of mineral resource	Fuel mineral resources: coal, hydrocarbons, geothermal energy; Industrial minerals: calcium fluoride, graphite, lithium, phosphorous, different types of salts, sulfur, barium sulfate, strontium, zirconium; Metal ores: e.g. iron, copper, zinc ores; On top: all resources in the area of the continental shelf and the area of coastal waters (e.g. gravel, natural stones)	Industrial minerals: bentonite and other montmorillonite-rich clays, feldspar, mica, china clay, diatomite, pegmatite sand, quartz and quartzite (if suitable for manufac-turing incombustible products or ferrosilicon), roof slate, soapstone, talc, Stone and earth: basaltic lava (with exception of columnar basalt), roof slate, trass; On top: all other not freely mineable raw materials explored or extracted underground (e.g. gypsum, natural stones, etc.)	Stone and earth (open-cast mining): anhydrite, gypsum, limestone, columnar basalt, and other natural stones, gravel and sand, quartz and quartzite (if not suitable for manufac-turing incombustible products or ferrosilicon) and other raw materials, On top: peat

Financial matters

The Federal Mining Act regulates that the holder of an exploration license for commercial purposes shall pay an annual filed royalty to the Land (federal state) in which the exploration takes place (5 € per square kilometre for the first year and 5 – 25 € for each subsequent year). On top of this the holder of an extraction license shall pay an annual royalty for the freely mineable resources extracted from the extraction license field.

The Federal Mining Act regulates in which cases and under which conditions mining companies have to pay compensation to the landowner. The exploration license holder shall pay compensation to the real property owner and other beneficial owners for any economic loss caused by exploratory operations and not compensated by restoration of the previous state. The real property owner and other beneficial owners may request security for securing their claims. If private people feel disadvantaged they can go to civil court and the lawsuit often ends with a court settlement and/or compensation. The reasons are many fold, e.g. house owners

right of residence, threatening of livelihood due to a longer way for the fire brigade to the estate etc.).

Permitting of mining activities in Schleswig-Holstein

Schleswig-Holstein is a federal state poor in raw materials. There is an offshore oil platform in the Wadden Sea, several small oil resources on land and several small gas resources. The main NEEI activities in Schleswig-Holstein refer to the supply of the construction industry with gravel and sand, clay and chalk.

This section will concentrate on the extraction of sand and gravel. In Schleswig-Holstein gravel and sand resources are mainly near surface resources. They are landowner mineral resources (see column 4 of Table 8.7) and are not regulated under the Federal Mining Act. The extraction processes are interventions in nature and landscape. They produce changes affecting the shape or areas and the landscape, changes in the groundwater level associated with the active soil layer which may significantly impair the performance and functioning of the natural balance or landscape appearance. The Federal Nature Conservation Act requires a permit / regulating approval or notification for interventions.

Additional details concerning the permit procedure for the extraction of surface near resources are laid down in the Nature Conservation Act of Land Schleswig-Holstein. If the affected field is larger than 1 000 m^2 or the amount of extraction exceeds 30 m^3 the permit under the Nature Conservation Regime is required. The permit includes all other decisions needed for the activity. For that purpose the permit authority shall seek opinion of all the other authorities that are affected by the project. Under certain conditions a permit acc. to the Water Management Act may be required, e.g. if a permanent water surface will be created or if groundwater will be affected. In these cases the plan approval or plan consent will replace the permit under the Nature Conservation Act.

NEEI activities and Natura 2000 in Schleswig-Holstein

Extraction activities of projects with licenses, quarries, sand and gravel pits already existing before notification of the Natura 2000 sites to the Commission fall under grandfather clause. As extraction projects generally get permits for sections problems might occur in case of existing extraction rights (from before notification) but not yet started extraction activities. After 2004 [107] no new extraction licenses have been issued in Natura 2000 sites. For sites protected under

[107] Date of the submission of the German federal list of proposed SAC to the Commission

national law (landscape conservation areas or nature protected areas) the existing extraction rights play an important role in the weighing process. For Natura 2000 sites this is not the case. The appropriate assessment procedure according to Article 6 (3) has to be carried out regardless of other public or private interests.

Examples of permit conditions concerning landscape / nature protection and protection of European species

In the licence according to the German Mineral Act for an expansion area of a gravel sand pit in Mecklenburg-Vorpommern a number of conditions concerning landscape / nature protection and protection of European species are integrated. For example:

a) General conditions

1. In the area of the protected site "XY" the extraction of raw materials is allowed on the plot 43, subplot 1, on 9 ha in total, namely with restrictions regarding space and time in three steps according to the application (date …. 2015) and mining plan that formed the basis for the Appropriate Assessment (date … 2016). Details have to be regulated in the main operating plan.

2. Extraction on the neighbouring site (plot 42, subplot 1) is prohibited. The recently created renaturation area has to be further developed for the continuous establishment of the basophile nutrient-poor grassland. The project has to be scientifically supervised and assessed. Details have to be developed together with the experts of the mining authority and the nature conservation authority. Records and contracts have to be submitted to the mining authority.

b) Conditions concerning nature and landscape protection

3. The extraction boundaries taken into consideration in the Appropriate Assessment have to be strictly respected.

4. The extraction boundary has to be marked in an effective and permanent manner. Extraction vehicles have to use the trails on the current extraction site. It is prohibited to drive on the other areas of the protected site "XY".

5. The removal of vegetation (plants and wood) and other uncovering measures have to be carried out in the period of vegetation rest between beginning of October and end of February.

6. Between the eastern extraction border in the protected site and the parallel river bank a buffer zone of 10 m has to be established.

7. The compensation and substitution measures have to be carried out in the way they are described in the application.

8. The rehabilitation of the extracted area has to be carried out according to the submitted rehabilitation concept (date) and under the following conditions.

9. The rehabilitation measures have to be carried out immediately after the extraction of the quarry field.

10. For immediate rehabilitation the landscaping measures have to be carried out simultaneously to the extraction phase and to the final works on the areas indicated in the application, but at latest one planting period after the beginning.

11. The individual measures necessary for the rehabilitation and detailed plans including the creation of structural elements and woods have to be described in the main operating plan that has to be submitted to the mining authority for approval. A target-actual comparison has to be part of it.

12. The diaspore potential of the area of the protected site has to be preserved and to be reused on the post-mine area. On top of that groups of bushes/shrubbery of the species *Rosa canina, Prunus spinosa, Crataegus monogyna* produced from local plants have to be planted on the area. Maintenance of the plants has to be carried out until a stable plant culture is achieved. The use of external soil (soil from other sites) for the purpose of rehabilitation is prohibited for open cast mining sites.

13. Completion of compensation, substitution and rehabilitation measures have to be notified immediately to the mining authority. After completion of the individual measure an official joint approval by the mining and nature conservation authorities has to be carried out.

14. After notification a joint site visit with the operator and representatives of the mining and nature conservation authority has to be carried out for the control of the measures. The result has to be documented. The following details: general information on company, site and activities, description of the measures with details, proof of implementation of the measures and assessment of the quantitative implementation (complete, modified, not carried out) with photo documentation, assessment of

qualitative implementation (without shortcomings, with minor shortcomings, not sufficient, further need for action, follow-up inspection).

15. For compensation, substitution and rehabilitation measures best available techniques have to be applied.

16. Compensation and substitution measures have to be legally ensured by a contract or by encumbrance (§ 15 Abs. 4 Federal Nature Conservation Act).

17. The operator has to ensure an ecological supervision of the extraction. The ecological supervision ensures the regular control of the nature conservation conditions on site including the implementation of protection, compensation and substitution measures. A qualified expert and a substitute have to be notified at the mining and the nature conservation authority by 2 weeks before the start of the extraction activities. The ecological supervision has to be carried out until the successful completion of the protection, compensation, substitution and rehabilitation measures.

18. The ecological supervisor has to produce a report about the correct implementation of the measures. The report has to be submitted to the mining authority and to the nature conservation authority by three month after the completion of the measure.

19. The ecological supervisor has to document unforeseen impacts on nature and landscape and to submit it to the mining authority for assessment.

c) Conditions concerning the protection of species

20. The provisions concerning extraction periods for the establishment or the expansion of the extraction field have to be respected (removal or uncovering measures in potential habitats not in the period of territory establishment and / or breeding periods of birds as well as outside the hibernation of amphibians and reptiles).

21. For the foreseeable loss of the breeding place of the red-backed shrike the following measure has to be carried out: Before extraction of the second and third extraction field in the area of plot 43, subplot 1, an appropriate breeding area has to be established on the neighbouring area (but outside the impact zone of the extraction project), which is in a functional relation /connection with the former breeding area (CEF measure – continuous ecological functionality measure). The implementation certification for the measure has to be submitted to the mining and nature conservation authority before the start of extraction on the individual extraction field.

22. Before starting the extraction the sand lizards (*Lacerta agilis*) have to be collected with utmost care and resettled on the renaturation area (plot 42, subplot 1) (CEF measure). Alongside the extraction border with the plot 42, subplot 1 an appropriate protective fence has to be installed. It has to be maintained till the end of the extraction. The resettlement has to be carried out before egg-laying in March/April and additionally after the hatching of young animals end of August / beginning of September.

23. The respective CEF measure has to be implemented and be effective before the intervention. Related to the effectivity of the CEF measure a monitoring plan for securing evidence has to be submitted in the frame of the approval procedure for the main operating plan. According to the approval it has to be implemented.

24. As part of the ecological supervision plot 43, subplot 1 and the access roads have to be controlled concerning migration of amphibians. This includes the assurance and control of measures for conflict avoidance and minimisation, documentation of unforeseen hazards and monitoring. Eventually appropriate guidance systems have to be installed and functionally maintained during the migration period (March till end of April).

25. In the main operation plan temporal extraction limitations have to be implemented after careful weighing of the protection needs and the breeding activities of the individual species and their occurrence. The ecological supervision has to ensure the compliance with the restrictions.

26. If necessary, operational access roads and drive ways have to be moistened or swept for the avoidance of dust generation.

27. Mining activities on the extraction area plot 43, subplot 1 are prohibited during the night period from 22:00 till 6:00 o'clock as well as on Sundays and public holidays.

28. In the dark light sources with low UV-radiation have to be applied.

29. For ensuring the conservation status (FCS measure - favourable conservation status measure) of the sand lizard (Lacerta agilis) the operator has to implement the rehabilitation measures on the extraction fields upon cessation on the particular subarea as described in the application. Details of the design of areas including the integration of structural elements have to be documented in the main operating plan.

30. The FCS measures have to be implemented immediately after the final works on the surface of an area. Concerning the effectivity a monitoring plan for securing evidence

has to be submitted in the frame of the approval procedure for the main operating plan. According to the approval it has to be implemented.

The grounding (justification) part of the license provides further information about the conditions and why they were integrated.

8.3.6.3 Croatia

All mineral resources in Republic of Croatia are state owned and mineral extraction is regulated under the provision of Mining Act (56/13, 14/14). Under this Act the following mineral resources are considered:

(1) energy minerals: carbohydrates and fossil fuels
(2) minerals for industrial processing
(3) minerals for construction
(4) ornamental stone
(5) metal minerals

The majority of mining in Croatia is exploration of mineral for construction and ornamental stone. For mineral extraction a concession tender procedure is required that can be initiated by the responsible authority or interested party. To be eligible for concession procedure an applicant must have to hold an executive location permit from the competent body (Ministry of spatial planning and construction), a proven mining project and proof of land property or possession for concessional time period. Furthermore, it has to obtain from the authority responsible for mining, a decision on the exploitation field which is a part of concession procedure and primarily based on the result of exploration decision on qualities and quantities of mineral.

An applicant has to hold a location permit but before obtaining one mineral extraction (intervention) is subjected to environmental impact assessment.

Concerning Natura2000 through a preliminary assessment, any intervention is considered and assessed whether it is possible to reduce or avoid negative impact on the ecological network Natura 2000. If it is possible, the intervention (project) is forwarded to the regular permit issuance procedure. If it is not possible, a main assessment (appropriate assessment) is given in which the possible negative impacts are reviewed in detail, alternative solutions are sought to

achieve the goals of the intervention, and measures to mitigate impacts. If the intervention is still unacceptable, it is possible to determine the overruling public interest with public participation if one exists, and to execute the intervention with compensation. That means compensating the "sacrificed" area with a replacement area, either natural or artificial, to take over its role in the Natura 2000 network.[108]

If during preliminary assessment, it is found that negative impact on Natura2000 is not possible to exclude, then the application will be subjected to appropriate assessment integrated with an environmental impact assessment, and the decision will be issued with proscribed measures and monitoring before, during and upon closure of extraction site.

An environmental impact assessment is initiated by the applicant through submitting the study - made by a person authorised by the competent ministry – with his application. The content of the study is prescribed by a national regulation and it contains a proposal for assessment, mitigation measures and monitoring. An expert commission appointed by the Ministry decides on the admissibility of the study and issues an official decision. The procedure ends with the official decision.

In the Table 8.8 below there is example of such decision for quarry in the Natura 2000 where it was decided through a preliminary assessment that negative impact from dust on vegetation cannot be excluded and the application subjected to an appropriate assessment integrated in environmental impact assessment. It was also found that there was a negative impact on flora in the local watercourse and to the species of Yellow-bellied toad (*Bombina variegate lat*.) for the loss of habitat, however both of these impacts were excluded because the share of the quarry area in the Natura site in total was negligible.

Table 8.8 – Croatian decision on Environmental impact assessment (Integrated appropriate assessment):

DECISSION
Mineral extraction (aggregates) at the proposed extraction site is acceptable for environment and Natura 2000 if following environmental and mitigation measures for Natura 2000 (A) and environmental monitoring plan (B) applied

[108] -http://www.dzzp.hr/eng/nature-impact-assessment/impact-assessment/about-acceptability-assessments-250.html

A. ENVIRONMETAL PROTECTION AND MINIGATION MEASURES FOR NATURA2000	
A.1. MEASURES IN PREPARATION AND EXTRACTION PHASE	
Biodiversity	
A.1.1.	Invasive flora to be regularly remove from the extraction site
A.1.2.	Vegetation not to be removed in vegetation period from 1st April till 1st September in the preparation phase
A.1.3.	Mechanical equipment to be moved by planned inner transportation roads
A.1.4.	Afforestation in compliance with the landscape project
A.1.5.	Flammable materials to be handle with care to prevent forest fires
Geodiversity	
A.1.6.	In case of valuable geological structure to be reported to nature conservation authority
Water and soil	
A.1.7.	Waste water to be treated and recirculated
A.1.8.	Contaminated precipitation waters to be collected in lagoons and treated before discharged to recipient
A.1.9.	In a 20 m zone from the stream bed not to dispose any raw material or waste material or any other material
A.1.10.	Stability and permeability of the relocated part or stream bed to be secured by hydrological-hydraulically study
A.1.11.	Upstream and down bed stream alignment to be harmonized
A.1.18.	Top soil to be disposed in appropriate place to prevent spreading and erosion of the material
A.1.19.	Disposed soil and humus to be used for rehabilitation and cultivation phase
Air	
A.1.20.	All equipment must be maintained properly

A.1.21.	All emissions must comply to ELV set in regulation
A.1.22.	Roads and mining areas must be sprinkled during the summer
Landscape	
A.1.23.	Landscape study must be a part of the Mining project
A.1.24.	Landscape study must consult expert for mining, biology, geology, forestry and others
A.1.27.	The slopes adjusted for vegetation
A.1.28.	Remediation to be conducted in succession with extraction
Noise	
A.1.29.	Work to be done exclusively from 7:00 a.m. till 7:00 p.m.
A.1.30.	Check technical validity for noise
Waste	
A.1.31.	Separately store produced waste in according with regulation
A.1.32.	Deliver waste to the collector
A.1.33.	Hazardous waste to be stored in containers
Blasting	
A.1.34.	Control seismic effects by limiting the quantity of explosives
A.1.35.	Prevent adverse blasting effect by applying the parameters from mining project
Transportation	
A.1.36.	Clean the truck tires before joining the truck on the road
Natura 2000	
A.1.37.	Sprinkle roads in the mining area in the dry season to reduce the dust emissions
A.1.38.	Regularly maintain the waste water lagoons. At the water level lower that 60 cm clean the lagoon. Lagoons are not to be cleaned from June to September.

A.1.39.	Upon closure of extraction site water stream to be returned to its original state for the fish upstream migration
A.1.40.	All Bombina variegate found it the pond and puddles form May to July ought to be transferred to appropriate habitat in Natura 2000by biologist-herpetologist during the night tri day in a row
A.2. MEASURES FOR ACCIDENT PREVENTION	
A.1.41.	Emergency plan for safety accident prevention and environment accident prevention to be made
A.3. MEASURES UPON CLOSURE OF EXTRACTION SITE	
A.1.42.	Rehabilitation and re-cultivation to be done in accordance with Landscape study in within a year from ending excavation work
B. MONITORING	
Landscape	Remediation and re-cultivation to be checked regularly
Water	2 times a year water from the lagoon to recipient to be analysed for suspended matter and checked if in line with Ordinance on ELV n waste water (Official Gazette No 81/10, 80/13 and 43/14)
Air	Particulate matter checked for Lead, Cadmium, Nickel, Arsenic, mercury, and benzo (a) pyrene
Noise	Noise measurement to be done in the period of 90 days after beginning of works and after any change in technology or equipment. Measurement should be done in accordance with Noise Protection Act.
Reporting	Monitoring report to Croatian Agency for Environment and Nature Protection

The right of excavation is acquired only with the granting of the concession by the authority competent for mining which is Ministry of Economy or regional authorities depending on the type of mineral resource.

Financial obligation

Minimum financial compensation of 600 kn/ha for the exploration area of non-energy minerals for the first year, 800 kn/ha for second year and 1.000 kn/ha for the third year is attributed by Regulation on financial compensation (Official Gazette No 40/2011).

Financial compensation for extraction of non-energy mineral consists of part for occupied extraction area and part for quantities extracted. Minimum financial compensation of 2.000 kn/ha occupied extraction area if the area is less than 20 ha, 2.500 kn/ha if the area is 20 ha to 50 ha and 3.000 kn/ha if the area is more than 50 ha. Minimum compensation for quantities extracted for construction materials is 7,5% market value.

Also during the concession tender procedure financial amount for remediation and warranty for the Amounts need to be submitted.

8.3.7 Appeals

An important aspect of the authorisation process is the appeal procedure. An appeal can be made by the applicant (operator) or by a third party in response to an authorisation outcome – in the main this is a response from an applicant in cases where an authorisation has been refused, however cases of a third party appealing against the granting of an authorisation also occur.

Most Member States provide the right for the applicant to appeal the decision of the authorisation process. In England, this is mainly heard through the Planning Inspectorate who deal with planning appeals, national infrastructure planning applications, examination of local plans and other planning related and specialist (for example permitting) casework. Nearly all English appeals are decided by Planning Inspectors or by appointed persons; in each case they are solely responsible for their decision. A very small percentage may be decided by the Secretary of State – although these tend to be the very large or contentious proposed schemes[109]. In England appeal provisions are explained in the confidentiality arrangements, the transitional arrangements and Schedule 6 of the Environmental Permitting Regulations (the

109 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/544036/Procedural_Guide_Planning_appeals_v8_0.pdf

Regulations). In England, dealing with an appeal is detailed in EA operational instruction 198_08 Environmental Permitting: Appeals[110].

In Spain, appeals are heard on a regional basis as opposed to the national-wide approach on England. In general the authorities hearing appeals in Spain are authorities specific to the activity (e.g. mining authority). For example, in Galicia (Spain), appeals for mining activities would be heard by the Department of Economy, Employment & Industry who sit within Galicia's regional government.

In Croatia, appeals on all decisions made by public institution are heard at Administrative Court and High Administrative Court.

In Germany the applicant or a third party (including NGOs) have the right to file an objection to the authority. After a negative decision of the reviewing authority they can submit the complaint at the administrative court.

8.3.8 Applications to vary an authorisation

Throughout the lifetime of an authorisation, unforeseen factors either within the site boundary (for example identification of new mineral reserves, discovery of fossils (for example Pedreira do Galinha) or unexpected outcome of monitoring condition results) or within the wider environment (for example economic or social changes) may result in an operator needing to vary their authorisation. In England, the variation process follows much the same procedure as that described earlier in this chapter for initial permitting, however the need for specific assessments to be recompleted for the variation application is dependent upon whether there is a changed or increased potential for impacts to sensitive receptors. For example, in England a renewed appropriate assessment would only be required if the impacts from the proposal were likely to increase the risk of impacts to a Natura 2000 site (such as mining activities extending closer to a Natura 2000 site). Where an operator is proposing to reduce levels of activity at the NEEI site, it is unlikely that a renewed appropriate assessment would be required as the expected impacts to the Natura 2000 site are likely to be diminished.

In Spain, a variation to the existing permit would require a completely new authorisation and as such, it would be necessary to renew any existing Environmental Impact Assessment. However,

110 EA operational instruction 198_08 (Environmental permitting: Appeals)

given the existing work which has been undertaken to determine the initial authorisation, the variation process would be somewhat simplified to only include relevant statutory consultees; but the public participation process of advertising the variation would remain in place.

8.3.9 Closure and authorisation surrender

Mine closure is the process of shutting down mining operations on a temporary or permanent basis. Mines have a limited lifetime which is determined by the size and quality of the mineral deposit being extracted, and are closed when the supply of ore runs out or the commodity prices drop, making the mine uneconomical to operate. It will typically take a number of years for an NEEI to become fully closed and the authorisation surrendered. Mine closure activities typically consist of:

- shutdown - ceasing of mining equipment and mineral production
- decommissioning - dismantling, demolishing and disposing of waste materials
- remediation / reclamation - returning the land and watercourses to an acceptable level, stabilising landforms and where possible restoring the area to the same level or better
- post-closure monitoring (long term monitoring programs to assess restoration effectiveness, tailings containment stability, water quality and any ongoing remediation technologies which may require upkeep such as constructed wetlands)

Although these mine closure steps are listed linearly above, the imposition of each stage may happen out of order and remediation can often begin during active operations. It is also unlikely that authorisation surrender can be fully completed and agreed until all four of these stages have been completed – as such, surrender of the permit often does not occur for long periods of time, and until environmental regulators are satisfied that long-term monitoring shows an acceptable and stable return to habitats, land and water quality. In terms of the authorisation, the requirements for shutdown and decommissioning stages are limited, and these stages are considered no further in this chapter.

8.3.10 Restoration / reclamation

Mining and quarrying can disturb land, plants and animals around a site, and closed mines as well as operational mines can cause serious pollution from contaminated water in mine shafts, tailings dams, stockpiles, tips and mounds. Operators are still responsible for managing the impacts of a mine or quarry even after it has closed, and should discuss plans for closing such activities with the environmental regulator as early as possible.

As noted above, although the process of mine restoration generally occurs once mining is completed, the planning of such activities usually occurs prior to a mine being permitted or the start of operations, and as such the mining operations can be tailored throughout its lifetime to provide maximum opportunity for biodiversity optimisation once the operations are completed. Mining reclamation meets a variety of goals ranging from the restoration of productive ecosystems to the creation of industrial and municipal resources, as well as playing an important role in helping to conserve habitats and species. When restored, an NEEEI site can provide excellent opportunities for new and often rare habitats and species.

See chapter 6 for examples of restoration and rehabilitation across Europe.

Of the countries that responded to the project questionnaire,[111] all required some level of mandatory restoration to be undertaken post-operation. The following section details a number of restoration case studies from across different member states for the closure and restoration of NEEI sites. Whilst the case studies focus primarily upon the benefits to Natura 2000 sites, the elements of benefit to other nature conservation designations, and the aspect of working together with surrounding communities are also taken into consideration.

8.3.11 Monitoring

Once restoration of the NEEI site is underway, the authorisation will dictate the type and frequency of monitoring required to ensure the success of the proposed restoration technologies is evidenced. Responses to the project questionnaire[112] indicate that in the vast majority of countries that responded, long and short term monitoring are binding parts of the NEEI authorisation. Chapter 9. of this document details monitoring methods and frequencies further.

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111 IMPEL Project 2016/15: Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive (*Questionnaire response document – question 16*)

112 IMPEL Project 2016/15: Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive (*Questionnaire response document – question 17*)

8.3.12 Authorisation surrender

As noted earlier in this chapter, the surrender of an active authorisation can often take a considerable amount of time to complete when compared to the point of operational closure. This is due to the fact that in order to surrender an authorisation, the environmental regulator must be satisfied that everything possible has been done to ensure that permit conditions have been fulfilled and that the activity area is returned to a stable situation which is in the same (if not better) status ecologically than when the authorisation was granted (see restoration section above). It is unlikely that authorisation surrender can be fully completed and agreed until all four of the stages listed in 8.3.8 above, have been completed and therefore surrender of an authorisation is often not completed until several years after the point of operational closure. Once the stages listed in chapter 8.3.8 have been successfully and satisfactorily completed, the surrender of the authorisation may be granted.

9. Monitoring

Monitoring may be perceived as a tiresome obligation. Monitoring helps improving knowledge and legal safety. Therefore future projects will benefit from a growing body of evidence. Lessons learned from previous experiences should be accessible for common analysis and evaluation. However, this presupposes that a reporting frame and data management for NEEI projects are set up.

9.1 Legal framework of monitoring

Monitoring in Natura 2000 sites are carried out with different objectives. Depending on the legal context different institutions are in charge.

Monitoring of conservation measures according to Art. 6.1 HD

Nature conservation authorities have to establish the necessary conservation measures in order to maintain or, if needed, to improve the conservation status of habitats and species. Management measures may require monitoring. The studies will usually focus on the implementation of measures. They will control if the measures have the intended success or need further adjustment. In this case, monitoring is a management tool. It may be carried out by the nature conservation authorities, by NGO or scientists under contract

Avoiding the deterioration of natural habitats, habitats of species and disturbances of species (Art. 6.2 HD)

According to Art. 6.2. HD the competent authorities have to avoid any significant deterioration of habitats and species covered by conservation objectives. In this case monitoring focusses on **on-going activities** in the site or, if needed, in its vicinity. Monitoring of activities located outside may be required if these activities could have significant negative effects in the site.

Since management according to Art. 6.1. HD is often carried out in order to mitigate negative effects of past or on-going activities, joint monitoring programs may raise the help meeting the targets of Art. 6.1 and Art. 6.2.

Targeted monitoring is intended to relate specific conservation objectives inside or near Natura 2000 sites with specific economic activities such as open cast mining, farming, pipelines and sewers, wind turbine, electric networks, roads and motorways, solar energy parks, etc. in order

to avoid significant impact. Consequently, different economic activities will result in different potential impacts needing to be considered.

Monitoring consists of separate phases, and are related to conservation objectives according to the specificity of such sites as protected areas. Research institutes, environmental agencies, independent researchers, teams evolved in conservation studies and management plans, surveillance for conservation measures fulfillment and NGOs perform routine monitoring inside Natura 2000 sites.

Monitoring and AA under Art. 6.3 HD

The AA has to assess any potential risk related with a proposed plan or project. In compliance with the precautionary principle the permit should not be granted if there are any doubts that the plan or the project could have negative impacts. Therefore it is not acceptable to clear outstanding issues **after** granting a permit.

The European Court of Justice stated in 2017 (C-142/16) that a permit may only be granted when no potential risks remain:

(42)"*In that regard, it should be noted that it is at the date of adoption of the decision authorising implementation of the project that there must be no reasonable scientific doubt remaining as to the absence of adverse effects on the integrity of the site in question (judgment of 26 October 2006, Commission v Portugal, C‑239/04, EU:C:2006:665, paragraph 24 and the case-law cited*)."

(43) "*As regards multi-phase monitoring, such monitoring cannot be considered as sufficient to ensure performance of the obligation laid down in Article 6(3) of the Habitats Directive*."

AA-related monitoring does not address potential risks that might have not been covered adequately before. The monitoring program is designed for surveillance tasks, that means in order to control the implementation of all measures and conditions as stipulated in the permit (e.g. compliance to maximal noise levels). In some member states the competent authorities may expect that the proponent submits an appropriate monitoring scheme as a part of the AA. In other member states, the required surveillance conditions are set up by the competent authority in the approval. Depending on the surveillance task, the monitoring program will be carried by the beneficiary of the permit or by independent parties/institutions.

Monitoring of compensatory measures adopted under Art. 6.4 HD

Compensatory measures are intended to offset the negative effects of the plan or project so that the overall ecological coherence of the Natura 2000 Network is maintained[113]. Compensatory measures usually include specific monitoring and reporting schedules based on progress indicators according to the conservation objectives (European Commission 2012: 15).

In line with the 'polluter pays' principle, the promoter of a project bears the cost of the compensatory measures. In Germany the monitoring program is carried out by the beneficiary of the permit until the success of the measures is established. After a final assessment, the monitoring issues become a part of the on-going monitoring of the site management. When the coherence of Natura 2000 is restored (that means when all the compensatory measures are fully implemented and effective), the responsibility will be transferred to the competent authorities. Usually the proponent stays in charge for about 25 years. For the time after, a financial agreement may be met in case of high specific maintenance costs.

9.2 Monitoring in case of quarries / open cast mining projects

The monitoring related to a certain plan or project, in this case open cast quarries, encompasses distinct phases and to ensure appropriate conservation, must consist of:

1. pre-monitoring / prior monitoring (assessement of natural patrimony before open cast mining commence)
2. monitoring during the exploitation period (preventive monitoring)
3. monitoring of rehabilitation phase (after exploitation closure)

All the monitoring phases are necessary to comply with the conservation objectives and the highest importance must be given to priority habitats and endangered species.

The prior monitoring is set in order to account for the natural patrimony of the Natura 2000 site at a time where there is little or no disturbance within the ecosystem, before any activity is permitted (e.g. a baseline). This monitoring phase should result in a robust inventory of type and state of species diversity and populations abundances, along with the favorable status of

[113] Guidance Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC CLARIFICATION OF THE CONCEPTS OF: ALTERNATIVE SOLUTIONS, IMPERATIVE REASONS OF OVERRIDING PUBLIC INTEREST, COMPENSATORY MEASURES, OVERALL COHERENCE, OPINION OF THE COMMISSION. 2007/2012

habitats at the place where the quarry is proposed. Usually there is information about species and habitats within management plans, scientific papers or at the very least, there are minimum requirements for conservation purposes.

Consequently, the permitting authority must focus on what will be disturbed in and around the mining activity (e.g. nesting places or crossing sites for priority species; and relevant supporting habitats for specific species).

Environmental authorities are expected to finalise the permitting procedure in a favorable time because investors depend on various reasons, other than environmental or nature conservation – such as funding and timing constraints. Often there is a lack of information about specific locations within the Natura 2000 site and so all areas must be covered under the precautionary principle and worst case scenario.

This means therefore, that:

- Permits should not be assigned if the place undergoes a specific, unfinished study in regard to species and habitats or if there is still controversy related to the presence certain species. Operators must be reminded that the absence of evidence of current presence of a species is not sufficient to assume the species no longer resides there.
- Exploitation permits should not be given priority if there is a proposal of rehabilitation or any type of conservative projects.
- Avoid fragmentation by always providing alternative refugia with specific habitats on which other species (for example dragonflies, amphibians or mammals) will depend. Fragmentation and anthropogenic barriers can impede species success rates for moving or feeding or other important places for survival.
- Look to the nearest open cast mining site which can be compared for effects during exploitation phase

Inform the operators and associated managers about the importance of the conservation measures, in many cases they are not aware about species or habitats.

9.3 Monitoring obligations in the permit

Regulatory authorities are often in a position where a permit must be agreed on the basis of permit application timescales but a monitoring plan may not yet be submitted or fully agreed with all parties at the point of time of issuing the permit. In such cases the authority regulates

the outstanding items by integration of tailor-made conditions into the permit. This occurs with monitoring plans too. For example, the licence according to the German Mineral Act for an expansion area of a gravel sand pit in Mecklenburg-Vorpommern contains a number of conditions concerning supervision and monitoring under the headlines landscape / nature protection and protection of species. Examples of such conditions are as follows:

a) General conditions

1. In the area of the protected site "XY" the extraction of raw materials is allowed on the plot 43, subplot 1, on 9 ha in total, namely with restrictions regarding space and time in three steps according to the application (date …. 2015) and mining plan that formed the basis for the Appropriate Assessment (date … 2016). Details have to be regulated in the main operating plan.

2. Extraction on the neighbouring site (plot 42, subplot 1) is prohibited. The recently created renaturation area has to be further developed for the continuous establishment of the basophile nutrient-poor grassland. The project has to be scientifically supervised and assessed. Details have to be developed together with the experts of the mining authority and the nature conservation authority. Records and contracts have to be submitted to the mining authority.

b) Conditions concerning nature and landscape protection

1. Completion of compensation, substitution and rehabilitation measures have to be notified immediately to the mining authority. After completion of the individual measure an official joint approval by the mining and nature conservation authorities has to be carried out.

2. After notification a joint site visit with the operator and representatives of the mining and nature conservation authority has to be carried out for the control of the measures. The result has to be documented. The following details: general information on company, site and activities, description of the measures with details, proof of implementation of the measures and assessment of the quantitative implementation (complete, modified, not carried out) with photo documentation, assessment of qualitative implementation (without shortcomings, with minor shortcomings, not sufficient, further need for action, follow-up inspection).

3. The operator has to ensure an ecological supervision of the extraction. The ecological supervision ensures the regular control of the nature conservation conditions on site

including the implementation of protection, compensation and substitution measures. A qualified expert and a substitute have to be notified at the mining and the nature conservation authority by 2 weeks before the start of the extraction activities. The ecological supervision has to be carried out until the successful completion of the protection, compensation, substitution and rehabilitation measures.

4. The ecological supervisor has to produce a report about the correct implementation of the measures. The report has to be submitted to the mining authority and to the nature conservation authority by three month after the completion of the measure.

5. The ecological supervisor has to document unforeseen impacts on nature and landscape and to submit it to the mining authority for assessment.

c) Conditions concerning the protection of species

1. The respective CEF measure has to be implemented and be effective before the intervention. Related to the effectivity of the CEF measure a monitoring plan for securing evidence has to be submitted in the frame of the approval procedure for the main operating plan. According to the approval it has to be implemented.

2. As part of the ecological supervision plot 43, subplot 1 and the access roads have to be controlled concerning migration of amphibians. This includes the assurance and control of measures for conflict avoidance and minimisation, documentation of unforeseen hazards and monitoring. Eventually appropriate guidance systems have to be installed and functionally maintained during the migration period (March till end of April).

3. In the main operation plan temporal extraction limitations have to be implemented after careful weighing of the protection needs and the breeding activities of the individual species and their occurrence. The ecological supervision has to ensure the compliance with the restrictions.

4. The FCS measures have to be implemented immediately after the final works on the surface of an area. Concerning the effectivity a monitoring plan for securing evidence has to be submitted in the frame of the approval procedure for the main operating plan. According to the approval it has to be implemented.

The grounding (justification) part of the license provides in depth information about the conditions and why they were integrated.

9.4 Indicators as corner stone for monitoring

The core steps of a monitoring process are (Dörte Segebart "Partizipatives Monitoring als Instrument zur Umsetzung von Good Local Governance – Eine Aktionsforschung im östlichen Amazonien/Brasilien"):

a) Identification of the issues that need monitoring based on identified possible impacts

b) Design of a monitoring system with:

- Identification of criteria and indicators
- Determination of methods and procedures to be applied
- Identification of the areas for observation

c) Collection of data

d) Data storage and documentation

e) Analysis and interpretation of data

f) Interpretation and assessment of results

g) Follow-up measures according to monitoring results.

Indicators make development in extraction sites qualitatively and quantitatively measurable, rateable and controllable with regard to habitats and species and thus to biodiversity. A stakeholder project identified biodiversity indicators specially adapted for operating extraction sites and their after-use within the framework of a long-term research and development. Fifty six biodiversity indicators were generated in this project. It is up to the individual company to adjust them to its own need.

The design of the monitoring system is complex and site specific. There is not one solution for all extractive sites. For example, a company chose 10 of these indicators. Three of these indicators deal with the issue of habitats in extraction sites, one with "habitats" in general, one with "after-use" and one with "wanderbiotopes". The diversity of species is recorded by seven indicators. Four of them belong to the sub-category "numbers of species" and three to the sub-category "ecologically significant species".

The company indicators for the representation of successful reconstruction measures and for measuring of biodiversity:

indicator	Computation
Set of indicators "habitats"	
Sub-category habitats	
habitats	Number of habitats per extraction site / area of the extraction site (ha)
Sub-category "after-use"	
After-use	Area of the extraction site with after-use conservation (ha) / area of the extraction site (ha) – area of the extraction site with after-use cultivated landscape (ha) / area of the extraction site (ha)
Sub-category wanderbiotopes	
wanderbiotopes	Area of the wanderbiotopes in an extraction site (ha) area of the extraction site
Set of indicators "number of species"	
Sub-category "number of species"	
Number of species plants A	Number of plant species in the extraction site / area of the extraction site (ha)
Number of species plants B	Number of plant species in the extraction site / Number of plant species in the surroundings
Number of species animals A	Number of selected animal groups in the extraction site / area of the extraction site (ha)
Number of species animals B	Number of selected animal groups in the extraction site / Number of selected animal groups in the surroundings
Subcategory ecologically significant species	
Endangered species A	Number of species in a given taxocoenosis based list of species / total number of species on the same given taxocoenosis based list of species
Endangered species B	Number of endangered species in an extraction site / number of endangered species in the surroundings
Species of the Species Action Plans	Occurrence and / or number of individuals of the species of the Species Action Plans

10. Inspection

10.1 Introduction

NEEI projects are long term and very complex, with a potential for a significant impact on biodiversity in contact zones and the wider surrounding area. The inspection activities in Natura 2000 sites is legally binding, posing a legal obligation on competent authorities to perform such inspections. To ensure compliance with permit conditions, particularly in regard to regulation around protected areas, the inspectors should be given basic recommendations or instructions for undertaking the task.

EU legislation has no prescribed methods for inspection, most methodology tends to be created through the experience of practitioners seeking to develop best practices. The complexity of NEEI permits are such that inspectors should be given time to read and consider the issues raised in the appropriate assessment, and to appreciate the differences highlighted at each stage of the assessment (for example pre-screening, likely significant effect and/or compensatory measures). This may help the inspector better prepare for the actual inspection.

The role of inspectors in regulation is very important, providing confirmation and assurance that the conditions within the permit are being translated on the ground, and ensuring the legal requirements as set out in the permit are met. The results of the inspection provides information to competent authorities which may be fed back into live mitigation and monitoring plans to ensure appropriate protection to the environment in the longer operational term. For this reason it is recommended that the inspector applies compliance monitoring[114] as set out in the IMPEL Guidance on CMS Supervision (CMS – Compliance Management System).

Compliance monitoring within environmental protection is one of the main ways by which adherence with mitigation measures and legal obligations amongst other requirements can be assessed. It should involve both the inspection and subsequent reporting activities, carried out to determine overall compliance (for example fulfillment of the mitigation measures for species and habitats according monitoring plan proscribed in permit.)

[114] http://impel.eu/wp-content/uploads/2015/03/FR-2014-16-2013-15-CMS-Supervision-Guidance-Document.pdf

To carry out site inspections at such complex and long-term projects as the exploitation of mineral resources, it is necessary to highlight the importance of developing recommendations for the inspectors and to establish 'minimum criteria' which must be met.

10.2 The legal base for inspection procedure at Natura 2000 sites

The legal framework for conducting inspections as well as the role of inspectors, can be found in EU legislation such as the Habitats Directive, Birds Directive and Environmental Impact Assessment Directive. It should be noted that none of those directives prescribe the manner of inspection but leave this to competent authorities at national levels to detail. Neither the Habitats Directive nor Birds Directive contain detailed inspection provisions. However, surveillance is provided for in Article 11 of Habitats Directive. The potential impacts resulting from different activities may take the form of deterioration or fragmentation of habitats, disturbance or displacement of sensitive species, loss of rare or endangered species, changes in species composition, along with loss of all the socio-economic benefits they entail (for example wetlands can provide ecosystem services such as reduced flood risks and wetland destruction may involve a loss of these services).

Provisions deriving from EU nature protection law which is relevant for undertaking inspections include:

- compliance with management requirements for Natura 2000 sites in accordance with respective management plans and designation acts
- compliance with the obligation of non-deterioration of sites under Art. 6(2) of 92/43
- compliance of projects with assessment provisions set out in Art. 6(3)-(4) of 92/43 (screening decisions, quality of assessments, alternatives) and related permits delivered (conditions attached thereto concerning implementation of mitigation/compensation measures or monitoring requirements)

For the implementation of Natura 2000 - in practice through the implementation of the AA - for certain NEEI projects, it is important to emphasize that besides the control measures and conditions coming from AA, directives also impose certain prohibitions that imply the necessity of control through inspection (e.g. compliance with Art. 6(2)).
When preparing and carrying out an inspection it is reasonable to assume that an inspector should follow the procedures arising from Recommendation 2001/331/EC, which provides for

minimum criteria for environmental inspections in the Member States (RMCEI)[115], and procedures arising from other projects and activities of the European Commission and the IMPEL Step-by-step guidance book for planning of environmental inspection[116] / [117]. The legal bases for inspection also arise from, and are supported by the Directive 2008/99/EC of the European Parliament and the Council of 19 November 2008 on the protection of the environment through criminal law.

10.3 Inspection cycle

Prior to undertaking inspection activities, an inspector should be aware of the Natura 2000 site(s) which may be impacted, their relevance under the Habitats and Birds Directives and why they have been included within the appropriate assessment. The RMCEI document and IMPEL DRT inspection cycle notes that there should be consideration of three main stages: preparation (planning), inspection (execution) and reporting (see figure 10.1). The IMPEL inspection cycle for supervision of NEEI sites differs in two of the main phases in that planning and execution should be undertaken with monitoring. Having in mind long term and complexity of NEEI project, this phase in preparation the inspection can improve performing inspection control and get better results. The first 'planning' phase differs in four steps:

- Describing the context
- Setting priorities
- Defining objectives and strategies
- Planning and review

The second 'execution' phase differs in three steps, and where necessary, the inspection cycle may be restarted based upon the findings of phase two to ensure the appropriate level of control of NEEI activities:

[115] The RMCEI contains non-binding criteria for the planning, carrying out, following up and reporting on environmental inspections. Its objective is to strengthen compliance with EU environment law and to contribute to its more consistent implementation and enforcement in all Member States

[116] IMPEL "Doing the right things" Guidance Book for planning of environmental inspections. The Guidance Book was developed to support Inspectorates in implementing the RMCEI and describes the different steps of the Environmental Inspection Cycle pursuant to the RMCEI.
[117] https://www.impel.eu/wp-content/uploads/2016/06/step-by-step-guidance-book-final-2007-12-11.pdf

- Execution Framework
- Execution and reporting
- Performing monitoring

The IMPEL inspection cycle planning indicates that the preparation stage of an inspection cycle is always the most important and should include elements such as:

- Collecting and evaluating existing information about the NEEI project (which makes targeted questioning of the operator easier)
- Previous inspection report findings and any incidents or accidents which may stand out within recent operational history
- Any historic complaints about the NEEI activities
- Information about the operator from their website or relevant experts/consultants
- Prepare maps showing locations of Natura 2000 sites and their proximity to NEEI activities (for example surveying/geodesic records)
- Be aware and comfortable with the information pertaining to the activity and the Natura 2000 site such as:
  - appropriate assessment and its outcomes
  - monitoring and mitigation plans in view of the Natura 2000 site as well as any historical monitoring reports available
  - experts opinion and/or reports
  - current status of the Natura 2000 site, including any current threats and pressures
  - any specific species or habitats of concern in the areas of the Natura 2000 site where the NEEI activity is located

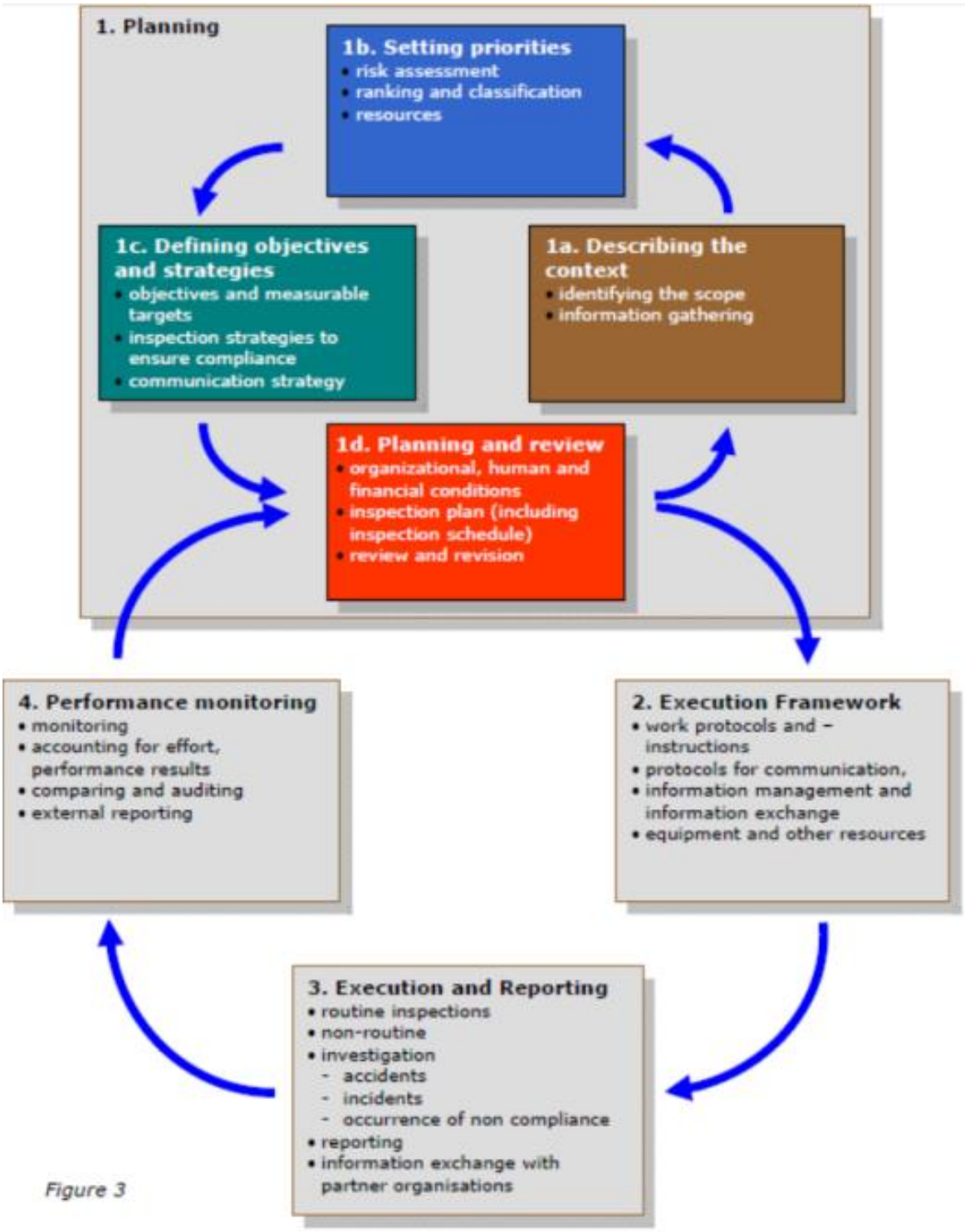

Figure 10.1: The inspection cycle of the IMPEL Guidance Book “Doing the right things”

The inspection plan (including inspection schedule) will include the itinerary (duration of inspection), frequency of supervision (once/twice per year, during the operating season) and specification of inspection locations inside and outside the operational zone (zone of impact in Natura 2000 site) for the site visit. It is also necessary to plan the structure of the inspection team (joint and coordinated inspections). Following this, a list should be compiled of questions for the operator, a list of targeted species and habitats, as well as a list of experts (specialists in particular areas of biodiversity which may be associated with the inspection). It is also necessary to prepare inspection forms or templates if they are not readily available through the competent authority, as well as supporting equipment such as camera, GPS, species identification manuals, sampling tools and any enforcement equipment (for example warrants and/or notebooks for recording conversations as necessary). Arrange suitable inspection times with the operator and ensure a responsible person from the site is available to join the inspection party. In some member states such as Spain and Croatia, forms and/or templates have already been developed for use on site – see Annex VI (Check-list for to review (Environment Authority) the quality about the study of environmental impacts presented by the project propose).

Post inspection, the inspector must draft a final inspection report (according templates if developed – see Annex VI for examples). The report should note essential data such as general information about project and operator, inspection results and sanctions (corrective or recommended measures).

Inspection of NEEI is based on the regulation and compliance with the requirements and measures prescribed in the permit. As it is a complex project that takes place over several phases, so inspections should be organised in accordance with the different phases of the project as well:

- Inspection before construction – surveillance of existing „in situ" species and habitats, preparatory operations (temporary roads, surveys, removal of surface layer of soil, …)
- Inspection during operational phase/exploitation – surveillance of mitigation measures regarding influence of all changes caused by exploitation
- Inspection after closing operation – surveillance of rehabilitation/restoration measures and if necessary corrective measures (monitoring plan)

Because the permit involves measures that cover different environmental components (soil, water, forest, noise etc.) it is understandable that different inspection criteria should be accounted for at all phases, and the reason joint inspections are so vital.

10.4. Monitoring related to inspection

There is a difference between monitoring as noted in the Habitats Directive Guidance[118] and the monitoring recognized in AA as an additional instrument in case of negative impacts on species and habitats as a result of quarry activities over a certain period of time. Monitoring must be based on recognised and validated methods, which are generally termed 'standard' methods, where they are available. Standard methods have been produced by CEN, ISO and the national standards organisations in Member States.[119]

It is important that permitting authorities implement monitoring plans based on all available existing scientific evidence, inventories and surveys as a part of the permit so that the operator is aware of possible additional measures if monitoring confirms negative impact. In case the operator disregards additional measures, the inspector can undertake appropriate enforcement action against him to mitigate possible negative effects.

Monitoring as a part of the permit is needed to indicate and support compliance with specific standards or limits. Compliance monitoring is one of the fundamental activities which are equally important for inspectors and for regulatory purposes. It can involve a range of inspection and reporting activities carried out to determine compliance with regulatory requirements (for example checking on progress with the monitoring plan).

The frequency over which monitoring must be carried out should be specified in the monitoring plan. The total duration of a monitoring programme must cover all three different phases of a project:

- Monitoring before a NEEI project has begun operating (e.g. to establish condition/status of habitat and species in natural environment)

[118] Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC

[119] http://ec.europa.eu/environment/impel/compliance.htm

- Monitoring during operating life of a project (monitor behaviour of species and changes of natural habitats in vicinity of project)
- Monitoring after a project has ceased operating – rehabilitation program

If non-compliance is proven, appropriate enforcement actions should be undertaken against the operator[120]. Reporting and monitoring results, related information and compliance findings must be prepared and delivered to all involved parties, including competent permitting authorities, operators, prosecutors, experts/specialists, and the public.

11. Incentive systems for boosting sustainability and biodiversity

11.1 Award systems

In recent years companies and their associations want to show their commitment to sustainability and biodiversity in the public. Several associations have created award systems, for example:

- Restoration and biodiversity awards of the Mineral Product Association (MPA) in the UK
- Sustainability award for high quality of renaturation and recultivation and special biodiversity award for exceptional performance of rehabilitation and biodiversity of the Association on Mineral Raw Materials (DE)
- Sutainability and biodiversity award system of the "Union Européenne des Producteurs de Granulats" (UEPG, European Aggregates Association)
- Sustainability award for raw material industry of a group of companies with commitment to biodiversity

Further information can be found on the websites of the Associations.

[120] DIRECTIVE 2004/35/CE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL; of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage (OJ L 143, 30.4.2004, p.56) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02004L0035-20130718

11.2 Initiatives of companies – Quarry life award of Heidelberg Cement

The company invites researchers, students and citizens to submit a biodiversity projects in its quarries around the world. The aim of this scientific and educational contest is to raise awareness of the organic value of mining sites and share new best practices with the scientific community, NGOs, authorities and our operating units. Prize winners get prize money and can carry out their projects from January till end of September of the following year. (further information see www.heidelbergcement.de)

11.3 Cooperation of companies with NGOs

Several companies co-operate with Non-Governmental Organisations (NGOs), (for example Heidelberg Cement with BirdLife International) with the aim of minimising their environmental impact and promoting biodiversity in the quarries and the surrounding areas.

11.4 Contract between local nature protection authority, an association for bird protection (NGO) and a mining company (June 2017)

Contractual obligation to support and preserve endangered amphibian species during the operational phase of the quarry and to produce a win-win-situation by securing and optimising habitats for European wide endangered amphibian species. The project will last till end of 2021 and is supported by the Bavarian nature conservation funds. (Further information available under https://www.lbv.de/news/details/naturschutz-und-rohstoffindustrie-gemeinsam-fuer-den-amphibienschutz/)

12. Acronyms and Abbreviations

AA	***Appropriate Assessment***
ASSIMAGRA	***Associação Portuguesa*** dos ***Industriais*** dos ***Mármores***, ***Granitos*** e ***Ramos Afins***
CEMAT	European Conference of Ministers responsible for Spatial / Regional Planning
EIAD	Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects
CMS	Compliance Monitoring System
EIP	European Innovation Partnership
ESDP	European Spatial Development Perspective
ICNF	Instituto da Conservação da Natureza e das Florestas
Interreg IV B NWE programme	INTERREG North-West Europe (NWE) Programme
IPRA	Rural Area Intervention Plan
Ma	Millions of years
MDoP	Mineral deposits of public importance
NPSAC	Natural Park of Serras de Aire e Candeeiros (PT)
PNA	Arrábida Natural Park
SCI	Site of Community Interest
SEPA	Scottish Environmental Protection Agency
SIP	Strategic Implementation Plan
SIA	Specific Intervention Areas

Glossary

Alternative solutions: different ways of achieving the objectives of a plan or project that they could involve alternative locations,alternative mineral processes, different designs of development, alternative time scales, different methods of construction (roads,power lines,dumps…), alternative solutions for biodiversity impacts, different types of waste management,…

Appropriate assessment (AA): the process under Article 6(3) of the Habitats Directive by which the potential effects of a plan or project upon a Natura 2000 site are assessed in view of the site´s conservation objectives in order to ascertain whether the plan or project will not adversely affect the integrity of the site.

Biodiversity offsets: conservation actions intended to compensate for the residual unavoidable harm to biodiversity caused by development projects, so as to aspire to no net loss of biodiversity.

Compensatory measures: a requirement set out in Article 6(4) where damage to a European site has been justified in the absence of alternatives and for imperative reasons of overriding public interest (IROPI). The main objective of compensatory measures is the protection of the overall coherence of the Natura 2000 network.

Competent authority or authorities: that authority or those authorities which the Member States designate as responsible for performing the duties arising from the legislation concerned.

Competent person: a natural person who has the technical knowledge and experience, as defined by the national law of the Member State in which the person operates, to perform the duties arising from the legislation concerned.

Conservation: a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable conservation status (FCS).

Conservation status of a natural habitat: is the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution,structure and functions as well as the long-term survival of its species within the territory.
Conditions about a favourable conservation status (FCS) of a natural habitat:

- its natural range and areas it covers within that range are stable or increasing,and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future,and
- the conservation status of its typical species is favourable as defined in conservation status of a species.

Conservation status of a species: is the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory. Conditions about a favourable conservation status (FCS) of species:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats,and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future,and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Cumulative impacts: impacts that accumulate over space and time from multiple plans or projects.

Dam: an engineered structure designed to retain or confine water and/or waste within a pond.

Damage: measurable adverse change in a natural resource (protected species and natural habitats,water and land) or measurable impairment of a natural resource service which may occur directly or indirectly.

Deterioration: physical degradation affecting a habitat,or a breeding site or resting place of species. In contrast to destruction, such degradation may occur slowly and gradually reduce of functionality of the site in terms of quality or quantity and might over a certain period of time lead to its complete loss.

Developer: the applicant for authorisation for a private plan/project or the public authority which initiates a plan or project.

Development consent: the decision of the competent authority or authorities which entitles the developer to proceed with the plan or project.

Discharge to groundwater: discharge of pollutants into groundwater without percolation throughout the soil or subsoil.

Disturbance: a temporary or permanent change in environmental conditions (e.g.noise emission by a blasting operation) that may have a negative effect on a natural habitat or a species. Disturbance may be detrimental for a protected species and may give rise to additional indirect effects.

Emission: the direct or indirect release of substances, vibrations, heat or noise from individual or diffuse sources in the mining installation into air, water or land.

Emission controls: controls requiring a specific emission limitation, for instance an emission limit value, or otherwise specifying limits or conditions on the effects, nature or other characteristics of an emission or operating conditions which affect emissions.

Emission limit values: the mass, expressed in terms of certain specific parameters, concentration and/or level of an emission, which may not be exceeded during any one or more periods of time.

Environmental impact assessment: a process defined in Article 1 of the Directive 2014/52/EU of the European Parliament and the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

Environmental inspection: all actions, including site visits, monitoring of emissions and checks of internal reports and follow-up documents, verification of self-monitoring, checking of the techniques used and adequacy of the environment management of the installation, undertaken by or on behalf of the competent authority to check and promote compliance of installations with their permit conditions and, where necessary, to monitor their environmental impact.

Extractive industries: all establishments and undertakings engaged in surface or underground extraction of mineral resources for commercial purposes, including extraction by drilling boreholes, or treatment of the extracted material.

Groundwater: all water which is below the surface of the ground in the saturation sone and in direct contact with the ground or subsoil.

Hazard: the intrinsic property of a dangerous substance or physical situation, with a potential for creating damage to human health or the environment.

Habitat of a species: an environment defined by specific abiotic and biotic factors, in which the species lives at any stage of its biological cycle.

Hazardous substances: substances or groups of substances that are toxic, persistent and liable to bio-accumulate, and other substances or groups of substances which give rise to an equivalent level of concern.

Imperative Reasons of Overriding Public Interest: a requirement set out in Article 6(4) of the Habitats Directive which, in limited circumstances, permits a plan or project to go ahead even after an appropriate assessment (AA) has failed to ascertain that the integrity of a Natura 2000 site will not be adversely affected.

Inert waste: waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater.

Major accident: an occurrence on site in course of an operation involving the management of mining activity, leading to a serious danger to human health and/or the environment, whether immediately or over time, on-site or off-site.

Mineral reserve: economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined. Assessments, which may include feasibility studies, have been carried out, and include consideration of and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time or reporting that extraction could reasonably be justified. Mineral Reserves are subdivided in order of increasing confidence into Probable Mineral Reserves and Proved Mineral Reserves (Pan-European Code for Reporting of Exploration Results, Mineral Resources and Reserves,2008).

Mineral resource: concentration or occurrence of material of economic interest in or on the earth´s crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge. Mineral Resources are subdivided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories (Pan-European Code for Reporting of Exploration Results, Mineral Resources and Reserves,2008).

Mitigation measures: measures aimed at minimising or even cancelling the negative impact of a plan or project, during or after its completion.

Natura 2000 site: sites designed to form the Natura 2000 network, which include Special Protection Areas (SPA) and Sites of Community Importance (SCI) approved by the European Commission and declared as Special Areas of Conservation (SAC) by the Member States.

Natural habitats: terrestrial or aquatic areas distinguished by geographic, abiotic and biotic features, whether entirely natural or semi-natural.

Natural habitat types of Community interest: those natural habitats which, within the territory are in danger of disappearance in their natural range; or have a small natural range following their regression or by reason of their intrinsically restricted area or present outstanding examples of typical characteristics of one or more of the following biogeographical regions: Alpine,Atlantic,Continental,Macaronesian and Mediterranean.Such habitat types are listed or may listed in Annex I of Habitats Directive.

Operator: natural or legal,private or public person who operates or controls in whole or in part the mining installation or, where this is provided for in national law, to whom decisive economic power over the technical functioning of the installation or plant has been delegated.

Permit: a written authorisation to operate all or part of an mining installation.

Pollution: the direct or indirect introduction, as a result of human activity, of substances, vibrations, heat or noise into air, water or land which may be harmful to human health or the quality of the environment, result in damage to material property, or impair or interfere with with amenities and other legitimate uses of the environment.

Precautionary principle: this principle establish that where scientific evidence is insufficient, inconclusive or uncertain and there are indications through preliminary objective scientific evaluation that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the chosen level of protection, lack of scientific knowledge shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (RIO Declaration,1992 & EC,2000).

Priority natural habitat types: natural habitat types in danger of disappearance, which are present on the territory and for the conservation of which the Community has particular responsibility in view of the proportion of their natural range which falls within the territory and these priority natural habitat types are indicated by an asterisk (*) in Annex I of Habitats Directive.

Priority species: Species of Community interest for the conservation of which the Community has particular responsibility in view of the proportion of their natural range which falls within the territory. These species are indicated by an asterisk (*) in Annex II of Habitats Directive.

Prospecting (exploration): the search for mineral deposits of economic value, including sampling, bulk sampling, drilling and trenching, but excluding any works required for the development of such deposits, and any activities directly associated with an existing extractive operation.

Public: one or more natural or legal persons and, in accordance with national law or practice, their associations, organisations or groups.

Public concerned: the public affected or likely to be affected by, or having an interest in, the taking or a decision on the granting or the updating of a permit or of permit conditions.The non-governmental organisations promoting environmental protection and meeting any requirements under national law shall be deemed to have an interest.

Qualifying interest: a natural habitat type listed in Annex I or a species listed in Annex II of the Habitats Directive, a species listed in Annex I of the Birds Directive or regularly occurring migratory species not listed in Annex I, for which a Natura 2000 is designated.

Recovery: including "natural recovery", means, in the case of water, protected species and natural habitats the return of damaged natural resources and/or impaired services to baseline condition and in the case of land damage, the elimination of any significant risk of adversely affecting human health.

Rehabilitation: the process of converting derelict land to usable land and may include engineering as well as ecological solutions. The restoration of natural habitats is often included as part of the site closure and rehabilitation process. This term is used to imply a process guided by ecological principles that promotes the recovery of ecosystem integrity in all its structural and functional aspects.

Restoration: action taken at a site following anthropogenic degradation or deterioration, to restore or enhance its ecological value. This term is used for rehabilitation that is guided by ecological principles and promotes the recovery of ecological integrity; reinstatement of the original (pre-mining) ecosystem in all its structural and functional aspects.

Risk: the likelihood of a specific effect occurring within a specified period or in specified circumstances.

River: body of inland water flowing for the most part on the surface of the land but which may flow underground for part of its course.

River basin: the area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta.

Screening: process used to determine whether an AA is needed for a plan or project.

Site: geographically defined area whose extent is clearly delineated. All land at a distinct geographic location.

Site of Community importance (SCI): site which, in the biogeographical region or regions to which is belongs, contributes significantly to the maintenance or restoration at a favourable conservation status of a natural habitat type in Annex I or of a species in Annex II (Habitats Directive) and may also contribute significantly to the coherence of Natura 2000 and/or contributes significantly to the maintenance of biological diversity within the biogeographic region or regions concerned. SCI are proposed to the Commission by Member States.

Soil: the top layer of the Earth´s crust situated between the bedrock and the surface. The soil is composed of mineral particles, organic matter, water, air and living organisms.

Special Area of Conservation (SAC): Site of Community importance designated by the Member States through a statutory, administrative and/or contractual act where the necessary conservation measures are applied for the maintenance or restoration, at a favourable conservation status, of the natural habitats and/or the populations of the species for which the site is designated.

Special Protection Area (SPA): protected area designated in accordance with the Birds Directive for species listed on Annex I of the Directive and/or regularly occurring migratory species, and included in the Natura 2000 Network.

Species of Community interest: species which, within the territory referred to in Article 2 (Habitats Directive), are:
- endangered, except those species whose natural range is marginal in that territory and which are not endangered or vulnerable in the western palearctic region; or
- vulnerable, i.e. believed likely to move into the endangered category in the near future if the causal factors continue operating; or
- rare, i.e. with small populations that are not at present endangered or vulnerable, but are at risk. The species are located within restricted geographical areas or are thinly scattered over a more extensive range; or
- endemic and requiring particular attention by reason of the specific nature of their habitat and/or the potential impact of their exploitation on their conservation status.

These species are listed or may be listed in Annex II and/or Annex IV or V of Habitats Directive.

Stakeholders: people or organisations that will be affected by, or will influence a programme, plan or project.

Surveillance: an extended programme of surveys systematically undertaken to provide a series of observations to ascertain the variability that might be encountered over time.

Surface water: all standing or flowing water on the surface of the land and all groundwater on the landward side of the baseline from which the breadth of territorial waters is measured.

Tecniques: includes both the technology used and the way in which the mining installation is designed, built, maintained, operated and decommissioned. Available techniques are those developed on a scale which allows implementation in the relevant mining sector, under economically and technically viable conditions, taken into consideration the costs and adventages, whether or not the tecniques are used or produce inside the Member State in question, as long as they are reasonably accessible to the operator.

Treatment: the mechanical, physical, biological, thermal or chemical process or combination of processes carried out on mineral resources, including from the working of quarries, with a view to extracting the mineral, including size change, classification, separation and leaching, and the re-processing of previously discarded waste, but excluding smelting, thermal manufacturing processes (other than the burning of limestone) and metallurgical processes.

Unpolluted soil: soil that is removed from the layer of the ground during extractive activities and that is not deemed to be polluted under the national law of the Member State where the site is located or under Community law.

Waste: any substance or object which the holder discards or intends or is required to discard.

Waste facility: any area designated for the accumulation or deposit of extractive waste, whether in a solid or liquid state or in solution or suspension and for time-periods depending on the type of waste.

Waste holder: the producer of the extractive waste or the natural or legal person who is in possession of it.

Waste prevention: measures taken before a substance, material or product has become waste, that reduce the quantity of waste, the adverse impacts of the generated waste on the environment and human health and the content of harmful substances in materials and products.

Waste producer: anyone whose activities produce waste (original waste producer) or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste.

Waters: all waters covered by Directive 2000/60/EC.

Work risk prevention: all the steps or measures taken or planned at all stages of work in the undertaking to prevent or reduce occupational risks.

References

Legislation:

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

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Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2012)
Wind energy Developments and Natura 2000 (EC, 2011a)
Establishing conservation measures for Natura 2000 Sites (EC, 2014)

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Annexes

See separate Document

Annex I

to

IMPEL Report

Permitting and Inspection under Art. 6(3) Habitats Directive - Quarries and Open Cast Mining

Experience in IMPEL Member Countries, Best Practice Examples

IMPEL Project 2016/15:

Summary of responses to the questionnaire

Annex II. Data extracted from the Strategic Implementation Plan for the European Innovation Partnership on Raw Materials (EC, 2013)

https://ec.europa.eu/growth/sectors/raw-materials/industries/minerals

The Strategic Implementation Plan For The European Innovation Partnership On Raw Materials, (2013) is based on three pillars:

I.B Priority Area: Technologies for primary and secondary raw materials production

Target 1: Up to **ten innovative pilot actions** on exploration, mining, processing, and recycling for innovative production of raw materials.

Examples:
Action area: n° I.2: **Exploration**:
New **reliable data-base** (link to EU mineral potential) on **primary and secondary raw materials**, to be used by authorities to better develop land use planning, being the ultimate goal is to discover new resources and open new mines.

Action area: n° I.3: Innovative extraction of raw materials:
Enable and facilitate the development of global sustainable competitiveness by the exemplary raw materials **exploitation activities in a sustainable way**, with examples of new clean and safe solutions, supporting streamlining of the permitting process.

The Strategic Implementation Plan For The European Innovation Partnership On Raw Materials, (2013) is based on three pillars:

I.C Priority Area: Substitution of raw materials

Target 2: substitutes for at least three applications of critical and scarce raw materials.

Examples:
Reduction - use less material to achieve the same level of functionality in a given product;
Alternative material - replace one material for another without loss of functionality;
Alternative system - replace one/several components within the same product;
Alternative products - replace existing technology with different products and/or services.

The Strategic Implementation Plan For The European Innovation Partnership On Raw Materials, (2013) is based on three pillars:

II.A Priority Area: Improving Europe's raw materials framework conditions

Target 3: **Framework conditions for primary raw materials** that would provide a stable and competitive supply from EU sources and will facilitate public acceptance.

Examples:
Action area n° II.1: **Minerals Policy Framework**.
Following the experience of the Raw Materials Initiative this action area addresses mineral policy, permitting, environmental management and reporting by public institutions and is structured around three sub-areas:
Member States' practices, EU guidance and **legislation** as well as **communication**.

It will be achieved by strengthening the exchange of best practices in the area of mineral policies and related regulation among Member States, by streamlining the permitting procedure along the whole chain of mining activities (prospecting, exploration, extraction, processing, refining, closure, post closure activities).

The Strategic Implementation Plan For The European Innovation Partnership On Raw Materials, (2013) is based on three pillars:

II.A Priority Area: Improving Europe's raw materials framework conditions

Examples:
Another objective is to **increase transparency on raw materials availability** in the EU, which is strongly influenced by environmental protection (**EIA, NATURA 2000, and Mining Waste Directive**) on different levels and by reporting on mineral resources by public institutions.

Action area n° II.2: **Access to Mineral Potential in the EU**. This area is dealing with the concept of mineral deposits of public importance and land use planning.

Action area n° II.3: **Public Awareness, Acceptance and Trust**. This action area aims at enhancing public acceptance and trust by improved communication and transparency, notably during the permitting procedure and the production cycle (exploration, mine operation, after-mining).

The Strategic Implementation Plan For The European Innovation Partnership On Raw Materials, (2013) is based on three pillars:

II NON TECHNOLOGY PILLAR

II.B Priority Area: Improving Europe's waste management framework conditions and excellence

Target 4: **Framework conditions for enhanced efficiency in material use and in waste prevention, re-use and recycling, and raw materials efficient product design.**

Examples:
European Resource Efficiency Platform (EREP), provide high-level guidance on the transition process towards a more resource-efficient economy.
On 17 June 2013, the Platform issued a number of relevant recommendations to: 1) set objectives, measure and report progress; 2) improve information on environmental and resource impacts for decision making; 3) phase out environmentally harmful subsidies; 4) move towards a circular economy and promote a high-quality of recycling; 5) improve resource efficiency in business–to-business relations; 6) take forward a coherent, resource efficient product policy framework; 7) deliver a stronger and more coherent implementation of Green Public Procurement; 8) develop instruments for SMEs.

The Strategic Implementation Plan For The European Innovation Partnership On Raw Materials, (2013) is based on three pillars:

II NON TECHNOLOGY PILLAR

II.C Priority Area: Priority Area: Knowledge, skills and raw materials flows

Target 7: **Pro-active international co-operation strategy of the EU** at bilateral and multilateral level, promoting synergies with countries such as the US, Japan, Australia, Canada, Latin America and African Union across the different areas covered by the EIP, by encouraging greater recovery and production of raw materials from within Europe (primary and secondary raw materials), international co-operation on improving access to raw materials globally, substitution, resource efficiency and knowledge/best-practices sharing.

The Strategic Implementation Plan For The European Innovation Partnership On Raw Materials, (2013) is based on three pillars:

II NON TECHNOLOGY PILLAR

II.C Priority Area: Priority Area: Knowledge, skills and raw materials flows

Target 5: **European raw materials knowledge base** with information, flows and dynamic modelling system for primary and secondary raw materials.

Target 6: **Network of Research, Education and Training Centres** on sustainable raw materials management organized as a Knowledge and Innovation Community.

The Strategic Implementation Plan For The European Innovation Partnership On Raw Materials, (2013) is based on three pillars:

III INTERNATIONAL COOPERATION PILLAR

III. Priority Area: Pro-active international co-operation strategy of the EU

Target 7: **Pro-active international co-operation strategy of the EU** at bilateral and multilateral level, promoting synergies with countries such as the US, Japan, Australia, Canada, Latin America and African Union across the different areas covered by the EIP, by encouraging greater recovery and production of raw materials from within Europe (primary and secondary raw materials), international co-operation on improving access to raw materials globally, substitution, resource efficiency and knowledge/best-practices sharing.

MNATURA 2020 - A Horizon2020 funded EU project

The overall objective of MINATURA2020 is to develop a concept and methodology for the definition and subsequent protection of “mineral deposits of public importance” in order to ensure their “best use” in the future in order to be included in a harmonised European regulatory/guidance/policy framework. Providing a policy-planning framework that comprises the “sustainability principle” for mining like for other land uses is the key driving force behind MINATURA2020.

MINATURA2020 is a 3-year EU funded project that relies on the strength of an international consortium of 24 partners. All project partners have a demonstrated record of accomplishment of projects at national, international and commercial level. They are active players in the international raw materials community, part of a well-established network and cover different domains (public and regulatory authorities, industry, academics, civil society, etc.).

Annex IV. Background Information and data for Appropriate Assessment (Part 1)

PART 1: INFORMATION AND DATA

1. INFORMATION ABOUT THE PROJECT

- General description about the project and its connected activities; It will be exposed a brief description about he project, explaining its objectives, actions, principal functions and the justification for its accomplishment with the relationship with the site/s management; Also, it´s obligatory to include information about **connected activities** of the project (activities, infraestructures and additional services, temporary or permanent, which are necessary for the accomplishment in all project phases).
- Plan or Program at Community, National or Regional level in which the project is included
- Technical description about the project and its connected activities

2. INFORMATION ABOUT THE NATURA 2000 SITES.

2.1. IDENTIFICATION OF NATURA 2000 SITES

2.1.1. Name of the NATURA 2000 SITE

2.1.2. Code [EU code for the N2K site]

2.1.3. Area

2.1.3. Administrative situation

2.1.4. Relationship with other/s Natura 2000 Sites.

2.2. INFORMATION ABOUT HABITATS TYPES PRESENTS IN THE PROJECT AREA

2.2.1. Common and scientific name.

2.2.2. Code. [EU code for the habitats in N2K site]

2.2.3. Category of threat:

2.2.3.1. European Union (EU)_Habitat Directive: priority / no priority habitats

2.2.3.2. Country/Region.

Catalogue of Habitats in risk of disappearance.

Catalogue of endangered species (constituent species of the habitat type).

Red Lists (constituent species of the habitat type): International (IUCN) / national / regional red lists

2.2.4. Distribution, extending and structure.

2.2.4.1. Total surface area occupied(ha): occupied / unoccupied

2.2.4.2. Conservation status of the habitat structure and functions of habitat type.

2.2.4.3. Possibilities of restoration or recovery.

2.2.5. Abundance.

2.2.6. Relative area (%).

2.2.7. Ecological requirements of the natural habitat/s type.

2.2.8. Human activities.

2.2.9. Fragility and vulnerability.

2.2.10 Trend /evolution of the conditions of the natural conservation of habitat.

Trend (%)

Period (initial year-year end)

Trend magnitude (km2)

Causes

Tendency projection

Minimum viable size

2.2.11 Conservation status of the habitat type: global evaluation

2.3. INFORMATION ABOUT SPECIES OF COMMUNITY INTEREST PRESENTS IN THE PROJECT AREA.

2.3.1. Common and scientific name.

2.3.2. Code.

2.3.3. Category of threat:

2.3.3.1. European Union (EU)_Habitat Directive.

- Priority.

- No priority.

2.3.3.2. Country/Region.

- Catalogue of endangered species.

2.2.3.2. Red Lists (constituent species of the habitat type).

- International Red List (UICN).
- National and Regional Red Lists.

2.3.4. Population :

- Breeding.
- Wintering.
- Migratory.

2.3.5. Distribution and use of area for species :

2.3.6. Relevant habitat/s for species :

- Total occupied area (has.) :
  * Number of occupied areas :
  * Extent of each area (has.) :
- Conservation status :
- Possibility of restoration or recuperation :

2.3.7. Ecological requirements of the specie.

2.3.8. Human activities.

2.3.9. Vulnerability.

2.3.10 Trend-Evolution of conservation status.

- Trend (%) :
- Period (initial year-year end) :
- Trend magnitude :
- Causes.
- Tendency projection.
  * In 5 years :
  * In 10 years :

2.3.11 Conservation status of the specie/s : global evaluation

2.3.12 Information data (University, Environment ONG,...)

2.4. IMPORTANCE OF THE NATURA 2000 SITE

2.4.1. Integrity of Natura 2000 site.

2.4.2. Global valoration of this Natura 2000 Site respect the Natura 2000 Network

2.5. CARTOGRAPHY

2.5.1. Project cartography and its connected activities respect the Natura 2000 Sites.

2.5.2. Cartography about area zonification (protection area, conservation area, general uses area)

2.5.3. Cartography about habitats types (community interest and priority habitats).

2.5.4. Cartography about species of community interest.

(*) Its obligatory to indicate in these maps: name, number, content, scale, format, GPS coordinates and other practical information).

Annex V. Content and Scope of Appropriate Assessment (Part 2)

PART 2: APPROPRIATE ASSESSMENT (AA)

ENVIRONMENTAL IMPACT SHEET

1. IDENTIFICATION OF NATURA 2000 SITE

- Name of the area :

- Code of Natura 2000 site: (Ex ES0000437)

- Region/province :

2. IDENTIFICATION OF ENVIRONMENT IMPACTS

2.1. Phase of the project :

2.2. Name of the impact and activity that provokes it :

2.3. Description, extension and location of impact :

2.4. Community interest elements which can be affected :

2.5. Probability of impact occurrence :

3. EVALUATION ABOUT THE SIGNIFICATIVITY OF THE IMPACT

4. IDENTIFICATION AND RISKS ANALYSIS

4.1. Identification and characterization of risks :

- Risks directly derived from the project execution :

- Other types of risks :

4.2. Affect on Natura 2000 Sites :

4.3. Risk probability :

4.4. Risk evaluation :

5. ANALYSIS AND EVALUATION OF IMPACTS CAUSED FOR OTHER ACTIVITIES, PROJECTS, PLANS OR PROGRAMS (Cumulative effects)

5.1. Cumulative effects with other projects, plans or programs :

5.2. Cumulative effects with other elements or activities :

6. EVALUATION ABOUT THE POTENTIAL IMPACT ON THE INTEGRITY OF THE NATURA 2000 SITE/S.

7. PREVENTIVE AND REMEDIAL MEASURES

7.1. Measure identification.

7.1.1. Phase of the project :

7.1.2. Name of the measure :

7.1.3. Measure characterization.

- Measure description :
- Methodology and technical characteristics :
- Measure location :
- Calendar of implementation :

7.1.4. Objectives and expected outcomes.

- Impact which the measure is directed :
- Natura 2000 Site and other elements of community interest benefited :
- Objectives :
- Technical viability of the measure (likelihood of success).

7.1.5. Cartography.

7.1.6. Implementation costs.

8. ADEQUATE ASSESSMENT NATURA 2000 CONCLUSIONS

9. ANALYSIS ABOUT PROJECT ALTERNATIVE SOLUTIONS

9.1. Brief description about the project and its main objectives:

9.2. Summary about the project potencial negative impacts on the Natura 2000 Sites :

9.3. Alternatives considered and their valoration- Alternative 0 :

9.4. Conclusions :

10. IMPERATIVE REASONS OF OVERRIDING PUBLIC INTERES.

11. COMPENSATION MEASURES.

11.1. Compensation measures identification.

11.1.1. Measure name.

11.1.2. Measure characterization :

- Measure description :
- Methodology and technical characteristics :
- Measure location :
- Calendar of implementation :

11.1.3. Objectives and expected outcomes.

- Impact which the measure is directed :
- Natura 2000 Site and other elements of community interest benefited :
- Objectives :
- Technical viability of the measure (likelihood of success).

12. CARTOGRAPHY.

13. COSTS OF COMPENSATION MEASURES PROGRAM

14. PROGRAM OF SURVEILLANCE AND ENVIRONMENTAL MONITORING.

14.1. Compensation measure identification.

14.1.1. Name and type of the compensation measure :

14.1.2. Summary measure :

14.1.3. Monitoring characterization.

- Indicators.

- Methodology and materials.

- Risks.

14.1.4. Monitoring calendar.

14.1.5. Analysis about the measures efficiency :

14.1.6. Contingency Plan.

14.1.7. Monitoring reports.

14.1.8. Costs of Monitoring Program

15. AUTHOR/S OF THE AA

15.1. Name and surname of author/s of the AA :

15.2. Academic degree :

15.3. Organization, Institution, company...:

16. SUMMARY OF AA

17. AA - FINAL CONCLUSION

Annex VI. Check-list for to review (Environment Authority) the quality about the study of environmental impacts presented by the project propose

SECTION I: DESCRIPTION OF THE PROJECT			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
The objectives and physical characteristics of the project			
1.1. Does the project submitted integrate the conclusions of the Environmental Impact Study (EIS)?			
1.2. Are the need for and objectives of the project explained?			
1.3. Is the programme for implementation of the project described, detailing the estimated length of time and start and Finnish dates for construction, operation and decommissioning? (this should include any sub phases within the main phases of the project)			
1.4. Are all the main components of the project described?			
1.5. Is the location of each project component identified, using maps, plans and diagrams as necessary?			
1.6. Is the layout of the site (or sites) occupied by the project described? (including ground levels, buildings, other physical structures, underground works, coastal works, storage facilities, water features, planting, access corridors, boundaries)			
1.7. For linear projects, are the route corridor, the vertical and horizontal alignment and any tunnelling and bridges described?			
1.8. Are all the activities involved in the construction of the project described?			
1.9. Are all the activities involved in the operation of the project described?			

1.10. Are all the activities involved in decommissioning the project described? (e.g. closure, dismantling, demolition, clearance, site restoration, site re-use)			
1.11. Are all additional services required for the project described? (e.g. transport access, water, sewerage, waste disposal, electricity, telecoms) or developments (e.g. roads, harbours, powerlines, pipelines)			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
1.12. Are any developments likely to occur as a consequence of the project identified? (e.g. new housing, roads, water or sewerage infrastructure, aggregate extraction)			
1.13. Are any existing activities which will alter or cease as a consequence of the project identified?			
1.14. Are any other existing or planned developments with which the project could have cumulative effects identified?			
The size of the project			
1.15. Is the area of land occupied by each of the permanent project components quantified and shown on a scaled map? (including any associated access arrangements, landscaping and ancillary facilities)			
1.16. Is the area of land required temporarily for construction quantified and mapped?			
1.17. Is the reinstatement and after use of land occupied temporarily for operation of the project described? (e.g. land used for mining or quarrying)			
1.18. Is the size of any structures or other works developed as part of the project identified? (e.g. the floor area and height of buildings, the size of excavations, the			

area or height of planting, the height of structures such as embankments, height of chimneys, the flow or depth of water)			
1.19. Is the form and appearance of any structures or other works developed as part of the project described? (e.g. the type, finish and colour of materials, the architectural design of buildings and structures, plant species, ground surfaces, etc)			
1.20. For urban or similar development projects, are the numbers and other characteristics of new communities or businesses described?			
1.21. For projects involving the displacement of communities or businesses, are the numbers and other characteristics of those displacements described?			
1.22. For new transport infrastructure or projects generating substantial traffic flows, is the type, volume, temporal pattern and geographical distribution of new traffic generated or diverted as a consequence of the project described?			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
Production processes and resources used			
1.23. Are all the processes involved in operating the project described? (e.g. manufacturing or engineering processes, raw material production, agricultural or forestry production, extraction processes)			
1.24. Are the types and quantities of outputs produced by the project described? (these could be raw materials or manufactured products, goods such as power or water or services such as housing, transport, retailing, recreation, education, municipal services (water,			

waste, etc))			
1.25. Are the types and quantities of raw materials and energy needed for construction and operation bespoken?			
1.26. Are the environmental implications of the raw materials sources discussed?			
1.27. Is efficiency in use of energy and raw materials discussed?			
1.28. Are any hazardous materials used, stored, handled or produced by the project identified and quantified? · during construction · during operation · during decommissioning			
1.29. Are the transport of raw materials to the project and the number of traffic movements involved discussed? (including road, rail and sea transport) · during construction · during operation · during decommissioning			
1.30. Is employment created or lost as a result of the project discussed? · during construction · during operation · during decommissioning			
1.31. Are the access arrangements and the number of traffic movements involved in bringing workers and visitors to the project estimated? · during construction · during operation · during decommissioning			
1.32. Is the housing and provision of services for any temporary or permanent employees for the project discussed? (relevant for projects requiring migration of a substantial new workforce into the area for either construction or the long term)			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***

Waste and emissions **Waste and emissions**			
1.33. Are the types and quantities of solid waste generated by the project identified? (including construction or demolition wastes, process wastes, by-products, surplus or reject products, hazardous wastes, household or commercial wastes, agricultural or forestry wastes, site clean-up wastes, aggregates, decommissioning wastes) · during construction · during operation · during decommissioning			
1.34. Are the composition and toxicity or other hazards of all solid wastes produced by the project discussed?			
1.35. Are the methods for collecting, storing, treating, transporting and finally disposing of these solid wastes described?			
1.36. Are the locations for final disposal of all solid wastes put forward?			
1.37. Are the types and quantities of liquid effluents generated by the project identified? (including site drainage and run-off, process waste water, cooling water, treated effluents, sewage) · during construction · during operation · during decommissioning			
1.38. Are the composition and toxicity or other hazards of all liquid effluents produced by the project included?			
1.39. Are the methods for collecting, storing, treating, transporting and finally disposing of these liquid effluents described?			
1.40. Are the locations for final disposal of all liquid effluents put forward?			
1.41. Are the types and quantities of gaseous and particulate emissions generated by the project identified? (including process emissions, fugitive emissions, emissions from combustion of fossil fuels in stationary and mobile plant, emissions from traffic, dust from			

materials handling, odours) · during construction · during operation · during decommissioning			
1.42. Are the composition and toxicity or other hazards of all emissions to air produced by the project put forward?			
1.43. Are the methods for collecting, treating and finally discharging these emissions to air described?			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
1.44. Are the locations for discharge of all emissions to air identified and the characteristics of the discharges identified? (e.g. height of stack, speed and temperature of release)			
1.45. Is the potential for waste recovery discussed? (including re-use, recycling or recovery from solid waste and liquid effluents)			
1.46. Are any sources of noise, heat, light or electromagnetic radiation from the project identified and quantified? (including equipment, processes, construction works, traffic, lighting, etc)			
1.47. Are the methods for estimating the quantities and composition of all waste and emissions identified and any difficulties put forward?			
1.48. Is the uncertainty attached to estimates of waste and emissions put forward?			
Risk of accidents and hazardous			
1.49. Are any risks associated with the project described? · risks from handling of hazardous materials · risks from fires, explosions · risks of traffic accidents · risks from breakdown or failure of processes or facilities			

· risks from exposure of the project to natural disasters (earthquake, flood, landslides, etc)			
1.50. Are measures to prevent and respond to accidents and abnormal events described?(preventive measures, emergency plans, contingency plans, fire drills, etc)			
Other aspects of the description of the project to be taken into account			
SECTION II: ALTERNATIVES			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
2.1. Are the processes by which the project will be developed and the alternatives considered during this process described?			
2.2. Is the baseline situation in the no project situation described?			
2.3. Are the alternatives proposed realistic and appropriate alternatives to the project?			
2.4. Are the main reasons for the choice of the proposed project explained, including any environmental reasons?			
2.5. Are the main environmental effects of the alternatives compared with those of the proposed project?			
Other aspects of the consideration of alternatives.			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***

Aspects of the environment			
3.1. Are the existing land uses of the land to be occupied by the project and the surrounding area described and are any people living on or using the land identified? (including residential, commercial, industrial, agricultural, recreational and amenity land uses and any buildings, structures or other property)			
3.2. Are the topography, geology and soils of the land to be occupied by the project and the surrounding area described?			
3.3. Are any significant features of the topography or geology of the area described and are the conditions and use of soils described? (including soil quality stability and erosion, agricultural use and agricultural land quality)			
3.4. Are the fauna and flora and habitats of the land to be occupied by the project and the surrounding area described and illustrated on appropriate maps?			
3.5. Are species populations and characteristics of habitats that may be affected by the project described and are any designated or protected species or sites defined?			
3.6. Is the aquatic environment of the area described? (including running and static surface waters, groundwater, estuaries, coastal waters and the sea, as well as water discharges and drainage. Not relevant if the aquatic environment will not be affected by the project)			
3.7. Are the hydrology, water quality and use of any water resources that may be affected by the project described? (including use for water supply, fisheries, angling, bathing, recreation, navigation, effluent discharge)			
3.8. Are local climatic and meteorological conditions and existing air quality in the area described? (Not relevant if the atmospheric environment will not be affected by the project)			
3.9. Is the existing noise level described? (Not relevant if noise levels will not be			

affected by the project)			
3.10. Is the existing situation regarding light, heat and electromagnetic radiation described? (Not relevant if these characteristics of the environment will not be affected by the project)			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
3.11. Are any material assets in the area that may be affected by the project described? (including buildings, other structures, mineral resources, water resources)			
3.12. Are any locations or features of archaeological, historic, architectural or other community or cultural importance in the area that may be bisected the project described, including any designated or protected sites?			
3.13. Is the landscape of the area that may be affected by the project described, including any designated or protected landscapes and any important views or viewpoints?			
3.14. Are demographic, social and socio-economic conditions (e.g. employment) in the area described?			
3.15. Are any future changes in any of the above aspects of the environment, that may occur in the absence of the project, described?			
Data collection and survey methods			
3.16. Has the study area been defined widely enough to include all the area likely to be significantly affected by the project?			
3.17. Have all relevant national and local authorities been contacted to collect information on the baseline environment?			
3.18. Have sources of data and information on the existing environment			

been adequately referenced?			
3.19. Where surveys have been undertaken as part of the Environmental Studies to characterize the baseline environment are the methods used, any difficulties encountered and any uncertainties in the data described?			
3.20. Were the methods used appropriate for each purpose?			
3.21. Are any existing gaps in the data and the means used detailed to address them during the assessment process?			
3.22. If surveys would be required to adequately characterise the baseline environment but they have not been practicable for any reason, are the reasons explained and proposals set out for the surveys to be undertaken at a later stage?			
Other aspects of the description of the environment			
SECTION IV: DESCRIPTION OF THE LIKELY SIGNIFICANT EFFECTS OF THE PROJECT			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
Scoping of the effects			
4.1. Is the process by which the scope of the Environmental Studies was defined described?			
4.2. Is it evident that a systematic approach to scoping was adopted?			
4.3. Is it evident that full consultation was carried out during scoping?			
4.4. Are the comments and views of all authorities and persons consulted presented?			
Prediction of direct effects			

4.5. Are direct effects on land uses, people and property described and where appropriate quantified?			
4.6. Are direct effects on geological features and characteristics of soils described and where appropriate quantified?			
4.7. Are direct effects on fauna and flora and habitats described and where appropriate quantified?			
4.8. Are direct effects on the hydrology and water quality described and where appropriate quantified?			
4.9. Are direct effects on water uses described and where appropriate quantified?			
4.10. Are direct effects on air quality and climatic conditions described and where appropriate quantified?			
4.11. Are direct effects on the acoustic environment (noise or vibration) described and where appropriate quantified?			
4.12. Are direct effects on heat, light or electromagnetic radiation described and where appropriate quantified?			
4.13. Are direct effects on material assets and depletion of non-renewable natural resources (e.g. fossil fuels, minerals) described?			
4.14. Are direct effects on locations or features of cultural importance described?			
4.15. Are direct effects on the quality of the landscape and on views and viewpoints described and where appropriate illustrated?			
4.16. Are direct, primary effects on demography, social and socio-economic condition in the area described and where appropriate quantified?			

Review question	*Relevant?*	*Adequately addressed?*	*What further information is needed?*
Prediction of secondary, temporary, short-term, permanent, long-term, accidental, indirect, cumulative effects			
4.17. Are indirect effects on any of the above aspects of the environment caused by direct effects on other aspects described and where appropriate quantified? (e.g. effects on fauna, flora or habitats caused by soil, air or water pollution or noise; effects on water uses caused by changes in hydrology or water quality; effects on archaeological remains caused by desiccation of soils)			
4.18. Are temporary, short term effects caused during construction or during time limited phases of project operation or decommissioning described?			
4.19. Are permanent effects on the environment caused by construction, operation or decommissioning of the project described?			
4.20. Are long term effects caused during project operation or by the accumulation pollutants in the environment described?			
4.21. Are effects which could result from accidents, abnormal events or exposure of the project to natural or man-made disasters described and where appropriate quantified?			
4.22. Are effects on the environment caused by activities ancillary to the main project described? (activities such as construction of access routes and infrastructure, traffic generated, extraction of raw materials, generation and supply of energy, effluent discharge or waste disposal)			
4.23. Are the effects on the environment caused by consequential development described? (it refers to the development of other projects stimulated by the main project e.g. provision of new goods or			

services, housing, businesses etc.)			
4.24. Are cumulative effects on the environment caused by the project together with other existing or planned developments in the location described?			
4.25. Are the geographic extent, duration, frequency, reversibility and probability of occurrence of each effect identified as appropriate?			
Prediction of the effects on the human health and on the sustainable development			
4.26. Are primary and secondary effects on human health and population welfare described and where appropriate quantified?			
4.27. Are impacts on biodiversity, global climate change and sustainable development discussed where appropriate?			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
Evaluation of the significance of the effects			
4.28. Is the significance or importance of each predicted effect discussed in terms of its compliance with legal requirement and the number, importance and sensitivity of people, resources or other receptors affected?			
4.29. Where effects are evaluated following legal standards or requirements is any relevant local, national or international guidance followed?			
4.30. Are positive effects on the environment described as well as negative effects?			
4.31. Are the consequences of each effect clearly explained?			
Impact assessment methods			
4.32. Are methods used to predict each effect described and are the reasons for			

their choice, any difficulties encountered and uncertainties in the results discussed?			
4.33. Where there is uncertainty about the precise details of the project and its impact on the environment are worst case predictions described?			
4.34. Where there have been difficulties in compiling the data needed to predict or evaluate effects are these difficulties acknowledged and their implications for the results discussed?			
4.35. Is the basis for evaluating the significance of impacts clearly described?			
4.36. Are impacts described on the basis that all proposed mitigation has been implemented i.e. are residual impacts described?			
4.37. Is the level of treatment of each effect appropriate to its importance for the development consent decision? Does the discussion focus on the key issues and avoid irrelevant or unnecessary information?			
4.38. Is appropriate emphasis given to the most severe, adverse effects of the project with lesser emphasis given to less significant effects			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
Other aspects relevant for the description of effects			
SECTION V: DESCRIPTION OF MITIGATION MEASURES			

Review question	*Relevant?*	*Adequately addressed?*	*What further information is needed?*
5.1. Where there are significant adverse effects on any aspect of the environment are the potential for mitigation measures discussed?			
5.2. Are any measures which the developer proposes to implement to mitigate effects clearly described and their effect on the magnitude and significance of impacts clearly explained?			
5.3. If the effect of mitigation measures on the magnitude and significance of impacts is not known are the reasons for this explained?			
5.4. Is it clear whether the developer has made a binding commitment to implement the proposed mitigation or that the mitigation measures are just suggestions or recommendations?			
5.5. Are the developer's reasons for choosing the proposed mitigation explained?			
5.6. Are responsibilities for implementation of mitigation, including funding, clearly defined?			
5.7. Where mitigation of significant adverse effects is not practicable or the developer has chosen not to propose any mitigation are the reasons for this clearly explained?			
5.8. Is it evident that the full range of possible approaches to mitigation have been considered, including measures to reduce or avoid impacts by alternative strategies or locations, changes to the project design, changes to methods and processes, "end of pipe" technologies, measures to repair impacts or measures to compensate them?			
5.9. Are compensatory measures where appropriate, adequately described?			

5.10. Is a restoration plan, properly funded, where appropriate included?			
5.11. Are plans for the control of residual impacts proposed?			
5.12. Are any negative effects of the proposed mitigation measures described?			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
Other aspects of the mitigation measures			
SECTION VI: SUMMARY OF THE ENVIRONMENTAL INFORMATION AND CONCLUSIONS (SYNTHESIS DOCUMENT)			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
6.1. Does the Environmental Information include a non-technical summary?			
6.2. Does the summary provide a concise but comprehensive description of the project, its environment, the effects of the project on the environment and the proposed mitigation measures?			
6.3. Does the summary highlight any significant uncertainties about the project and its environmental effects?			
6.4. Does the summary explain the development consent process for the project and the role of EIA in this process?			
6.5. Does the summary provide an overview of the approach to the assessment?			

6.6. Is the summary written in non-technical language, avoiding technical terms, detailed data and scientific discussion?			
6.7. Would it be the summary comprehensible to the majority of the non-specialized public?			
Other aspects of the summary of the Environmental Information and conclusions			
SECTION VII: QUALITY OF PRESENTATION			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***
7.1. Is the Environmental Information available in one or more clearly defined documents?			
7.2. Is the Environmental Information logically organised and clearly structured so that the reader can locate the information easily?			
7.3. Is there a table of contents at the beginning of the Environmental Information?			
7.4. Is there a clear description of the processes which have been followed?			
7.5. Is the presentation comprehensive but concise, avoiding irrelevant data and information?			
7.6. Does the presentation make effective use of tables, figures, maps, photographs and other graphics?			
7.7. Does the presentation make effective use of annexes or appendices to present detailed data not essential to understanding the main text?			
7.8. Are all analyses and conclusions adequately supported with data and evidence?			
7.9. Are all sources of information used properly referenced?			

7.10. Is consistent terminology used throughout the Environmental Information?			
7.11. Is the Environmental Information read as a single document with cross referencing between sections used to help the reader navigate it?			
7.12. Is the presentation demonstrably reasonable and as far as possible impartial and objective?			
7.13. Do all elements pointed out in the Environmental Information match the project they go with			
Other aspects of the quality of presentation			
Review question	***Relevant?***	***Adequately addressed?***	***What further information is needed?***

OVERAL APPRAISAL OF THE ENVIRONMENTAL INFORMATION

If the reviewer wishes to use the Review Checklist to make an overall appraisal of the quality of Environmental Information, this can be done using the table below.

No.	Review topic	Qualification	Comments
1	CHARACTERISTICS OF THE PROJECT		
2	ALTERNATIVES CONSIDERED		
3	LOCATION OF THE PROJECT		
4	MITIGATION MEASURES		
5	CHARACTERISTICS OF THE POTENTIAL IMPACTS		
6	QUALITY OF PRESENTATION		

Overall assessment:
Comments:

(*) Guidance based on EIA. EIS Review.European Commission.

Annex VII. Practical data about alternative solutions and compensatory measures

Table 1. MINIMUM CONTENTS AND CONSIDERATIONS ABOUT THE STUDY OF A PLAN OR PROJECT ALTERNATIVE SOLUTIONS.

ALTERNATIVE SOLUTIONS ASSESSMENT
1.1. Brief description about the plan/project and its main objectives: 1.2. Summary about the plan/project potential negative impacts on the Natura 2000 Sites : 1.3. Information (data) used in alternative solutions assessment: It´s obligatory to provide useful information about the data used in alternative solutions assessment, *inter alia* : 1.3.1. Identification of author/s,organization or institution that made the alternative solutions assessment by indicating the precise and complete references (name and surname of author/s,college degree,postal address,e-mail,phone,) 1.3.2. Source/s of the information on which the assessment was based, identifying baseline studies,publications,institutions consulted,etc). 1.3.3. Intensity of the assessment,indicating if there has only been a bibliographic review or if also a survey field work was carried out Problems and shortcomings encountered during alternative solutions assessment have to be mentioned. The quality of the results achieved should be evaluated in the alternative solutions assessment 1.4. Alternative solutions considered and their assessment- Alternative 0 : The purpose of this paragraph is to provide technically feasible alternatives to the plan or project submitted. The “do-nothing” or zero alternative should be included and analysed. For each alternative, it should be considered:

1.4.1. Number of alternative.

Each alternative should be numbered sequentially.

1.4.2. Detailed description of each alternative.

Characteristics of the alternative.

Infrastructures,works and necessary activities for alternative realization, indicating the variations and changes with respect to the initial plan or project.

1.4.3. Cartography

Maps with different scales (1:50.000, 1:25.000, 1:10.000, 1:5.000) showing the alternative analysed and Natura 2000 site affected.

Its obligatory to indicate in these maps: name,number,content,scale,format, GPS coordinates and other practical information).

With respect to Natura 2000,this cartography must contain the following information:

- connected activities of the plan or project respect the Natura 2000 site,
- zoning (protection area,conservation area,general uses area…),
- location of habitats types (community interest and priority habitats) and protected species.

1.4.4. Identification,analysis and assessment of each alternative about its likely effects (positive and negative effects) upon the integrity of Natura 2000 site, and with respect to the habitats types and species of community interest.

It´s mandatory to explain in detail the criteria used in this valuation.

1.4.5. Substantiated description of the reason/s for which every alternative solution was rejected or accepted,with the reference,wherever possible, to the technical and scientific documentation on which the decision is based.

1.5. Conclusions :

It should be made a final report with the following points:

1.5.1. Valuation of each alternative solution.

1.5.2. Justification of alternative elected.

1.5.3. Reasonable justification why the other alternative solutions were rejected, comparing each alternative solution presented against the integrity of the Natura 2000 site concerned.

1.5.4. In the case of a negative assessment overall alternative solutions and if it is impossible to find an alternative solution according with the integrity of Natura 2000 site, a final declaration should be made explaining in detail all the considerations about this matter.

Table 2. MINIMUM CONTENTS AND CONSIDERATIONS ABOUT THE STUDY OF A PLAN OR PROJECT COMPENSATORY MEASURES.

COMPENSATORY MEASURES ASSESSMENT
1. Natura 2000 site identification. It should be identified the Natura 2000 site concerned, indicating the name and the site code (SPA and/or SCA). Example of compensatory measure identification: - *Name of the site : SPA "SERRA DA ENCIÑA DA LASTRA"* - *Code of Natura 2000 site : ES1130009.* - *Location : Region of Galicia (Spain).* **2. Information about every compensatory measure.** 2.1. <u>Compensatory measure identification.</u> 2.1.1. Measure number : Serial number for every measure, indicating if this measure is compensatory or no 2.1.2. Measure name. Example: *Compensatory measure 1: Rehabilitation of the habitat type 6170 Alpine calcareous grasslands.*

2.1.3. General description about the measure:

It will be explained the measure content, main characteristics and application site.

2.2. Compensatory measure characterization.

2.2.1. Measure description.

Detailed description of every compensatory measure adopted.

2.2.2. Methodology and technical characteristics of every compensatory measure.

It´s necessary to explain in detail, all the technical characteristics and the methodology used for the implementation of every measure.

It will be justified in a scientific way, the chosen measure and its methodology

2.2.3. Measure location.

Precise location of the area/s where the measure/s will be implemented, inside or outside of Natura 2000 Network.

Recommendations for the selection of these areas:

- selected area/s should be adequate with the ecological purpose of the compensation,
- they have to provide similar ecological functions compared with the existent ones in the Natura 2000 site affected,
- they must belong to the same biogeographical region.

It will be reasonably justified the chosen location with respect to the compensation that it´s predictable to achieve.

2.2.4.Calendar of implementation.

Schedule indicating in detail when the measure will be implemented.

It should be differentiated if the measure is:

- a measure with a single application,
- a same measure with periodic implementation,or
- a multi-stage measure. In this case,the duration of every stage needs to be mentioned.

Proponents have to connect the implementation phase of the compensation measure/s according with the project phases (exploration,mineral extraction processing,site closure).

2.2.5. Calendar of outcomes.

Schedule indicating dates and expected time frame in order to ensure desired results with respect to the phases of the measure implementation.

It should be estimated the time for the compensatory measure effectiveness.

2.3.Objectives and expected outcomes.

2.3.1. What environmental impact must be identified that it is trying to compensate with a implementation measure.

It will be specified the name and the number of the environmental impact according with the project impact sheet.

2.3.2. What natural elements of community interest and/or ecological process are the compensatory measures directed.

It must be included the name (common and scientist) and its code (Normalized Form of Natura 2000) of the habitats and species of community interest and all ecological process for which the compensatory measure will be implemented.

The compensatory measure should be faced to the natural element affected by the environmental impact collected in the impacts site sheet.

2.3.3. What objective will pretend to obtain with the compensatory measure implemented in relation to each natural elements affected for the project environmental impact.

A general description was avoided. It´s mandatory a detailed explanation for every natural element likely to be affected and with the following considerations:

- specific compensation: how the compensatory measure will help to compensate

the adverse effect/s provoked by the impact.

It must be showed the equivalence between affection provoked and expected compensation.

- what ecological benefits will be obtain for every natural element affected once the compensatory measure has been implemented and estimated time in each case for obtaining these benefits.

2.3.4. What success probability is estimated to obtain in the implementation of every compensatory measure and for each conservation objective.

An analysis of technical viability of every compensatory measure will be made in order to demonstrate it.

3. Cartography

Cartography with a high level of detail according to the type of compensatory measure will be done, showing the area/s in which the measures will be implemented.

Maps with different scales (1:50.000, 1:25.000, 1:10.000, 1:5.000) showing the compensatory measure to be implemented and Natura 2000 site affected.

Its mandatory to indicate in the maps: name,number,content,scale,format, GPS coordinates and other practical information).

With respect to Natura 2000,this cartography must contain the following information:

- location compensatory measure in relation with the damage site,
- division in zones (protection area,conservation area,general uses area…),
- location of habitats types (community interest and priority habitats) and protected species.

4. Costs of compensatory measures implementation.

The proponent of the plan or project has to assume all costs of compensatory measures implementation (European Commission,2007).

Therefore, proponents must provide a budget breakdown for the implementation of every compensatory measure to implement in the Natura 2000 site affected.

This budget should be realistic and in accordance with the measures proposed and guaranteeing at all time,the budgetary sustainability of the compensatory measures, even those measures to be implemented in long-term.

The non-inclusion of an adequate compensation budget in the global budget of the plan or project implies a lack of guarantee of the maintenance and/or recuperation of the integrity of Natura 2000 sites and this should be enough reason for the plan or project authorisation may not be granted.

Example of check-lists for assessment of alternative solutions and compensatory measures matrix. (Annex 2.Blank assessment forms.Managing Natura 2000 Sites).

Table 3. ASSESSMENT OF ALTERNATIVE SOLUTIONS.

<table>
<tr><th colspan="3">ASSESSMENT OF ALTERNATIVE SOLUTIONS</th></tr>
<tr><td colspan="2">The description and objectives of project or plan:</td><td>The “do-nothing” alternative:</td></tr>
<tr><td colspan="3">Predicted adverse effects of the project or plan on the Natura 2000 site following the appropriate assessment:</td></tr>
<tr><td colspan="3">Comparison with chosen project or plan</td></tr>
<tr><td>Possible alternative solutions</td><td>Evidence of how the alternative solutions were assessed</td><td>Describe the relative effects on the conservation objectives of Natura 2000 (greater or less adverse effects)</td></tr>
<tr><td colspan="3">Alternative locations
Alternative 1:
Alternative 2:
Alternative 3:</td></tr>
<tr><td colspan="3">Alternative designs of development/scale
Alternative 1:
Alternative 2:
Alternative 3:</td></tr>
</table>

Alternative mineral processes Alternative 1: Alternative 2: Alternative 3:
Alternative methods of construction (roads,power lines,dumps…) Alternative 1: Alternative 2: Alternative 3:
Alternative solutions for biodiversity impacts Alternative 1: Alternative 2: Alternative 3:
Alternative decommissioning/dismantling methods Alternative 1: Alternative 2: Alternative 3:
Alternative waste management (including waste-rock and tailings management facilities Alternative 1: Alternative 2: Alternative 3:
Alternative time scales Alternative 1: Alternative 2: Alternative 3:
Conclusions on assessment of alternatives

Table 4. ALTERNATIVE SOLUTIONS ASSESSMENT STATEMENT.

ALTERNATIVE SOLUTIONS ASSESSMENT STATEMENT	
Describe the alternative solution that would avoid or minimise significant impacts on the Natura 2000 site	Explain why the proposed project or plan is favoured over the other alternative solutions assessed.

Provide an overall statement to explain why it is considered that in this instance there are no alternative solutions that would avoid reducing the conservation value of the Natura 2000 site.	

Table 5. CHECK-LIST FOR TO REVIEW (ENVIRONMENT AUTHORITY) THE QUALITY ABOUT THE ALTERNATIVE MEASURES PRESENTED BY THE PROJECT PROPOSER.

ALTERNATIVES			
Review questions	**Relevant?**	**Properly addressed?**	**Which additional information is needed?**
2.1. Is there a description of the process by which the project will be carried out? Is there a description of the alternatives proposed for the duration of the project?			
2.2. Is there a description of the initial situation in case the project is not carried out?			
2.3. Are the alternatives proposed realistic and suitable for the project?			
2.4. Is there an explanation of the main reasons which lead to the choice of the project proposed, including any environmental motive?			
2.5. Is there a comparison of the main environmental effects of the different alternatives with those derived from the proposed project?			
Other aspects when considering alternatives			

Table 6. EVIDENCE OF ASSESSMENT MATRIX (ALTERNATIVE SOLUTIONS).

EVIDENCE OF ASSESSMENT MATRIX (ALTERNATIVE SOLUTIONS)

Consultation on alternative solutions			
List of agencies consulted	Response to consultation	Impact of alternatives on the Natura 2000 site are considered adverse (explain)	Impact of alternatives on the Natura 2000 site are considered positive or neutral (explain)
Data collected to carry out the assessment			
Who carried out the assessment? :			
Sources of data:			
Level of assessment completed:			
Where can the full results of the assessment be accessed and viewed? :			

Table 7. COMPENSATORY MEASURES ASSESSMENT MATRIX.

Name and brief description of the project or plan and how it will adversely affect the Natura 2000 site:	
Description of the compensatory measures:	
Assessment questions	**Response**
How are compensatory measures identified?	
What alternative measures were identified?	

How do these measures relate to the conservation objectives of the site?
Do these measures address,in comparative proportions the habitats and species negatively affected?
How would the compensatory measures maintain or enhance the overall coherence of Natura 2000?
Do these measures relate to the same biogeographical region in the same Member State?
If the compensation measures require the use of land outside the affected Natura 2000 site,is that land under the long-term ownership and control of the project or plan proponent or relevant national or local authority?
Do the same geological,hydrogeological,soil, climate and other local conditions exist on the compensation site as exist on the Natura 2000 site adversely affected by the project or plan?
Do the compensatory measures provide functions comparable to those that had justified the selection criteria of the original site?
What evidence exists to demonstrate that this form of compensation will be successful in the long term?

Bibliography:

Guidance Document. Non-energy mineral extraction and Natura 2000. European Commission.2011.

Managing Natura 2000 sites. The provisions of Article 6 of the “Habitats” Directive 92/43/EEC.

Criteria-Guidance for the elaboration of environmental documentation needed for the environmental impact assessment of projects likely to have effects on Natura 2000 Network sites.Ministry of the Environment,Rural and Marine Affairs of Spain.2009.

TOR Reference No.:	Author(s): Ana Garcia, Gisela Holzgraefe and Iñaki Bergareche
Version: 1.0	Date: 09.2015

TERMS OF REFERENCE FOR WORK UNDER THE AUSPICES OF IMPEL

1. Work type and title

1.1 Identify which Expert Team this needs to go to for initial consideration	
Industry	☐
Waste and TFS	☐
Water and land	☐
Nature protection	☑
Cross-cutting – tools and approaches -	☑
1.2 Type of work you need funding for	
Exchange visits	☑
Peer reviews (e.g. IRI)	☐
Conference	☐
Development of tools/guidance	☑
Comparison studies	☐
Assessing legislation (checklist)	☐
Other (please describe):	☐
1.3 Full name of work (enough to fully describe what the work area is)	
Nature protection in permitting and inspection of extractive industry (quarries and open cast mining) – Implementation of Art. 6(3) of the Habitats Directive	
1.4 Abbreviated name of work or project	
Permitting under Art. 6(3) HD – quarries and open cast mining	

2. Outline business case (why this piece of work?)

2.1 Name the legislative driver(s) where they exist (name the Directive, Regulation, etc.)	
Habitats Directive, Council Directive 92/43/EEC of 21 May 1992 Birds Directive, Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009	
2.2 Link to IMPEL MASP priority work areas	
1. Assist members to implement new legislation 2. Build capacity in member organisations through the IMPEL Review Initiatives 3. Work on 'problem areas' of implementation identified by IMPEL and the European Commission	☐ ☐ ☑
2.3 Why is this work needed? (background, motivations, aims, etc.)	

A. Motivations

Decline in EU biodiversity

The alarming decline in Europe's biodiversity has driven the adoption, by the European Union (EU) of two key pieces of legislation – the Habitats and Birds Directives – to conserve Europe's most valuable species and habitats across their entire natural range within the EU.

The Birds and Habitats Directives are central to achieving the EU 2020 target of halting and reversing the loss of biodiversity endorsed by Heads of State and Government. The Commission has adopted an ambitious strategy to achieve this objective, comprised of six targets. Target 1 of this Strategy is focused on "Full implementation of EU nature legislation to protect" biodiversity and requires a significant improvement in conservation status. The implementation of EU nature legislation also contributes significantly to other targets of the biodiversity strategy, including in relation to green infrastructure and restoration under Target 2.

Assure compatibility of extractive industry with effects on wildlife and nature

Europe's manufacturing and construction industries are heavily dependent on the non-energy extractive industry for essential raw materials, including non-energy minerals, resources that are many times present on Natura 2000 sites, which highlights the a need to assure the compatibility of extractive industry with effects on wildlife and nature.

Increase the level of implementation and enforcement of the Habitats and Birds Directives within organizations in the Member States and identification of key challenges

In 2012 - 2014 the "Study on Evaluating and Improving the Article 6.3 Permit Procedure for Natura 2000 Sites" was carried out for the Commission. Only nature authorities were involved in it. A big variety of different approaches have been applied in practice.

In total it was found that the Article 6.3 permit procedure is functioning well.

However, some countries/regions some countries reported that there is still an overall lack of understanding of, or willingness to accept, the Article 6.3 procedure amongst certain authorities and/or sectors. Several countries reported that there was still a real need to set up a more

systematic and consistent framework for assessment, provide skills training and locally adapted guidance (including for instance checklists and pro forma forms) for both the project or plan proponents and the competent authorities
A number of current problems are mentioned in the study, such as:

- Poor quality of the Appropriate Assessment (AA);
- Lack of skills/ knowledge /capacity in the Article 6 (3) procedure;
- Poor inadequate knowledge base on which to assess impacts ;
- Problems during screening;
- Lack of assessment of cumulative effects ;
- Poor understanding of key concepts and legal terms.

This report makes several recommendations, to facilitate the implementation of the HD Directive, increase the level of understanding of how this is to be done in practice and discuss any particularly complex or problematic cases, including:
- User-friendly up-to-date and practical guidance documents (eg practical 'how to' guide, with worked up examples of how to collect baseline information, assess impacts or cumulative effects, identify mitigation measures, …).
- Consider drawing up standardized, but non obligatory, checklists of what to include in an AA report.
- Organize more systematic training courses (tailored to particular needs) and exchange platforms for competent authorities;
- Ensure there is a consistent and uniform framework in place for screening of all types of plans and projects;
- Provide a standardized format for preparing the screening application and to guide the developer/competent authority in terms of the minimum level of information that is required for the screening test (together with guidelines and explanations of how to complete them).

The Multi Annual Strategic Programme 2013-15 for IMPEL presents background information and the key priorities, in line on the European Commission's 7th Environmental Action Plan Consultation Document and its Communication on Implementation (COM(2012) 95 final). Together, these seek to deliver four important outcomes, being mainly important to this project: Implement EU legislation effectively to deliver better environmental outcomes; Align environmental policy and practice to latest scientific knowledge.

B. Background

In 2013 IMPEL identified in a small project "Nature protection in permitting and inspection". The need for more information concerning nature protection in permitting and inspection of industrial installations was confirmed. Therefore IMPEL carried out a follow-up in 2014 project with the title "Nature protection in permitting and inspection of industrial installations Implementation of Art. 6(3) of the Habitats Directive" in which nature authorities and permit and inspection authorities for industrial installations participated. It was found out very quickly that the project could only give a general overview of the situation and collect information about some best practice examples. It is impossible to give one recipe for all different species and particular targeted features. The main findings of the project 2014 were that there is a need for:

Improving knowledge about and use of EU guidance / awareness raising measures,
Initiating revision of existing or development of new EU guidance,
Sharing existing national guidance and scientific studies on different projects,
Exchange of knowledge about screening criteria and assessment methodologies, e.g accepted practices: use of Critical Loads (CL), criteria for habitat loss, new approaches.
Follow-up projects should concentrate on small steps.

In 2015 the project is ongoing, and the products will be:

- An evaluation of the applicability of the Guidance Document "Wind energy developments and Natura 2000" and a
- Sector specific guidance document on Article 6(3) HD in permitting of farm projects (pigs and poultry).

C. Aim

The main objective of this project is to contribute to the continuing development of capacity within IMPEL and to the gather forces and share of experience between MS to assure proper implementation and enforcement of the Nature directives, to promote nature conservation.

To achieve such objective we propose a an IMPEL follow-up project in 2016 to explore the implementation and enforcement of article 6 (3) of the HD Directive on Non-Energy Mineral extraction sector, more specifically on quarries and open cast mining, by providing:

- An evaluation of the applicability of the EU Guidance Document "Non-Energy Mineral extraction and Natura 2000", on the subject of quarries and open cast mining; and
- To explore, analyze and report the practices of MS on application of Art 6(3) of the HD concerning this sector.

2.4 Desired outcome of the work (what do you want to achieve? What will be better / done differently as a result of this project?)

Exchange of experience concerning the applicability of the EU Guidance Document "Non-Energy Mineral extraction and Natura 2000" – on the subject of quarries and open cast mining and to explore and analyze the present the practices of MS on application of Art 6(3) of the HD concerning this sector.

At the same time the aim is to improve better knowledge about the document and discussion of national approaches.
For the development of a common understanding and sharing as well as spreading knowledge a report should be developed. The results will be available for all interested parties.

2.5 Does this project link to any previous or current IMPEL projects? (state which projects and how they are related)

2013: “Nature protection in permitting and inspection”
2014: “Nature protection in permitting and inspection of industrial installations Implementation of Art. 6(3) of the Habitats Directive” – general overview
2015: “Nature protection in permitting and inspection of industrial installations Implementation of Art. 6(3) of the Habitats Directive” – evaluation of the Guidance Document “Wind energy developments and Natura 2000” and development of a Sector specific guidance document on Article 6(3) HD in permitting of farm projects (pigs and poultry).

3. Structure of the proposed activity

3.1 Describe the activities of the proposal (what are you going, to do and how?)

Working with a core team for the preparation of the project activities, that might include a short questionnaire to be sent to MS.
Sending of the questionnaire to MS (to be decided, t.b.d.).
Invitation of experts concerning quarry and open cast mining projects for the evaluation of the Guidance Document “Non-Energy Mineral extraction and Natura 2000”.
Discussion with experts concerning Article 6(3) HD in permitting of projects.
Preparation of the documents (outputs).

3.2 Describe the products of the proposal (what are you going to produce in terms of output / outcome?)

Report that includes an evaluation of the applicability of the Guidance Document “Non-Energy Mineral extraction and Natura 2000” and that complements it, with actual practices and examples from MS, intended to cover:

- The non-energy extractive industry (NEEI) in the EU;
- The EU’s policy framework and legislation for nature and biodiversity;
- Potential impacts of non-energy extraction activities on nature and wildlife;
- The importance of strategic planning;
- Article 6.3: carrying out an appropriate assessment of NEEI plans and projects in accordance with the habitats directive;
- Screening lists and criteria
- Assessment of significance; significance criteria
- Cumulative effects assessment
- Article 6.4: alternative solutions;
- Some NEEI activities and their relations with the provisions of article 6.3 and 6.4 (Rehabilitation);
- Permitting;
- Monitoring;
- Inspection.

3.3 Describe the milestones of this proposal (how will you know if you are on track to complete the work on time?)

January 2016: identification of core team members
February to May 2016: identification of contributors to the project
March 2016: first core team meeting

March/April 2016: send questionnaire to MS June 2016: workshop with experts August 2016: second core team meeting September 2016: draft final report for green expert team November 2016: submission of the draft final report to GA
3.4 Risks (what are the potential risks for this project and what actions will be put in place to mitigate these?)

4. Organisation of the work

4.1 Lead (who will lead the work: name, organisation and country) – this must be confirmed prior to submission of the TOR to the General Assembly)
Project Manager: Gisela Holzegraefe, Ministry for Energy, Agriculture, the Environment and Rural Areas of Land Schleswig-Holstein, Germany Project Co-Manager: Ana Garcia, IGAMAOT - General Inspection for Agriculture, Sea, Environment and Spatial Planning, Portugal Project Co-Manager: Iñaki Bergareche Urdampilleta, The Territorial Unit of A Coruña Province of the Regional Environmental Authority, Spain
4.2 Project team (who will take part: name, organisation and country)
t.b.d 6 countries: Germany, Portugal, and Spain And possibly: Romania Croatia Italy
4.3 Other IMPEL participants (name, organisation and country)
t.b.d
4.4. Other non-IMPEL participants (name, organisation and country)
e.g. ENCA, Habitats Committee, ORNIS Committee, JASPERS, Working group for Appropriate Assessment procedure. Working group on EIA (Espoo Convention) and SEA (Kyiv Protocol)

5. High level budget projection of the proposal. In case this is a multi-year project, identify future requirements as much as possible

	Year 1 (exact)	Year 2	Year 3	Year 4
How much money do you require from IMPEL?	17 270 €			
How much money is to be co-financed	-			
Total budget	17 270 €			

6. Detailed event costs of the work for <u>year 1</u>

	Travel € (max €360 per return journey)	Hotel € (max €90 per night)	Catering € (max €25 per day)	Total costs €
<u>Event 1</u>	6 x 360 € = 2 160 €	540 €	150 €	2 850 €
First core team meeting,				
March 2015,				
Location t.b.d.				
6 participants				
2 days, 1 night				
<u>Event 2</u>	18 x 360 € = 6 480 €	3 240 €	1 350 €	11 070 €
workshop				
June 2015				
Location t.b.d.				
18 (6 core team plus 12 experts)				
3 days / 2 nights				
<u>Event 3</u>	2 160 €	540 €	150 €	2 850 €
second core team meeting				
August 2015				
Location t.b.d.				
6 participants				
2 days, 1 night				
<u>Event 4</u>				
<Type of event>				

<Data of event> *<Location>* *<No. of participants>* *<No. of days/nights>*				
Total costs for all events	10 800 €	4 320 €	1 650 €	**16 770 €**

7. Detailed other costs of the work for year 1

7.1 Are you using a consultant?	☐ Yes ☑ No
7.2 What are the total costs for the consultant?	-
7.3 Who is paying for the consultant?	-
7.4. What will the consultant do?	Development of a draft for the final report, the evaluation document and the sector specific guidance document
7.5 Are there any additional costs?	☑ Yes ☐ No Namely: 630 €
7.6 What are the additional costs for?	participation in IMPEL green expert team meeting
7.7 Who is paying for the additional costs?	IMPEL
7.8. Are you seeking other funding sources?	☐ Yes ☑ No Namely:
7.9 Do you need budget for communications around the project? If so, describe what type of activities and the related costs	☐ Yes ☑ No Namely:

8. Communication and follow-up (checklist)

	What		By when
8.1 Indicate which communication materials will be developed throughout the project and when ***(all to be sent to the communications officer at the IMPEL secretariat)***	TOR˅* Interim report˅* Project report˅* Progress report(s) ˅ Press releases News items for the website˅* News items for the e-newsletter Project abstract˅* IMPEL at a Glance ˅ Other, (give details):	☑ ☐ ☑ ☑ ☐ ☑ ☑ ☑ ☐ ☐	t.b.d.
8.2 Milestones / Scheduled meetings (for the website diary)	First core team meeting Workshop Second core team meeting		
8.3 Images for the IMPEL image bank	☑ Yes ☐ No		
8.4 Indicate which materials will be translated and into which languages	t.b.d.		
8.5 Indicate if web-based tools will be developed and if hosting by IMPEL is required	t.b.d.		
8.6 Identify which groups/institutions will be targeted and how	COM, non-IMPEL participants, e.g. ENCA, Habitats Committee, ORNIS Committee, JASPERS, Working group for Appropriate Assessment procedure. Working group on EIA (Espoo Convention) and SEA (Kyiv Protocol)		
8.7 Identify parallel developments / events by other organisations, where the project can be promoted			

*˅) Templates are available and should be used. *) Obligatory*

9. Remarks

Is there anything else you would like to add to the Terms of Reference that has not been covered above?

In case of doubts or questions please contact the IMPEL Secretariat.

Draft and final versions need to be sent to the IMPEL Secretariat in word format, not in PDF.

Thank you.

Annex I

to

IMPEL Report

Permitting and Inspection under Art. 6(3) Habitats Directive - Quarries and Open Cast Mining

Experience in IMPEL Member Countries, Best Practice Examples

IMPEL Project 2016/15:

Summary of responses to the questionnaire

Information about respondent, organisation and contact details

Albania – ALB1 **National Environmental Agency** **CONTACT: Mrs. Aspri Kapo** **EMAIL: asbeka@hotmail.com** **TEL: +355697246057**	Italy1 – IT1 **Italian National Institute for Environmental Protection and Research (ISPRA - Istituto Superiore per la Protezione e la Ricerca Ambientale)** **CONTACT: Mrs. Carmela Cascone** **EMAIL: carmela.cascone@isprambiente.it** **TEL: +390645650330**	Romania – ROM **National Environmental Guard – Suceava County Commissariat** **CONTACT: Mr. Constantin Hutupas** **EMAIL: hutupasconstantin:@yahoo.com / cjsuceave@gnm.ro** **TEL: 0747067709 / 0774532495**
Albania – ALB2 **Ministry of the Environment** **CONTACT: Mrs. Elvana Ramaj** **EMAIL: elvana.ramaj@moe.gov.al** **TEL: +355692121425**	**Italy2 – IT2** Ministry for the Environment, Land and Sea CONTACT: Mrs. Claudia Carpino EMAIL: carpino.claudia@minambiente.iy TEL:	**Slovakia – SLVK** Slovak Environmental Inspectorate CONTACT: Cyril Burda / Roman Antoska EMAIL: cyril.burda@sizp.sk / roman.antoska@sizp.sk TEL:
Bulgaria – BUL **Ministry of Environment and Water** **CONTACT: Mrs. Aylin Hasan** **EMAIL: ahasan@moew.government.bg** **TEL: +35929406103**	**Kosovo –KOS** Ministry of Environment and Spatial Planning CONTACT: Mr. Ismail Hetemaj EMAIL: ismail.hetemaj@rks-gov.net TEL: +37744192706	**Slovenia – SLVN** Inspectorate for the Environment and Spatial planning CONTACT: Mrs. Andreja Slapnik EMAIL: andreja.slapnik@gov.si TEL:
Croatia – CRO **Croatian Agency of Environment and Nature Ministry of Environmental and Nature Protection** **CONTACT: Mr. Neven Trenc / Mrs. Katica Bezuh** **EMAIL: neven.trenc@dzzp.hr / katica.bezuh@dzzp.hr** **TEL: NT - +38515502928 / KB - +38514866137**	**Portugal – POR** Institute of Nature Conservation and Forests CONTACT: Mrs. Lia Mergulhao EMAIL: lia.mergulhao@icnf.pt TEL: +351219247200	**Spain – SPN** Regional Government of Galicia, Depratment of Environment & Planning, Nature conservation service of Ourense CONTACT: Mr Jose Antonia Vazquez Quintela EMAIL: jose.antonio.vazquez.quintela@xunta.es TEL: +34988386499

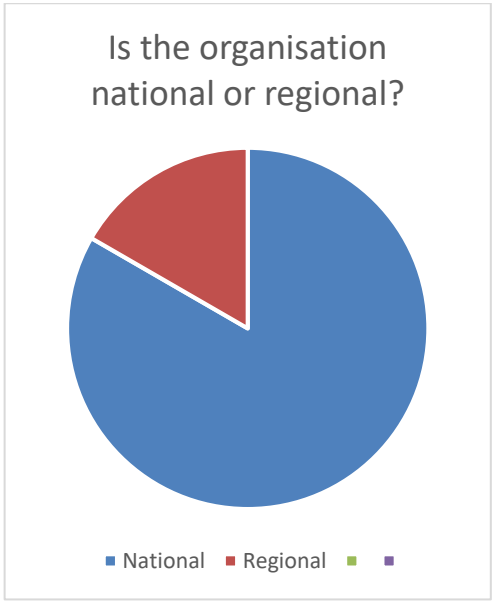
Is the organisation	National	ALB1; ALB2; BUL; CRO; IT1; IT2; KOS; POR; SLVK; SLVN	regional	ROM; SPN
	Other, please specify:			

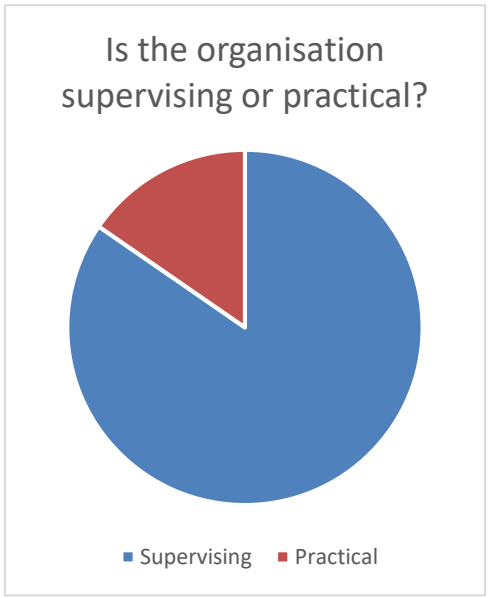
Is your organisation / authority responsible for	Permitting	ALB1; ALB2; BUL; CRO; KOS; POR; SLVK; SPN	Inspection	ROM; SLVK; SLVN; SPN
	0ther, please specify: IT1 - Nature protection, Evaluation of Appropriate Assessment IT2 - local authorities (Regioni) are in charge of administrative and regulatory functions related to the implementation of the habitats directive. The Ministry for the Environment is responsible for coordinating.			
Does it carry out	Supervising tasks	ALB1; ALB2; BUL; CRO; IT1; IT2; POR; ROM; SLVK; SLVN; SPN	Practical tasks	ROM; SPN
Do you work in the field of:				
Nature conservation	Yes	ALB2; BUL; CRO; IT1; KOS; POR; ROM; SLVN; SPN	No	IT2; SLVK
Permitting and/or inspection of installations	permitting	ALB2; BUL; CRO; KOS; SPN	inspection	IT2; ROM; SLVN; SPN
Non-Energy Mineral extraction industry (NEEI)	yes	SLVN	no	ALB2; IT1; IT2; ROM; SPN
	Other, please specify ALB1 - Registration and supervising of self-monitoring reports from A&B Environmental Permits, Department of Information and Statistics/ PRTR Sector IT1 – Assessment of plans and projects significantly affecting Natura 2000 sites.			
Which is your professional background?	Nature conservation	ALB2; BUL, CRO; IT1; KOS; POR; ROM: SLVN; SPN	NEEI/Installation specialist	SLVK
	Other, please specify			
	ALB1 - Specialist of Geography and MSc. Environmental Technology IT2 - agronomist engineer			

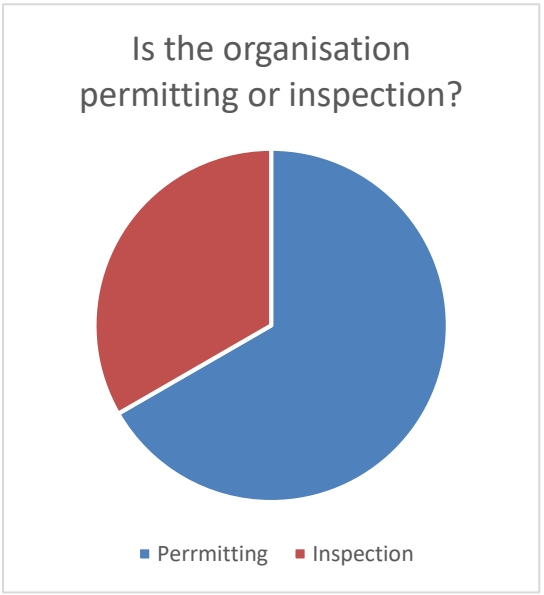
Which kind of installations do you work with: for example - quarries and open cast mining (for production of stones, sand (pits), chalk, gravel, and other products for civil construction, industry, etc.)	ALB1 - Based to the Low No. 10448 Dated 14.07.2011 “On environmental permitting” (Appendix 1), National Environmental Agency (NEA) gives Environmental Permits (Type B) for extraction of minerals, sand and clay from open cast mining and quarries, registers and controls the self-monitoring reports from Environmental Permits. ALB2 – Procedures for preliminary EIA study and environmental permit procedures BUL – All described. CRO – All kind of installation for NEEI IT1 – Any plan or project likely to have a significant effect on a Natura 2000 site POR - quarries and open cast mining (mainly construction minerals, e.g. ornamental limestones, gravel) ROM - Inspection and control activities in environmental protection, activity that includes checking installations of the kind mentioned SLVN - I supervise the influence of quarries on the environment (noise, air emissions, waste treatment …) SPN - Quarries and open cast mining in Natura 2000 sites. (Quarries and open cast mining for production of dimension and decorative stones, sand (pits),gravel, aggregates and other products for civil construction)

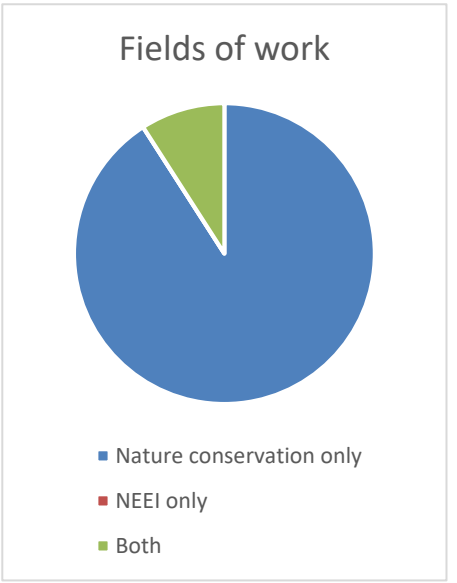
The answers only represent the opinion of the respondent and reflect the circumstances in……

Country	
IT1	response to survey questions and in relation to concepts of survey questions
KOS	Implementation of Art. 6(3) of the Habitats Directive
SLVN	in Slovenia.


Is the organisation national or regional?
National
Regional


Is the organisation supervising or practical?
Supervising
Practical

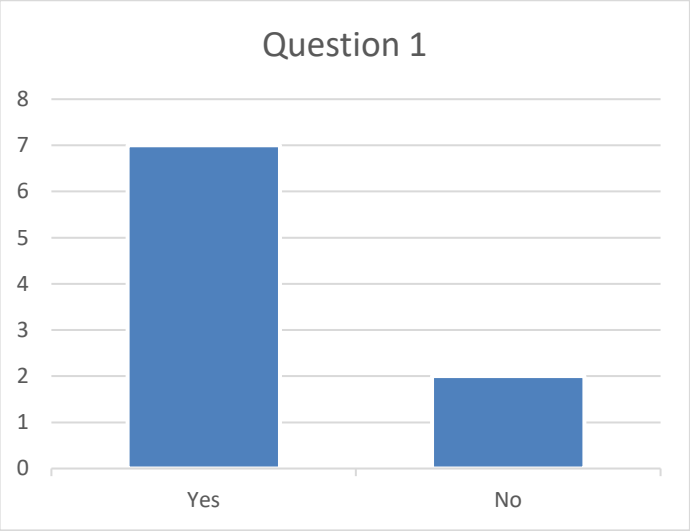

Is the organisation permitting or inspection?
Perrmitting
Inspection


Fields of work
Nature conservation only
NEEI only
Both

The non-energy extractive industry (NEEI) in Natura 2000 (N2K) sites

1. Are there NEEI present in (or near, within 10 km of a) Natura 2000 (N2K) sites? Yes/No

Yes	No	Don't know / N/A	Detail
BUL; IT1; IT2; KOS: POR; ROM: SLVN	ALB1; ALB2	SLVK	**KOS** - Kosovo is now focused on approximation of their national legislation with *acquis communautaire* in general. It is clear that Natura 2000 implementation is in full line with this commitment and will be an inevitable step in the process of preparation for accession; at the same time, it is the most demanding task in the nature conservation chapter. Kosovo is not a Party to the Bern Convention. It means that the Emerald network has not been developed. The Emerald network is often used by the European Commission as the very first step on the way to identification of Natura 2000 sites. The first Law on nature protection of Kosovo came into force in 2006, actually is inforce new Law from 2010. So far, PAs have been designated on 11% of the country´s territory. Kosovo has quite a balanced nature conservation governance system. National Parks are designated directly by the Kosovo Assembly (parliament), Strict Nature Reserves, SPA, SAC, Nature Monuments of Particular Importance and Nature Parks are designated by the Government. Only small-scale PAs (Nature Monument, Protected Landscape, Park Architecture Monument) with regional or local importance are designated directly by municipalities. On the one hand, so constituted system would be an advantage. On the other, Kosovo has quite a young system of nature conservation with so far insufficient capacities, esp. at the technical level, and such division of responsibilities can cause practical problems. **ALB2** - Not applicable for Albania as the country is not a Member State yet and the Natura 2000 network is currently being identified in the country.



1a. If yes please the N2K area fill the table with the available data.

Country	Kind of NEEI Activity (for example - quarries and open cast mining (for production of stones, sand (pits), chalk, gravel, and other products for civil construction, industry, etc)	Area of activities in N2K (ha)	Area of activities in or near N2K (ha)	Number of activities in or near N2K	Number of activities in or near N2K
IT	Quarry of Gypsum	374.580 m^2 (of which 227.248 m^2 included in the authorization of the quarry; FANTI, 2010)			
BUL	Quarries and open cast mining	4334.6	14212.4	201	443
CRO	Stone/architecture			25	99
CRO	Stone/civil constraction			88	25
CRO	barit			6	9
CRO	Sea salt			4	4
CRO	Bauxite			9	23
CRO	gyps			1	8
CRO	sand			23	72

Country	Kind of NEEI Activity (for example - quarries and open cast mining (for production of stones, sand (pits), chalk, gravel, and other products for civil construction, industry, etc)	Area of activities in N2K (ha)	Area of activities in or near N2K (ha)	Number of activities in or near N2K	Number of activities in or near N2K
CRO	Sand /gravel (sea)			3	9
CRO	Limestone/dolomite			3	14
CRO	Carbon clay			1	14
CRO	cement			2	10
IT1	Quarry of Gypsum	374.580 m^2 (of which 227.248 m^2 included in the authorization of the quarry; FANTI, 2010)			
IT2	http://annuario.isprambiente.it/ada/scheda/4855				
KOS	quarries and open cast mining (for production of stones, sand (pits), chalk, gravel, and other products for civil construction, industry, etc)	Based on the fact that Kosovo doesn't have established Natura 2000 Network, we don't know exactly number of interventions in N2K and of course surface in ha. Any way we know that are some activities within or near supposed N2K areas. Major part of Protected Areas in Kosovo (about 11%) of Kosovo territory We aspect to be part of N2K.			
POR	Quarries and open cast mining * Data not available; this information should be gathered next to licensing authorities: Municipalities and the General Directorate for Energy and Geology (DGEG).	*	*	*	*
ROM	Andesite	31,67 ha	11	4,6 ha	5
ROM	Amphibolites	2 ha	1	17,6 ha	1
ROM	Amphibolites bazaltoid andesite	4 ha	1		
ROM	Slate	59,5 ha	1		
ROM	Gold and silver	108,7 ha	1	347,5 ha	
ROM	Limestone	113,98 ha	13	140,1 ha	3

Country	Kind of NEEI Activity (for example - quarries and open cast mining (for production of stones, sand (pits), chalk, gravel, and other products for civil construction, industry, etc)	Area of activities in N2K (ha)	Area of activities in or near N2K (ha)	Number of activities in or near N2K	Number of activities in or near N2K
ROM	Limestone and gneiss	100,555 ha	1		
ROM	Dacite	20,2 ha	2		
ROM	Diorit	44,3 ha	2		
ROM	Diabaz	72,75 ha	5		
ROM	Gips cast			109,58 ha	1
ROM	Grit stone	0,8334 ha	1		
ROM	Calcareous sandstone	11,1 ha	1		
ROM	Quartz sandstone	1,5 ha	1		
ROM	Ornamental grit stone	0,8042 ha	4		
ROM	Granodiorite	3,8 ha	1		
ROM	Granite	383,48 ha	19	23,67 ha	1
ROM	Micasist, gneiss	6,686 ha	2		
ROM	Marble			1 ha	1
ROM	Quartz sands			83,3 ha	1
ROM	Stone building	4,58 ha	2	16 ha	1
ROM	Ornamental stone	1,65 ha	1		
ROM	Rhyolites	8 ha	1		
ROM	Igneous rock	4,3 ha	1		
ROM	Granulated rock			192 ha	1
ROM	Basaltic scoria	13,3 ha	1		
ROM	Volcanic tuffs	0,2 ha	1		
ROM	Total	997,8886	74	935,35	15
SLVN	We do not have that data. Protection objectives in six N2 areas are dependent on activities of quarries				

1b. Please list any documents relevant to NEEI and Natura 2000 in your country below *?

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
ALB1	PKIE 2016-2020	Plani Kombetar Per Integrimin Evropian 2016-2020	Kapitulli 27 Priortet (paragrafi 7) IV. 5 Mbrojti e Natyres http://www.integrimi.gov.al/al/dokumenta/dokumente-strategjike/plani-kombetar-per-integrimin-europian-2016-2020&page=1
ALB2	N/A as Albania not yet a member state		
BUL	Legislation	Underground Resources Act, 1999	https://www.me.government.bg/en/library/underground-resources-act-321-c25-m258-1.html

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
BUL	Legislation	Regulation on the scope and content of the work projects for prospecting or exploration, extraction and primary processing of mineral resources, liquidation and / or conservation of geological and mining sites and reclamation of affected lands and the terms and conditions for their reconciliation, 2013	http://www.lex.bg/laws/ldoc/2135951437
BUL	Legislation	Environmental Protection Act, 2002	http://goo.gl/AEE0CT
BUL	Legislation	Regulation on conditions and procedures for environmental impact assessment, 2006	http://goo.gl/bGXjnV
BUL	Legislation	Biological Diversity Act, 2002	http://goo.gl/4lde42
BUL	Legislation	Regulation on the Conditions and Procedures for Assessment of the Compatibility of Plans, Programs, Projects and Investment Proposals with the Scope and Objectives of Conservation of the Protected sites (Natura 2000 sites), 2007	http://goo.gl/h00Fze
CRO	Legislation	Uredba o ekološkoj mreži (NN 124/13; 105/15) Pravilnik o ocjeni prihvatljivosti (NN 146/14)	http://narodne-novine.nn.hr/clanci/sluzbeni/2013_10_124_2664.html http://narodne-novine.nn.hr/clanci/sluzbeni/2014_12_146_2738.html
CRO	Guidance	Priručnik za ocjenu prihvatljivosti zahvata za ekološku mrežu (OPEM)	http://www.dzzp.hr/ocjena-prihvatljivosti/ocjena-prihvatljivosti/prirucnik-za-

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
			ocjenu-prihvatljivosti-zahvata-za-ekolosku-mrezu-opem-1475.html
IT1	Legislation	REGIONAL LAW (Emilia Romagna) 14th April 2004, n. 7	http://demetra.regione.emilia-romagna.it/al/monitor.php?vi=all&urn=urn:nir:regione.emilia.romagna:legge:2004-04-14;7&urn_tl=dl&urn_t=text/xml&urn_a=y&urn_d=v&urn_dv=n
IT1	Legislation	REGIONAL LAW (Emilia Romagna) 18th May 1999, n. 9	http://demetra.regione.emilia-romagna.it/al/monitor.php?urn=er:assemblealegislativa:legge:1999;9
IT2	guidelines	"Linee guida per la progettazione, gestione e risanamento ambientale delle attività estrattive a cielo aperto e in sotterraneo e opere connesse" – D.G.R. N° 141 DEL 15/02/2008	http://www.ambienteinliguria.it/eco3/DTS_GENERALE/20080313/lineeguida_attivitaestrattive.pdf
IT2	practical example	Gestione delle attività estrattive in Aree protette. Il caso del Parco Regionale Fluviale del Trebbia	http://www.sarmaproject.eu/uploads/media/2010_ER_CERA_SPOTORNO.pdf
KOS	Legislation	**Law No.03/L –233 on Nature Protection** - has been in force since 2010. It covers the whole field of nature conservation as well as implementation of EU Nature Directives. Natura 2000 (called in the law "System of Important Ecological Areas of EU") is supposed to be an integral part of national ecological network established under the Administrative Instruction (GRK No. 03/156) that includes detailed information about the process of its designation and protection.	Sent via emails

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
		The law also specifies the only way of compensation of Natura 2000 sites in Article 44, point 4: *"For the important ecological area of "NATURA 2000", compensation condition could be only creation of the area with same or similar characteristics which once had the damaged area of network, based on the aims of conservation, structure and functionality of the area of ecological network."*. PAs are managed by their own administrations or by municipalities in case of smaller PAs with regional or local significance. Natura 2000 is not explicitly mentioned in the part of the Law specifying competencies, but it is listed as a special category of PA (SACs and SPAs together). As a main source of information about PAs and other important natural values, the ´Register of Nature Protected Values´ has been established. The national system of PAs is inspired by the IUCN management categories of PAs, but is not in a full compliance with the latter. A quite progressive Article 9 stipulates transboundary PAs (on state border) and demands to unify their conservation objectives with partners on the other side of the border. This is a very rare example of law (probably the only one in Balkan countries) setting such a provision of real cross-border cooperation. Two basic documents directly mentioned in the Law as relevant in nature conservation planning besides management plan are: Strategy and Action Plan for Biodiversity, and programmes for nature protection carried out by municipalities for their territory.	
KOS	Guidance	**Administrative Instruction GRK No. 03/156 on Proclamation of the Ecological Network** (approved by the Government) was signed by Prime Minister at the end of 2013 with an aim to establish national ecological network within two years, i.e., till 2015. The Instruction includes guidance for the implementation as well as other obligations (regular monitoring of sites, etc.). There is no Natura 2000 directly mentioned in the text but it is clear that the ecological network covers mandatorily also habitat types and species of Community interest as target conservation features for which appropriate conservation objectives shall be developed. The KINP is in charge of establishment of the ecological network. Management shall be carried out by relevant administrations of PAs or municipalities outside the large-scale PAs.	Sent via emails

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
		Data on all sites shall be part of ´Nature Protection Information System´ and also of spatial plans in relevant scale (digital cadastral plan, scale 1:5000).	
KOS	Guidance	**Administrative Instruction MESP no 19/2013 on Assessment of Acceptability of Plan, Program or Intervention to Ecological Network** was developed by the MESP with an aim to introduce the appropriate assessment procedure allowing to protect not only the current ecological network (which is the most probably the original purpose for its establishment), but also future Natura 2000 sites. The KINP is a technical (expert) body carrying out assessments themselves. In general, the procedure follows the EC guidance on appropriate assessment (Art. 6 Habitats Directive).	Sent via emails
KOS	Guidance	**Administrative Instruction no. 12/2011 for the sort of natural habitat types, natural habitat map, threatened and rare natural habitat types as well as safeguard measures for conservation of natural habitat types** defines habitat types regularly occurring in Kosovo, their favourable status and range. The instruction also specifies general conservation measures for threatened habitat types.	Sent via emails
POR	Legislation	Legal Framework for Nature Conservation and Biodiversity Decree-Law No. 142/2008 of ammended by Decree-Law nº 242/2015 of 15 October	http://www.icnf.pt/portal/icnf/legisl/legislacao/2005 [in portuguese: Regime Jurídico da Conservação da Natureza e da Biodiversidade Decreto-Lei n.º 142/2008, de 24 de julho, alterado pelo 242/2015, de 15 de outubro.
POR	Legislation	Decree-Law No. 140/99 of 24 April, amended and republished by Decree-Law No. 49/2005 of 24 February and amended by Decree-Law No. 156-A/2013 of 8 November, (apllies Birds and Habitats Directives in Portugal)	http://www.icnf.pt/portal/icnf/legisl/legislacao/2005

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
			[in portuguese: Decreto-Lei n.º 140/99, de 24 de abril, alterado pelos Decretos-Lei n.º 49/2005, de 24 de fevereiro e n.º 156-A/2013, de 8 de novembro]
POR	Legislation	RCM No. 115-A / 2008 of 21 July (Sectoral Plan for Natura 2000)	http://www.icnf.pt/portal/icnf/legisl/legislacao/2005 [in portuguese: RCM n.º 115-A/2008, de 21 de julho (Plano Setorial da Rede Natura 2000)]
POR	Legislation	Law No. 54/2015 of June 22 (Bases of the legal act of disclosure and use of existing geological resources in the national territory, including those located in the national maritime space)	https://dre.pt/home/-/dre/67552494/details/maximized?p_auth=VTIlgs1v&serie=I/en [in portuguese: Lei n.º 54/2015 de 22 de junho (Bases do regime jurídico da revelação e do aproveitamento dos recursos geológicos existentes no território nacional, incluindo os localizados no espaço marítimo nacional)]
POR	Legislation	Decree-Law No. 270/2001 of 6 October (legal regime of exploration and exploitation of mineral masses (quarry)), republished by Decree-Law No. 340/2007 of 12 October **Attached**	[in portuguese: Decreto -Lei n.º 270/2001, de 6 de Outubro

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
			(regime jurídico de pesquisa e exploração de massas minerais (pedreiras)),republicado pelo Decreto-Lei n.º 340/2007 de 12 de Outubro
POR	Legislation	Land Spatial Plans of Protected Areas	http://www.icnf.pt/portal/naturaclas/ordgest/poap (in portuguese: Planos de Ordenamento das Áreas Protegidas)
POR		Degraded Areas Recovery Guide (Serras de Aire e Candeeiros Natural Park) **Attachment1.**	[in portuguese: Guia de Recuperação de áreas Degradadas (PNSAC)]
POR	Legislation	Decree-Law No. 151-B / 2013, October 31(Legal regime for environmental impact assessment (EIA)), as amended by Decree-Law N.o 47/2014 of 24 March and Decree-Law No. 179/2015 of 27 August	[in portuguese: Decreto-Lei n.º 151-B/2013 de 31 de outubro (regime jurídico da avaliação de impacte ambiental (AIA)), alterado pelo Decreto-Lei No. 47/2014 de 24 de março e Decreto-Lei n.º 179/2015 de 27 de agosto]

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
ROM	National legislation	GEO no. 57/2007 on the regime of protected natural areas, conservation of natural habitats, wild flora and fauna	http://www.mmediu.ro/beta/wp-content/uploads/2012/08/2012-0808_legislatie_protectia_naturii_oug57din2007regimariinaturale protejate.pdf
		Law No.5 / 2000 on the approval of the National Landscaping - Section III - protected areas	http://www.cdep.ro/pls/legis/legis_pck.htp_act_text?idt=22636
		OM nr.1964 / 2007 on the creation of the protected area of sites of Community importance as part of the European ecological network Natura 2000 in Romania	http://www.natura2000.ueb.ro/legislatie/
		GD 1284/2007 SPA declaring Special Protection of avifauna areas as part of the European ecological network Natura 2000 in Romania	http://mmediu.ro/new/wp-content/uploads/2014/02/Afaceri%20Europene/Legislatie/1_Directive%20UE/5_Protectia%20naturii/Directiva%202009_147_CE/HG%201284_2007.doc.
			http://www.legex.ro/Ordin-2387-2011-116635.aspx

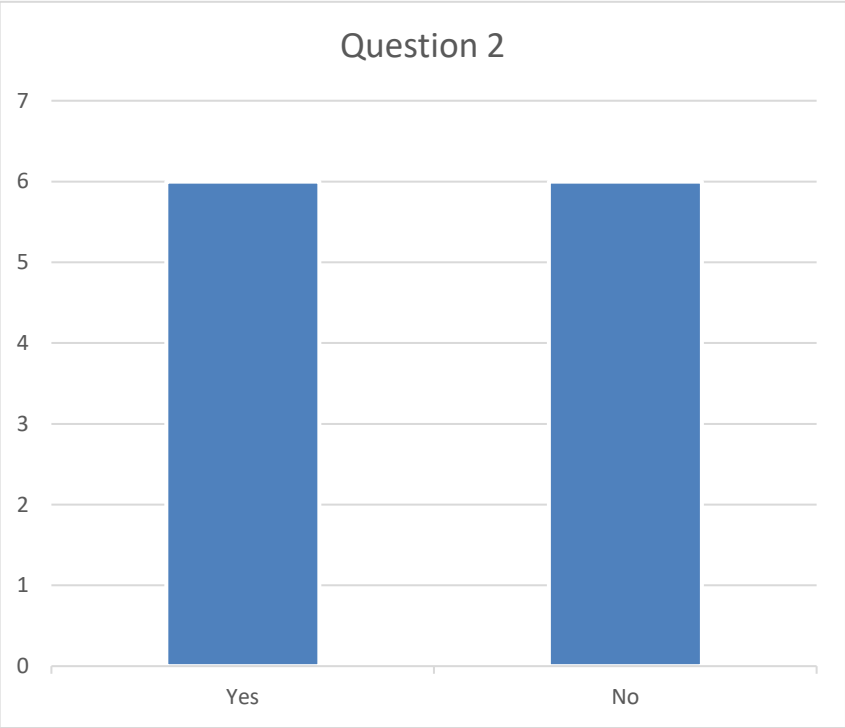
Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
		OM 2387/2011 amending Order emitted by the minister of environment and sustainable development. 1.964 / 2007 on the creation of the protected area of sites of Community importance as part of the European ecological network Natura 2000 in Romania	
ROM	Regulatory documents	Environmental authorizations Authorisation Natura 2000 Plans for management of Natura 2000 sites These documents are not specific only for activities NEEI, but apply to all activities in protected areas. Environmental permits and authorisations Natura 2000 must know the operator Management plans must know the name of the Natura 2000 site.	http://www.anpm.ro/ro/autorizatii-de-mediu
SLVN	Programme	Natura 2000 Management programme for Slovenia for the period 2014-2020; 2015	http://www.natura2000.si/index.php?id=330 ; http://www.natura2000.si/index.php?id=21&L=1
SPN	National legislation	Ley 21/2013,de 9 de diciembre, de evaluación ambiental. *National Law 21/2013, of 9th December 2013 on the environmental assessment.*	https://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-12913
SPN	National legislation	Ley 42/2007,de 13 de diciembre, del Patrimonio Natural y de la Biodiversidad. *National Law 42/2007, of 13th December 2007 on the conservation of natural heritage and of the biodiversity.*	https://www.boe.es/buscar/act.php?id=BOE-A-2007-21490
SPN			

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify) Name and year of document	Link and/or please attach document
	National guidance	Evaluación ambiental de proyectos que pueden afectar a espacios de la Red Natura 2000. Criterios-Guía para la elaboración de la documentación ambiental . *Criteria-Guidance for the elaboration of environmental documentation needed for the environmental impact assessment of projects likely to have effects on Natura 2000 Network sites.*	http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/publicaciones/eia-nat2000_tcm7-218039.pdf
SPN	Regional legislation	Decreto 37/2014, do 27 de marzo,polo que se declaran zonas especiais de conservación os lugares de importancia comunitaria en Galicia e se aproba o Plan director da Rede Natura 2000 de Galicia. *Decree 37/2014, of 27th March 2014 of the Regional Government of Galicia by which the sites of Community importance of Galicia are designated as special areas of conservation and the Master Plan for the Natura 2000 Network of Galicia is approved.*	http://www.xunta.es/dog/Publicados/2014/20140331/AnuncioCA02-270314-0001_es.html

*even if not in English

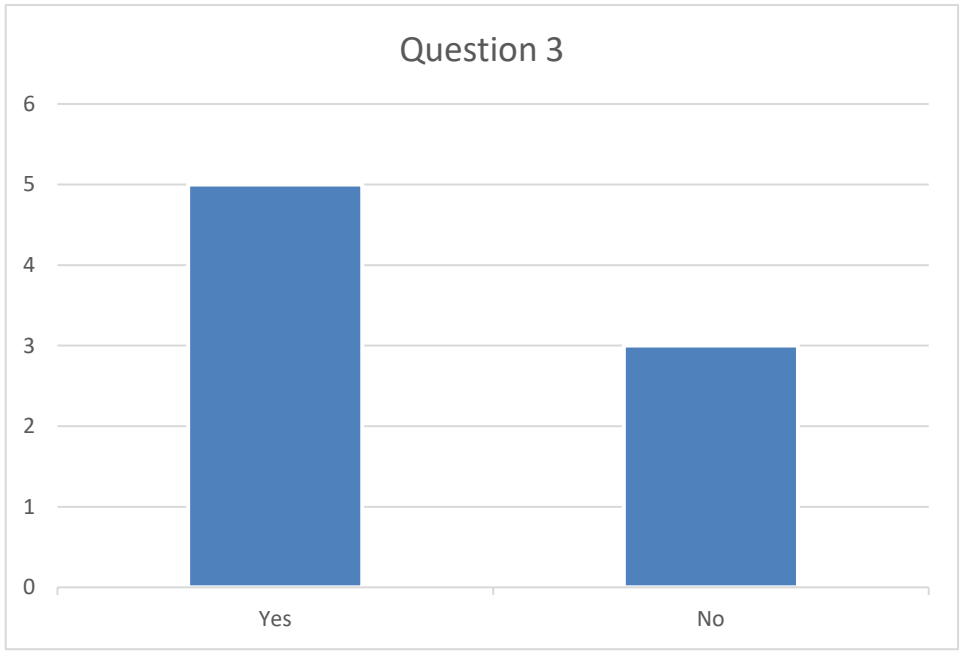
2. Do you have an in-depth knowledge of the Guidance Document «Non-energy mineral extraction and Natura 2000»?

yes	no	Don't know	Detail
BUL; IT2: POR; ROM:SLVN; SPN	ALB1; ALB2; IT1; KOS: SLVK; CRO		**POR -** We know this document and its guidelines, but we don't have an in-depth knowledge of the document. However, in the comparison between the "guidance" and the policy guidelines and rules for environmental protection and nature conservation in the Portuguese legislation, along with the elements required by the management plans for protected areas located in Natura 2000 areas, we can conclude that the Portuguese legislation is coherent with the principles set out in the "guidance". **SLVN** - We are familiar with the document but since our quarries are not a really a problem, we do not use it. **CRO** – Some of services included in AA have partial knowledge of NEEI document.



3. Are the guidelines provided in that document used in project assessment? Yes/No

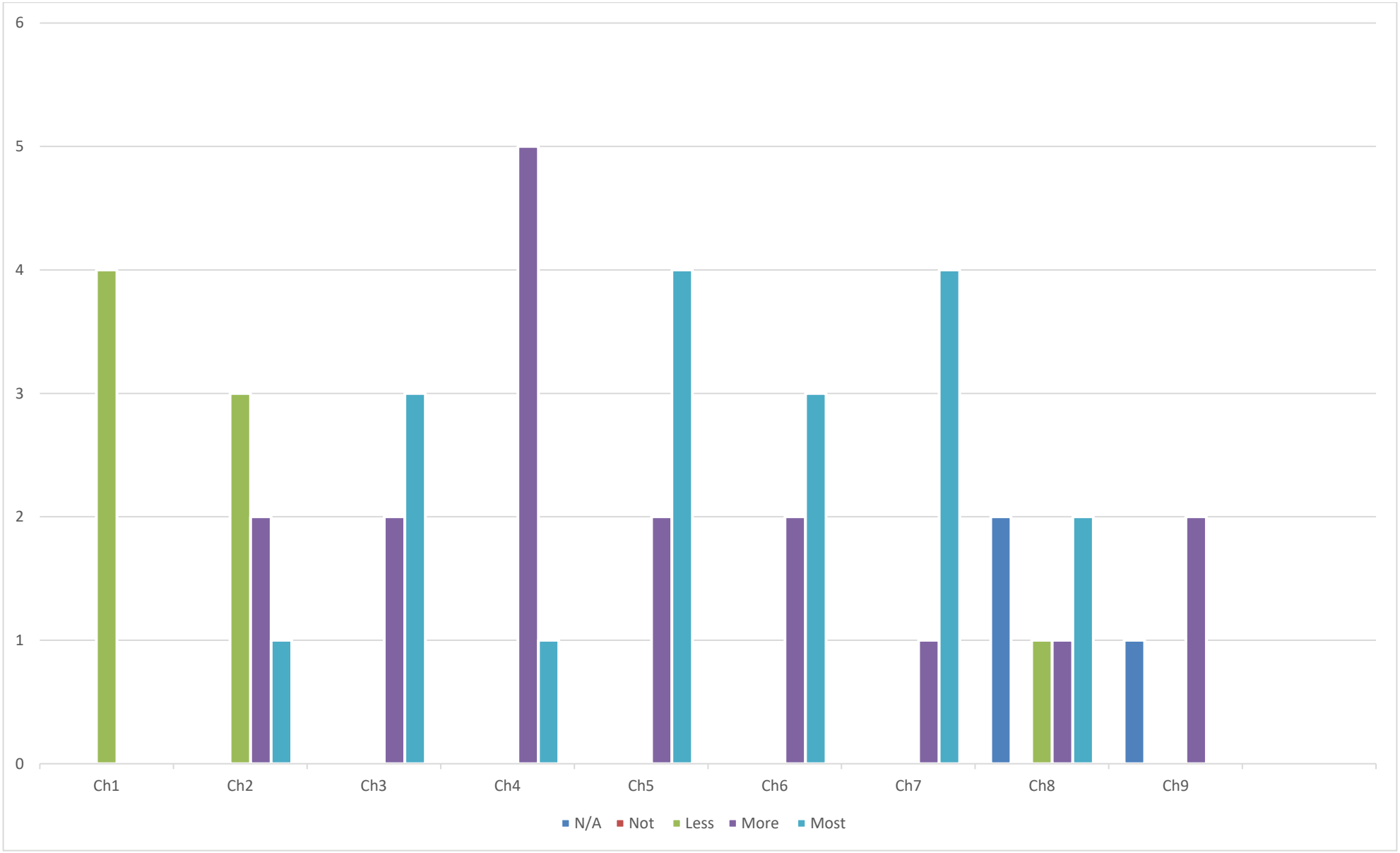
yes	No	Don't know	Detail
BUL; CRO; IT2; POR; ROM	ALB2: SLVN; SPN	ALB1; KOS (but probably); SLVK (no information)	**POR -** In areas of Natura 2000, the analysis of processes takes into account the elements considered in Sectoral Plan for Natura 2000. In the case of protected areas coincident with the Natura 2000 sites, the respective land spatial plans already incorporate management guidelines and stringent rules to comply with Natura 2000 conservation objectives , and in its regulations take into account whether or not the installation and exploitation of the mineral mass is allowed. This is also foreseen in some of the municipalities' plans (e.g. Pombal, Porto de Mós, etc). **CRO** – only some service officers use NEEI guidelines, not all



4. Which chapters do you find most useful?

chapters	Not applicable	Not useful	Less useful	More useful	Most useful
1. THE NON-ENERGY EXTRACTIVE INDUSTRY (NEEI) IN THE EU			BUL; CRO; ROM; SPN		
2. THE EU'S POLICY FRAMEWORK AND LEGISLATION FOR NATURE AND BIODIVERSITY			BUL; CRO; SPN	IT2; ROM	POR
3. POTENTIAL IMPACTS OF NON-ENERGY EXTRACTION ACTIVITIES ON NATURE AND WILDLIFE				BUL; CRO	POR; ROM; SPN
4. THE IMPORTANCE OF STRATEGIC PLANNING				BUL; CRO; IT2; ROM; SPN	POR
5. ARTICLE 6.3: CARRYING OUT AN APPROPRIATE ASSESSSMENT OF NEEI PLANS AND PROJECTS IN ACCORDANCE WITH THE HABITATS DIRECTIVE				CRO; IT2	BUL; POR; ROM; SPN

chapters	Not applicable	Not useful	Less useful	More useful	Most useful
6. ARTICLE 6.4: ALTERNATIVE SOLUTIONS, IMPERATIVE REASONS OF OVERRIDING PUBLIC INTEREST AND COMPENSATION				CRO; SPN	BUL; POR; ROM
7. SOME NEEI ACTIVITIES AND THEIR RELATIONS WITH THE PROVISIONS OF ARTICLE 6.3 AND 6.4				ROM	BUL; CRO; POR: SPN
8. EXTRACTIVE ACITIVITES AND NATURA 2000 IN MARINE AREAS	ROM; SPN		CRO	IT2	BUL; POR
9. OTHER ISSUES	BUL			CRO; SPN	


6
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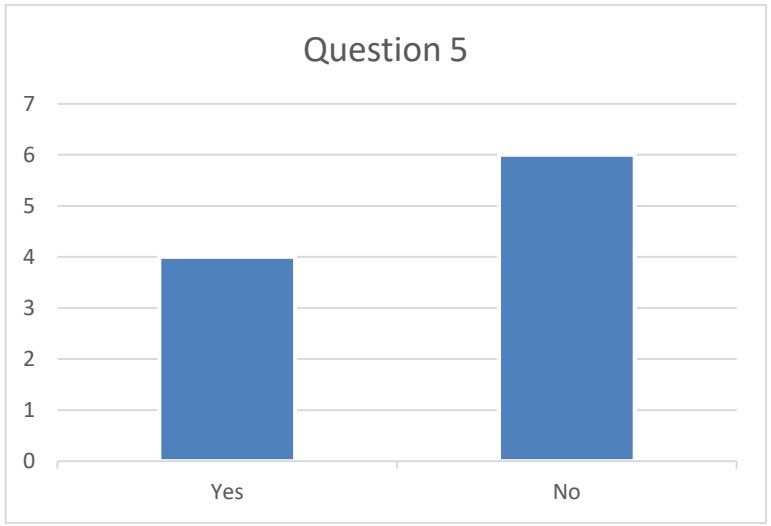
Ch1
Ch2
Ch3
Ch4
Ch5
Ch6
Ch7
Ch8
Ch9
N/A
Not
Less
More
Most

5. Are there any specific conditions concerning the installation of NEEI, in or near Natura 2000 sites, stricter than those stated in Art 6 (3) of the Habitat Directive (HD) as prohibition of this activity in your country? Yes/No

yes	no	Don't know
BUL; IT2; POR; SPN (In Spain, stricter conditions depend of regional governments. For instance, in the Region of Galicia, it´s prohibited new installations of NEEI in Natura 2000 sites)	ALB1; ALB2; CRO; KOS; ROM; SLVN	



a) If yes, does it apply:

i) To new installations; Yes/No

yes	no	Don't know
BUL; IT2: POR: SPN		

ii) To extent of existent installations; Yes/No

yes	no	Don't know
BUL; IT2; POR	SPN	

iii) To resumption activities; Yes/No

yes	no	Don't know
BUL; IT2	POR (if there is no change in the area of the NEEI); SPN	

iv) Only on some Natura 2000 sites; Yes/No

yes	no	Don't know
BUL; IT2; POR: SPN		

v) In specific locations of Natura 2000 sites; Yes/No

yes	no	Don't know
BUL; IT2; POR: SPN		

vi) Under exceptional circumstances. Yes/No (Please detail):

yes	no	Don't know	Detail
BUL ; IT2; SPN			**BUL -** Article 19 on Biodiversity Act - In the event of risk of damage to any sites included in the list referred to in Article 10 (2) herein prior to the designation thereof as special areas of conservation, the Minister of Environment and Water shall, by an order promulgated in the State Gazette, prohibit or restrict specific activities in the said sites for a period not exceeding two years, with the exception of sites allocated for national defence and to the armed forces. **IT2** - The Italian legislation for the special protection areas, identifies specific prohibitions for quarries. The ministerial decree 17 October 2007 (Article 5, paragraph 1, letter n) has expressly provided in ZPS the ban on opening new quarries and the expansion of existing ones, except those already laid down in the sector plans in

	force on the date of enactment of the Decree. In these cases the ultimate recovery of areas affected by mining has to be done in natural purposes and with positive impact assessment. **SPN** - in mining municipalities declared as such by the Regional Government

5b. Are there any specific documents relevant to your answer in 5a above? If so, please provide details below*

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
BUL	Orders of Minister of environment and water for designation of Natura 2000 sites according to Article 12 on Biodiversity Act.	Prohibitions on the above cases are introduced so far with orders of Minister of environment and water for designation of 17 Natura 2000 sites for protection of birds and for 5 Natura 2000 sites for protection of natural habitats and of wild fauna and flora: BG0002008, BG0000271, BG0002007, BG0000152, BG0002101, BG0002097, BG0002095, BG0002084, BG0002069, BG0002065, BG0002064, BG0002061, BG0002057, BG0002038, BG0002018, BG0002016, BG0002015 and BG0000589, BG0000605, BG0000587, BG0000269, BG0000591.	All documents are available on the Information system for Natura 2000 in Bulgaria: http://natura2000.moew.government.bg/
IT2	Ministerial Decree	decreto ministeriale 17 ottobre 2007	http://www.minambiente.it/normative/decreto-ministeriale-17-ottobre-2007-criteri-minimi-uniformi-la-definizione-di-misure-di
KOS	Law No. 03/L-214 ON ENVIRONMENTAL IMPACT ASSESMENT The aim of this Law is to prevent or mitigate adverse impacts of proposed public and private projects and thereby contribute to the safeguarding and improvement of the environment, the protection of human health, and the improvement of the quality of life. This Law determines regulation of procedures for the identification, assessment and reporting of the environmental impacts of certain proposed projects and provides for associated administrative procedures, in order that, during the decision-making process by the Ministry of	Law No. 03/L-214 ON ENVIRONMENTAL IMPACT ASSESMENT	Law Attached

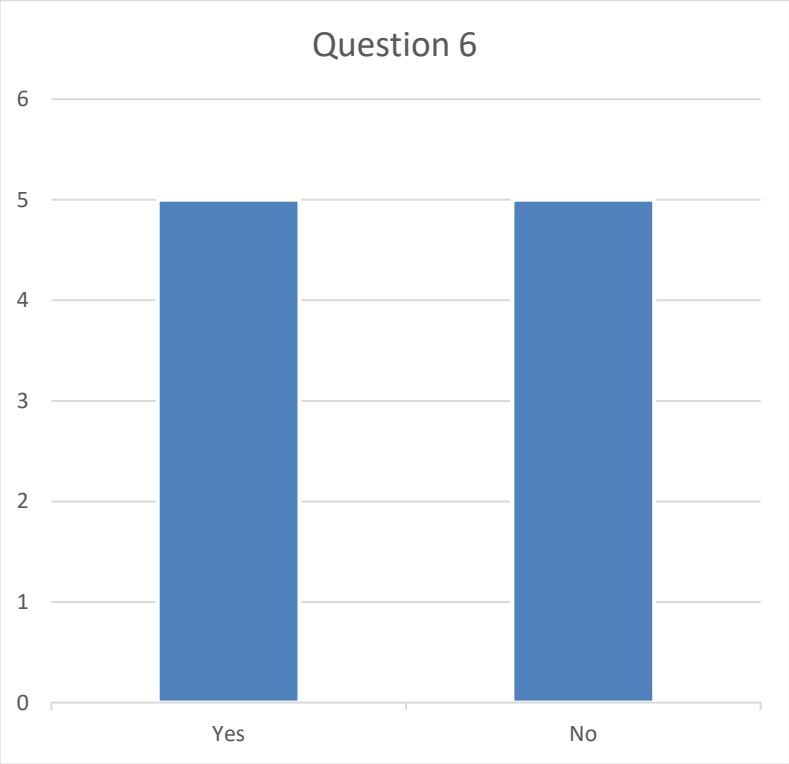
Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
	Environment and Spatial Planning for issuing the Environmental Consent and all relevant information regarding the environment is provided and taken into account. In general competent authority for issuing of Mining Licenses is The Independent Commission for Mines and Minerals – ICMM. ICMM has the power to exercise the following functions, in accordance with the Law on Mining and Minerals: - The issuance, transfer, extension, suspension and revocation of licenses and permits; - The establishment and maintenance of a mining cadastre and a GIS database containing geographical data, geological and other relevant economic data and all existing minerals titles and mining rights; and-issuance of rules on internal organization and operation of the ICMM; One of important documents in proces of issuing Lisense by ICMM is Enviromnetal Permit issued by Ministry of Environment and Spatial Planning according to Environmental Impact Assessment Law No.03/L-214.		
POR	See Legislation (point 1b) particularly protected areas land spatial plans and some municipalities master plans		
SLVK	MoE is preparing the guidance document for Regional and District offices at this moment		
SPN	Regional legislation Region of Galicia (Spain)	Decreto 37/2014, do 27 de marzo,polo que se declaran zonas especiais de conservación os lugares de importancia comunitaria en Galicia e se aproba o Plan director da Rede Natura 2000 de Galicia. *Decree 37/2014 ,of 27th March 2014 of the Regional Government of Galicia by which the sites of Community importance of Galicia are designated as special areas of conservation and the Master Plan for the Natura 2000 Network of Galicia is approved.*	http://www.xunta.es/dog/Publicados/2014/20140331/AnuncioCA02-270314-0001_es.html
SPN	National legislation	Real Decreto 975/2009,de 12 de junio,sobre gestión de los residuos de las industrias extractivas y de protección y	https://www.boe.es/diario_boe/txt.php?id=BOE-A-2009-9841

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
		rehabilitación del espacio afectado por actividades mineras *Royal Decree 975/2009, of 12th June,on the management of mineral wastes and the protection and rehabilitation of areas affected by mining activities.*	
SPN	Regional legislation Region of Galicia (Spain)	Resolucion do 4 de maio de 2001 da Dirección Xeral de Calidade e Avaliación Ambiental,pola que se publica a declaración de impacto ambiental marco e plan director de restauración para as explotacións mineiras a ceo aberto na Lagoa de Antela (Ourense).	http://www.xunta.es/dog/Publicados/2001/20010524/Anuncio8B3E_gl.html

*even if not in English

6. Do you have any information on the progress of EU Biodiversity Strategy 2020 (COM(2011)244) related to NEEI activities in your country (for example restoration, post-operational use of the area)? Yes/No.

yes	no	Don't know
KOS; POR; ROM; SPN; IT2	ALB2; BUL; CRO; SLVK; SLVN	



If there is any document relevant on this matter, could you please provide it*?

Country	Type of document (legislation, guidance, instructions, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
ALB1	Udhezim	UDHËZIM Nr. 3, datë 17.5.2006 ”PËR PLANET E REHABILITIMIT TË SIPËRFAQEVE TË DËMTUARA NGA GURORET”	http://80.78.70.231/pls/kuv/f?p=201:Udh%EBzim:3:17.05.2006
ALB1	VENDIM TE KESHILLIT TE MINISTRAVE	VENDIM Nr.942, datë 17.11.2010 ”PËR MIRATIMIN E PROCEDURAVE DHE TË DOKUMENTACIONIT PËR MARRJEN E LEJEVE MINERARE NË ZONAT E HAPURA”	http://80.78.70.231/pls/kuv/f?p=201:Vendim%20i%20KM:942:17.11.2010

CRO	Strategy	Strategija I akcijski plan zaštite biološke I krajobrazne raznolikosti Republike Hrvatske (NN 81/99 I 143/08) National Strategy and Action Plan for the Protection of Biological and Landscape Diversity (NSAP) (OG 81/99 and 143/08)	http://narodne-novine.nn.hr/clanci/sluzbeni/271210.html http://narodne-novine.nn.hr/clanci/sluzbeni/2008_12_143_3962.html
POR	See legislation in point 1b		
POR	Attachment 2		
ROM	Policy document	National Strategy and Action Plan for Biodiversity Conservation 2013 - 2020	http://www.mmediu.ro/beta/wp-content/uploads/2013/02/2013-02-DB-NBSAP
ROM	Policy document	Romania's Energy Strategy for 2007-2020 updated for 2011 - 2020	https://peterlengyel.wordpress.com/2013/04/05/strategia-energetica-a-romaniei-2011-2020-plus-oameni-si-natura/
ROM	Policy document	Mining Industry Strategy for the period 2012-2035	http://sdtr.ro/upload/STUDII/4.%20Raport%20-%20Activitatile%20din%20sectorul%20primar.pdf
SPN	National legislation	Real Decreto 416/2014,de 6 de junio,por el que se aprueba el Plan sectorial de turismo de naturaleza y biodiversidad 2014-2020. *Royal Decree 416/2014,of 6th June by which the sectorial Plan for nature tourism and biodiversity 2014-2020 is approved.*	https://www.boe.es/diario_boe/txt.php?id=BOE-A-2014-6432
SPN	National Estrategic Program	Estrategia española de conservación vegetal 2014-2020. *Spanish Strategy for the conservation of plant diversity 2014-2020.*	http://www.magrama.gob.es/es/biodiversidad/planes-y-estrategias/estrategia_ce_vegetal_2014-2020_tcm7-332576.pdf
SPN	National legislation	Real Decreto 1274/2011,de 16 de septiembre,por el que se aprueba el Plan Estratégico del Patrimonio Natural y de la Biodiversidad 2011-2017, en aplicación de la Ley 42/2007, de 13 de diciembre,del Patrimonio Natural y de la Biodiversidad.	http://www.magrama.gob.es/es/biodiversidad/planes-y-estrategias/RD_plan_estrategi

		Royal Decree 1274/2011, of 16th September,by which the Strategic Plan for the Natural Heritage and Biodiversity 2011-2017,implementing the Law 42/2007,of 13th December of 2007 on the conservation of natural heritage and of biodiversity.	co_patrimonio_natural_biodiversidad.aspx
IT2	Policy document	Strategia Nazionale per la Biodiversità	http://www.minambiente.it/pagina/strategia-nazionale-la-biodiversita

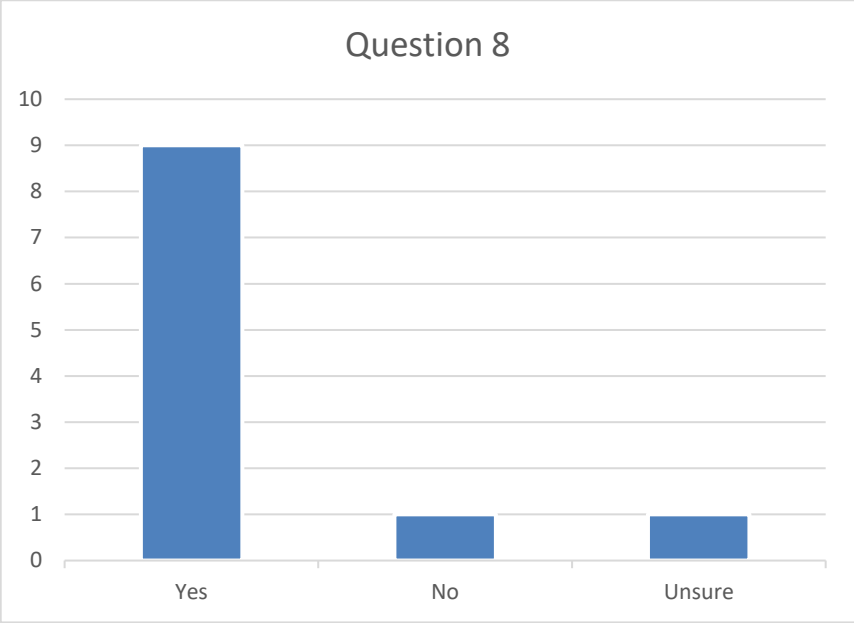
*even if not in English

7. Does the operator need a specific permit for investigation of potential geological resources? Yes/No

yes	no	Don't know
ALB1; ALB2; BUL; CRO; IT2; KOS; POR; ROM: SLVK (permit survey area); SPN		

8. Does the operator need to restore the area affected by the investigation of potential geological resources? Yes/No If yes, is restoration required to meet original state?

yes	no	Don't know	Detail
ALB1; BUL; CRO; IT2; KOS; POR; ROM; SLVN; SPN	ALB2	SLVK (no information)	**BUL -** The restoration is required to meet the original state as much as possible. **KOS –** nearly natural state **POR -** It´s a case by case analysis, particularly with regard to vegetation and the natural heritage of the surrounding places. **SPN –** Returning to original state depends on the Restoration Plan for the specific site.



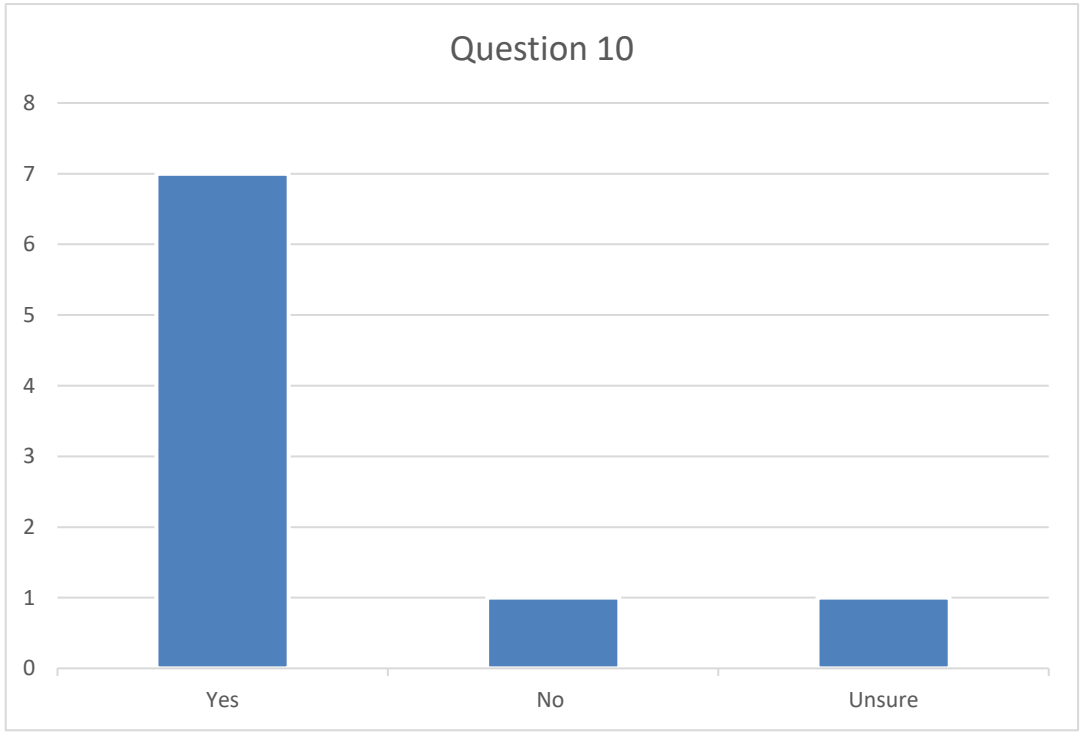
9. Do you consider that the investigation of potential geological resources is a plan or project under article Art. 6 (3) of the HD? Yes/No

yes	no	Don't know	Detail
BUL; ALB2; CRO; IT2; KOS; ROM; SLVK; SPN			**BUL -** According to the National Biological Diversity Act "Projects" are any regional plans for the development of wooded areas, forestry plans and programs envisaging activities that do not fall within the scope of Annexes 1 and 2 to the Environmental Protection Act, with the exception of projects, required under the Spatial Development Act.

10. Does the operator need a specific permit for starting the exploration activity of NEEI near or in Natura 2000? Yes/No

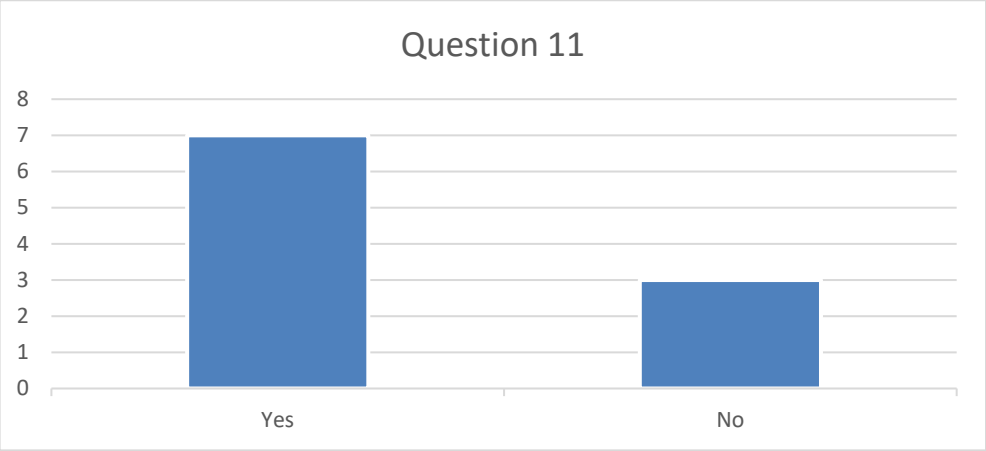
yes	no	Don't know / N/A	Detail
BUL; KOS; POR; ROM; SLVK: SLVN; SPN	CRO	ALB2	**KOS -** Now operators applying for Environmental Consent in future When we establish Natura 2000 network, operators are obliged to fulfill Appropriate Assessment procedure for the operations next or in Natura 2000 Areas. **POR -** It depends on the investigation techniques and on the protection regime as foreseen in PA spatial plans.

	SLVK - Permit for technical geological exploration – in the case of nature conservation areas according to national legislation (Nature Conservation Acts No. 543/2002) (§ 13 art. 2 f); § 14 art. 2 f)



11. Do you have guidance on the level of information required in an application for an NEEI activity which will be submitted to the permitting authorities? Yes/No

yes	no	Don't know
ALB2; BUL; CRO; IT2; POR; ROM; SPN	KOS; SLVK (MoE is preparing the guidance document for Regional and District offices at this moment); SLVN	



11a. Is the following information required in the application:

i) Location. Yes/No

yes	no	Don't know
ALB2; BUL; CRO; IT2; POR; ROM; SLVK; SLVN; SPN		

ii) Characterisation of the activity proposed. Yes/No

yes	no	Don't know
ALB2; BUL; CRO; IT2; ROM: SLVK: SLVN; SPN		

iii) Characterisation of the habitats and species potentially affected. Yes/No

yes	no	Don't know
ALB2; BUL; CRO; IT2; POR (in the case of projects subject to environmental impact assessment processes); ROM; SLVN; SPN		SLVK

(a) In an adequate time period. Yes/No

yes	no	Don't know
BUL; CRO; IT2; POR; ROM; SLVN; SPN	ALB2	

(b) Using adequate methods. Yes/No

yes	no	Don't know
BUL; CRO; IT2; POR; ROM; SLVN; SPN	ALB2	

iv) Environmental impacts. Yes/No

yes	no	Don't know
ALB2; BUL; CRO; IT2; POR (in the case of projects subject to environmental impact assessment processes); ROM; SLVN; SPN		SLVK

v) Cumulative (in-combination) impacts. Yes/No

yes	no	Don't know	Detail
BUL; CRO; IT2; POR; ROM; SLVN; SPN	ALB2; SLVK		**POR -** in the case of projects subject to environmental impact assessment processes. In the case of projects located in Natura 2000 is weighted the cumulative impact exerted on site integrity, individually or in combination with other projects, as regards the structure and function of the Site and the conservation objectives.

vi) Nature conservation impacts. Yes/No

yes	no	Don't know
ALB2; BUL; CRO; IT2; POR; ROM; SLVN; SPN	SLVK	

11b. If there is any document relevant on this matter, could you please provide it*?

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
ALB	Vendim i Keshillit te Minsitrave	Vendim Nr. 686, datë 29.7.2015 „Për miratimin e rregullave, të përgjegjësive e të afateve për zhvillimin e procedurës së vlerësimit të ndikimit në mjedis (vnm) dhe procedurës së transferimit të vendimit e deklaratës mjedisore	http://www.mjedisi.gov.al/files/userfiles/VNM_Paraprake/Fletorja_Zyrtare_145-2015_-_VKM-_686_date_29_07_2015_per_VNM-_Per_miratimin_e_rregullave_te_pergjegjesive_e_te_afateve_per_zhvillimin_e_procedure.pdf
ALB	Vendim i Keshillit te Ministrave	Vendim Nr. 507, datë 10.6.2015 Për miratimin e listës së detajuar të planeve apo programeve me pasoja negative në mjedis, që do t'i nënshtrohen procesit të vlerësimit strategjik mjedisor“	http://www.mjedisi.gov.al/files/userfiles/VNM_Paraprake/VKM_nr_507_date_10_06_2015_lista_e_vsm.pdf
BUL	Legislation	Regulation on the Conditions and Procedures for Assessment of the Compatibility of Plans, Programs, Projects and Investment Proposals with the Scope and Objectives of Conservation of the Protected sites (Natura 2000 sites), 2007	http://goo.gl/h00Fze
CRO	Guidance	Smjernice za izradu studija utjecaja na okoliš eksploatacije mineralnih sirovina	http://puo.mzoip.hr/UserDocsImages/Smjernice_2010.pdf
CRO	Guidance	Priručnik za ocjenu prihvatljivosti zahvata za ekološku mrežu (OPEM)	http://www.dzzp.hr/ocjena-prihvatljivosti/ocjena-prihvatljivosti/prirucnik-za-ocjenu-prihvatljivosti-zahvata-

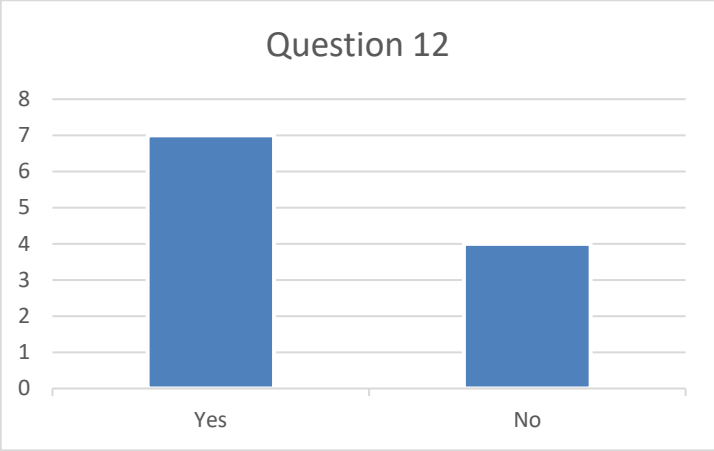
Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
			za-ekolosku-mrezu-opem-1475.html
IT2	legislation	DPR 12 marzo 2003, n. 120	http://www.minambiente.it/pagina/la-valutazione-di-incidenza-nella-normativa-italiana
POR	See legislation in point 1b		
ROM	National legislation	Ord. 19/2010 approving the Methodological guidelines on proper assessment of the potential effects of the plans and projects on protected natural areas of community interest Ord. 135/2010 approving the Methodology for the implementation of environmental impact assessment for public and private projects	http://lege5.ro/Gratuit/geztcnzygu/ordinul-nr-19-2010-pentru-aprobarea-ghidului-metodologic-privind-evaluarea-adecvata-a-efectelor-potentiale-ale-planurilor-sau-proiectelor-asupra-ariilor-naturale-protejate-de-interes-comunitar http://mgfat.uv.ro/fmediu/O_MMP_135_2010.htm
	Guide	Manual application of the Guide to adequately assess the impact of plans / projects on the conservation objectives of Natura 2000 sites	http://infonatura2000.cndd.ro/documents/Manual.pdf
SPN	Legislation	Ley 21/2013,de 9 de diciembre, de evaluación ambiental. *National Law 21/2013, of 9th December 2013 on the environmental assessment.*	https://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-12913

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
SPN	Guidance	Evaluación ambiental de proyectos que pueden afectar a espacios de la Red Natura 2000. Criterios-Guía para la elaboración de la documentación ambiental . *Criteria-Guidance for the elaboration of environmental documentation needed for the environmental impact assessment of projects likely to have effects on Natura 2000 Network sites.*	http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/publicaciones/eia-nat2000_tcm7-218039.pdf
SPN	Legislation	Real Decreto 975/2009,de 12 de junio,sobre gestión de los residuos de las industrias extractivas y de protección y rehabilitación del espacio afectado por actividades mineras *Royal Decree 975/2009, of 12th June,on the management of mineral wastes and the protection and rehabilitation of areas affected by mining activities.*	https://www.boe.es/diario_boe/txt.php?id=BOE-A-2009-9841

*even if not in English

12. Are there mechanisms to assure the quality of the information submitted to the authority by the proponent for the Appropriate Assessment? Yes/No

yes	no	Don't know
BUL; CRO; IT2; POR; ROM; SLVN (expert opinion system for appropriate assessments in place); SPN	ALB1; ALB2; KOS; SLVK	



12a. If yes:

i) Accredited experts. Yes/No

yes	no	Don't know	Detail
BUL; CRO; IT2; POR; ROM; SPN			**BUL -** According to the Article 31, para (21) of Biological Diversity Act the evaluation of the extent of impact of the plan, programme, project or building-development proposal on the natural habitats and on habitats of species subject to protection within the relevant special area of conservation shall be delegated by the contracting authority to a team of experts with experience in the field of conservation of habitats and / or species and at least one of them shall have educational degree in one of the specialties in the biological sciences professional stream. The experts shall meet the following requirements: 1. shall have completed higher education with a master's degree; 2. shall have a minimum of five-year experience in the relevant speciality; 3. shall carry out or have experience in scientific research and/or expert activities, including drawing up expert reports, written consultations, or environmental analyses and other documents in the field of conservation of habitats and species included in Annexes 1 and 2 of Biological Diversity Act; 4. shall be familiar with the current Bulgarian and European legislation in the environment protection field and shall go by and comply with these requirements and with the existing methodological documentation in their activity in connection with the assessments; 5. shall have no personal interest in the implementation of the respective plan, project, programme, or building-development proposal, subject to the compatibility assessment procedure; 6. shall not be related parties within the meaning of the Commerce Act; 7. shall have no relations with the contracting authority or the competent authority that may give rise to any justified doubts about their impartiality; The competent authority, at its own discretion or upon request by the contracting authority, may request that the team under Paragraph (21) comprises experts with specific competence in line with the specifics of the plan, programme, project, or building-development proposal.

ii) Detailed lists or guidance. Yes/No

yes	no	Don't know	Detail
BUL; CRO; IT2; POR; ROM; SPN			**BUL -** According to the Article 31a of Biological Diversity Act the Regulation also mandatorily lay down the following: 1. the peculiarities compatibility with the environmental assessment procedures and environmental impact assessment procedures in the cases falling under Article 31 (4); 2. the criteria for appointing the competent authority; 3. the plans, programmes, projects and building-development proposals referred to in Article 31 (1); 4. the requirements towards the scope and contents of the information necessary to carry out the assessment, including that necessary for any alternative solutions; 5. the requirements towards the scope, contents and format for presenting the assessment, as well as the procedure for carrying out the latter; 6. the criteria for indicating in the assessment the type and extent of impact or damage to the special area of conservation resulting from the realization of the relevant plan, programme or building-development proposal; 7. the procedural stages, including any requirements for consultations and public participation; 8. the requirements towards the format and contents of the decision; 9. the procedure for issuing any decision in respect of the assessment and the controls on the implementation thereof; 10. the terms and procedure for issuing any decision for termination of the compatibility assessment procedure. **IT2** – drawn up by regional authorities

iii) Standardised methods. Yes/No

yes	no	Don't know
CRO; POR; ROM; SPN	BUL	

12b. If there is any document relevant on this matter, could you please provide it*?

Country	Type of document (legislation, guidance, instruction, practical example, best	Name and year of document	Link and/or please attach document

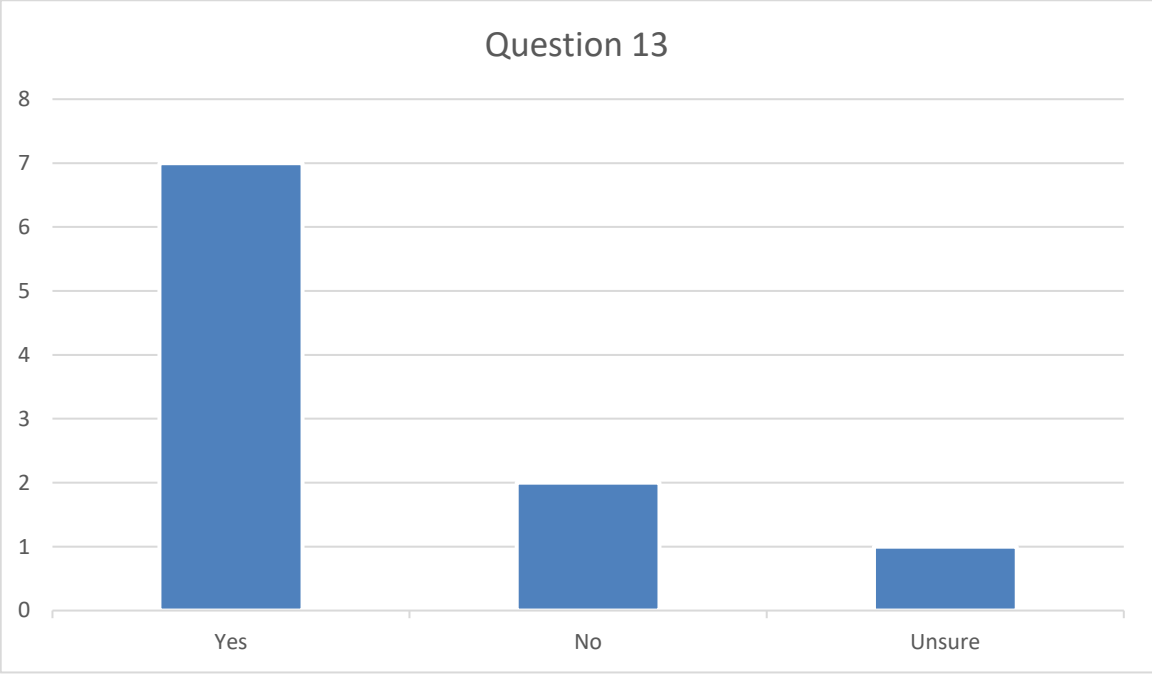
	practices or other) (please specify)		
BUL	Legislation	Biological Diversity Act, 2002	http://goo.gl/4lde42
BUL	Legislation	Regulation on the Conditions and Procedures for Assessment of the Compatibility of Plans, Programs, Projects and Investment Proposals with the Scope and Objectives of Conservation of the Protected sites (Natura 2000 sites), 2007	http://goo.gl/h00Fze
CRO	Guidance	Smjernice za izradu studija utjecaja na okoliš eksploatacije mineralnih sirovina	http://puo.mzoip.hr/UserDocsImages/Smjernice_2010.pdf
CRO	Guidance	Priručnik za ocjenu prihvatljivosti zahvata za ekološku mrežu (OPEM)	http://www.dzzp.hr/ocjena-prihvatljivosti/ocjena-prihvatljivosti/prirucnik-za-ocjenu-prihvatljivosti-zahvata-za-ekolosku-mrezu-opem-1475.html
ROM	National legislation	Ord. 19/2010 approving the Methodological guidelines on proper assessment of the potential effects of the plans and projects on protected natural areas of community interest	http://lege5.ro/Gratuit/geztcnzyg u/ordinul-nr-19-2010-pentru-aprobarea-ghidului-metodologic-privind-evaluarea-adecvata-a-efectelor-potentiale-ale-planurilor-sau-proiectelor-asupra-ariilor-naturale-protejate-de-interes-comunitar
ROM	Guide	Manual application of the Guide to adequately assess the impact of plans / projects on the conservation objectives of Natura 2000 sites	http://infonatura2000.cndd.ro/documents/Manual.pdf
SLVN	legislation	Zakon o ohranjanju narave (2015)	http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO1600
SLVN	legislation	P R A V I L N I K o presoji sprejemljivosti vplivov izvedbe planov in posegov v naravo na varovana območja	http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV5539
SPN	Guidance	Evaluación ambiental de proyectos que pueden afectar a espacios de la Red Natura 2000. Criterios-Guía para la elaboración de la documentación ambiental.	http://www.magrama.gob.es/es/calidad-y-evaluacion-

		Criteria-Guidance for the elaboration of environmental documentation needed for the environmental impact assessment of projects likely to have effects on Natura 2000 Network sites.	ambiental/publicaciones/eia-nat2000_tcm7-218039.pdf
IT2	technical document – Guidelines	Criteri di verifica di assoggettabilità e di valutazione di impatto ambientale di cave e di torbiere	http://www.flanet.org/sites/default/files/Verifica%20VIA.pdf
IT2	Guidelines (one example; each local authority has a guidance document)	Linee guida per la relazione della Valutazione d'incidenza	http://www.regione.abruzzo.it/xambiente/docs/VI/LineeGuida_VII.pdf

*even if not in English

13. Is there guidance on the minimum contents of the NEEI activity required for appropriate assessment presented to the authorities? Yes/No

yes	no	Don't know	Detail
BUL; CRO; IT2; POR; ROM: SLVN; SPN	ALB2; KOS	SLVK (no information)	**BUL -** The proponent notify at the earliest stage competent authority under Art. 6a of the Regulation of its intention by a notification containing data in accordance with Annex № 1 (Part A - for plans, programs and projects, part B - for investment proposals). The notification shall be submitted in one paper copy and two electronic copies. The notification shall be accompanied by document certifying paid fee and information and documentation in accordance with Annex № 2, (Part A - for plans, programs and projects, part B - for investment proposals). In cases of notification in the earliest stage when the predictions of the proponent are not sufficiently clear and specific to perform appropriate assessment, the competent authority shall notify the proponent of which stage to submit the necessary documentation and information. In cases where the competent authority identify the gaps, omissions or inaccuracies in the notification or documentation submitted by the proponent, the competent authority require to remove the irregularities and / or provide additional information in determined by the authority period.



If there is any document relevant on this matter, could you please provide it*?

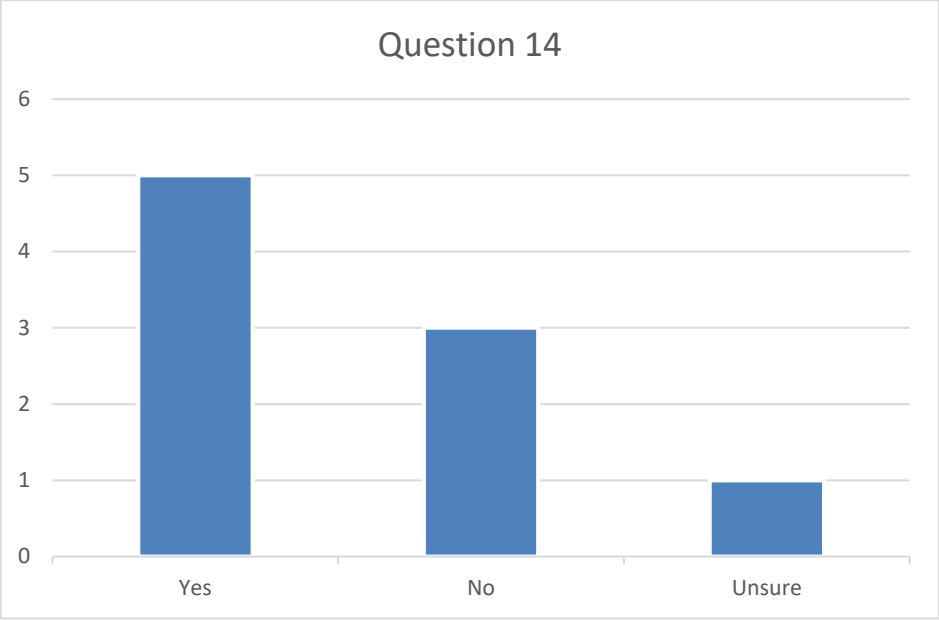
Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
BUL	Legislation	Regulation on the Conditions and Procedures for Assessment of the Compatibility of Plans, Programs, Projects and Investment Proposals with the Scope and Objectives of Conservation of the Protected sites (Natura 2000 sites), 2007, Annex № 1 and Annex № 2	http://goo.gl/h00Fze
CRO	legislation	Pravilnik o ocjeni prihvatljivosti (NN 146/14)	http://narodne-novine.nn.hr/clanci/sluzbeni/2014_12_146_2738.html

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
IT2	Technical document	Criteri di verifica di assoggettabilità e valutazione di impatto ambientale di cave e di torbiere	http://flanet.org/sites/default/files/Verifica%20VIA.pdf
POR	Legislation in point 1b		
ROM	National legislation	Ord. 19/2010 approving the Methodological guidelines on proper assessment of the potential effects of the plans and projects on protected natural areas of community interest	http://lege5.ro/Gratuit/geztcnzyg u/ordinul-nr-19-2010-pentru-aprobarea-ghidului-metodologic-privind-evaluarea-adecvata-a-efectelor-potentiale-ale-planurilor-sau-proiectelor-asupra-ariilor-naturale-protejate-de-interes-comunitar
ROM	Guide	Manual application of the Guide to adequately assess the impact of plans / projects on the conservation objectives of Natura 2000 sites	http://infonatura2000.cndd.ro/documents/Manual.pdf
SLVN	legislation	P R A V I L N I K o presoji sprejemljivosti vplivov izvedbe planov in posegov v naravo na varovana območja	http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV5539
SPN	Legislation	Ley 21/2013,de 9 de diciembre, de evaluación ambiental. *National Law 21/2013, of 9th December 2013 on the environmental assessment.*	https://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-12913
SPN	Guidance	Evaluación ambiental de proyectos que pueden afectar a espacios de la Red Natura 2000. Criterios-Guía para la elaboración de la documentación ambiental. *Criteria-Guidance for the elaboration of environmental documentation needed for the environmental impact assessment of projects likely to have effects on Natura 2000 Network sites.*	http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/publicaciones/eia-nat2000_tcm7-218039.pdf

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
IT2	technical document – Guidelines	Criteri di verifica di assoggettabilità e di valutazione di impatto ambientale di cave e di torbiere	http://www.flanet.org/sites/default/files/Verifica%20VIA.pdf
IT2	Guidelines (one example; each local authority has a guidance document)	Linee guida per la relazione della Valutazione d'incidenza	http://www.regione.abruzzo.it/xambiente/docs/VI/LineeGuida_VII.pdf

14. Are there criteria for assessing the significance of impacts of the NEEI activity on the nature conservation? Yes/No

yes	no	Don't know
BUL; CRO; IT2; SPN; ROM	ALB2; POR; SLVN	SLVK (no information)



14a. Do they include:

i) Magnitude of impact? Yes/No.

yes	no	Don't know
BUL; CRO; IT2; ROM; SPN	ALB2; POR	

ii) Type? Yes/No.

yes	no	Don't know
BUL; CRO; IT2; ROM; SPN	ALB2; POR	

iii) Extent? Yes/No.

yes	no	Don't know

BUL; CRO; IT2; ROM; SPN	ALB2; POR

iv) Duration? Yes/No.

yes	no	Don't know
BUL; CRO; IT2; ROM; SPN	ALB2; POR	

v) Intensity? Yes/No.

yes	no	Don't know
BUL; CRO; IT2; ROM	ALB2; POR	

vi) Timing? Yes/No.

yes	no	Don't know
BUL; CRO; IT2; ROM; SPN	ALB2; POR	

vii) Probability? Yes/No.

yes	no	Don't know
BUL; CRO; IT2; ROM; SPN	ALB2; POR	

viii) Cumulative effects? Yes/No.

yes	no	Don't know
BUL; CRO; IT2; ROM; SPN	ALB2; POR	

Any observations:

Country	Observation

BUL	In case where it finds that the plan, programme, project, or building-development proposal is likely to have a significant negative impact on the relevant special area of conservation, the competent authority deliver a decision for an evaluation of the extent of impact of the plan, programme, project, or building-development proposal on natural habitats or on habitats of species subject to protection within the relevant special area of conservation to be carried out. The decision contains requirements for the scope, volume and content of the assessment including carrying out of preliminary monitoring if necessary, possible alternative solutions, mitigating measures / compensatory measures, etc .;
BUL	The assessment is presented in the form of a report and contains information on the methods of study, including the duration and period of field research, methods to forecast and assess the impact, sources of information, difficulties in collecting the necessary information;
BUL	In case when during the consultations with the public has been received information on the object and purpose of protected sites and / or the expected degree of their disability, which differs from that provided by the assessment report, the competent authority may assign another team of experts or require by the proponent to carry out additional studies and analysis or collect additional scientific information, also define their duration. In these cases, the competent authority may carry out spot check on the collected information.
BUL	The criteria for indicating in the assessment the type and extent of impact or damage to the special area of conservation resulting from the realization of the relevant plan, programme or building-development proposal are determined with the Article 22 of the Regulation on the Conditions and Procedures for Assessment of the Compatibility of Plans, Programs, Projects and Investment Proposals with the Scope and Objectives of Conservation of the Protected sites (Natura 2000 sites).
POR	No, however, parameters (i) to (viii) are assessed , in the case of projects subject to environmental impact assessment processes, on a case-by-case basis, considering the directly affected and surrounding area, and the typology of the project or activity to develop. The assessment of cumulative impacts is by far the most difficult to assess but they are also take into account.
IT2	The A.E.V.I.A. (Mining environmental impact assessment) is one of the most useful tool in the specific field

14b. If there is any document relevant on this matter, apart from that of the European Commission guidance documents, could you please provide it*?

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
BUL	Legislation	Regulation on the Conditions and Procedures for Assessment of the Compatibility of Plans, Programs, Projects and Investment Proposals with the Scope and Objectives of Conservation of the Protected sites (Natura 2000 sites), 2007	http://goo.gl/h00Fze

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
CRO	legislation	Uredba o ekološkoj mreži (NN 124/13; 105/15) Pravilnik o ocjeni prihvatljivosti (NN 146/14)	http://narodne-novine.nn.hr/clanci/sluzbeni/2013_10_124_2664.html http://narodne-novine.nn.hr/clanci/sluzbeni/2014_12_146_2738.html
POR	Pages of EIA authorities.		http://www.apambiente.pt/index.php?ref=17&subref=146&sub2ref=485 http://www.ccdr-lvt.pt/pt/ http://www.ccdr-a.gov.pt/ http://www.ccdr-alg.pt/ http://www.ccdr-n.pt/ http://www.ccdrc.pt/
ROM	National legislation	Ord. 19/2010 approving the Methodological guidelines on proper assessment of the potential effects of the plans and projects on protected natural areas of community interest	http://lege5.ro/Gratuit/geztcnzygu/ordinul-nr-19-2010-pentru-aprobarea-ghidului-metodologic-privind-evaluarea-adecvata-a-efectelor-potentiale-ale-planurilor-sau-proiectelor-asupra-ariilor-

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
			naturale-protejate-de-interes-comunitar
ROM	Guide	Manual application of the Guide to adequately assess the impact of plans / projects on the conservation objectives of Natura 2000 sites	http://infonatura2000.cndd.ro/documents/Manual.pdf
SPN	Guidance	Evaluación ambiental de proyectos que pueden afectar a espacios de la Red Natura 2000. Criterios-Guía para la elaboración de la documentación ambiental. *Criteria-Guidance for the elaboration of environmental documentation needed for the environmental impact assessment of projects likely to have effects on Natura 2000 Network sites.*	http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/publicaciones/eia-nat2000_tcm7-218039.pdf
SPN	Guidance	Manual de restauración de terrenos y evaluación de impactos ambientales en minería (Instituto Tecnológico Geominero de España. Ministerio de Industria y Energía) *Manual on the rehabilitation of soils and environmental impact assessment in mining activities (Technological Geo-mining Institute of Spain.Ministry of Industry and Energy).*	http://info.igme.es/SidPDF%5C065000%5C106%5C65106_0001.pdf
IT2	guidelines	"LINEE GUIDA PER LA PROGETTAZIONE, GESTIONE E RISANAMENTO AMBIENTALE DELLE ATTIVITÀ ESTRATTIVE A CIELO APERTO E IN SOTTERRANEO E OPERE CONNESSE" – D.G.R. N° 141 DEL 15/02/2008	http://www.ambienteinliguria.it/eco3/DTS_GENERALE/20080313/lineeguida_attivitaestrattive.pdf

*even if not in English

15. Please provide, where possible, examples of the application in practice of cumulative effects assessment (please note – specific site or company names can be omitted):

Country	Detail
BUL	Projects for investigation of potential geological resources are not subject to mandatory evaluation for compatibility with the object and purpose of Natura 2000 sites, but they are subject to evaluation of need for such according to National Biodiversity Act. Many of such projects fall within the boundaries of Natura 2000 site BG0001032 “Rodopi-Iztochni”. Therefore, there is a high probability of occurrence of a cumulative effect of that type of project within the Natura 2000 site BG0001032 “Rodopi-Iztochni”. In this regard, all investigation projects within the Natura 2000 site BG0001032 “Rodopi-Iztochni” are subject to a mandatory assessment of compatibility with evaluation of cumulative effect.
BUL	Compatibility assessment of the investment proposal "Extraction and processing of gold ore from the "Ada Tepe" division of "Khan Krum" deposit in Krumovgrad Municipality, Kardzhali District with the object and purpose of Natura 2000 site BG0001032 “Rodopi-Iztochni”. The assessment procedure for compatibility provides an analysis and assessment of cumulative effects. As a result of the assessment, it was found that there is not opportunity for cumulative effect and the investment proposal was approved.
BUL	Compatibility assessment of the investment proposal “Extraction and primary processing of building materials - limestone from the "Kosharite" deposit in Sofia District with the object and purpose of Natura 2000 site BG0000322 „Dragoman”. The assessment procedure for compatibility provides an analysis and assessment of cumulative effects. As a result of the assessment, it was found that there is opportunity for cumulative effect. As a result of the expected cumulative impact due to concomitant realization of the investment proposal with other investment proposals, plans, programs and projects within the Natura 2000 site, it was estimated that the expected loss of habitat 62A0 "Eastern sub-Mediterranean dry grasslands" amounted to 2.84% from the total area of habitat in Natura 2000 site BG0000322 „Dragoman”, which is assessed as a significant negative impact on the object and purpose of conservation. As a result the investment proposal was not approved.
POR	See pages of EIA authorities above (14).
SPN	Two projects about wind farms in a birds migratory corridor (Sierra de Larouco and Sierra de Gomariz on the border between Spain and Portugal. Councils of Baltar (Spain) and Montealegre (Portugal).

15a. If there is any document relevant on this matter, could you please provide it*?

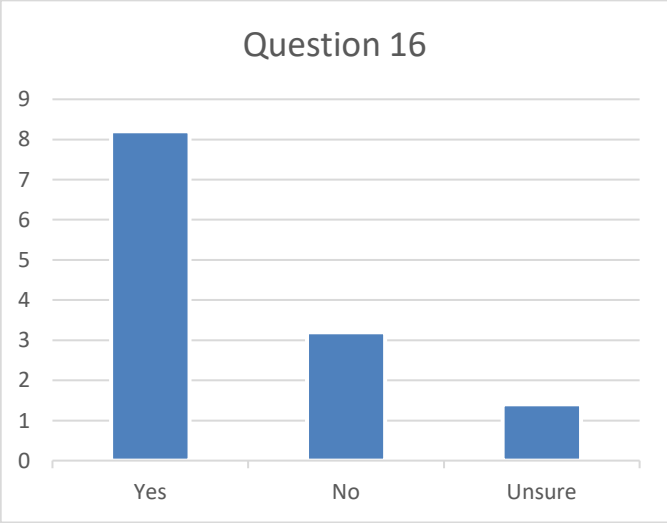
Country	Type of document (legislation, guidance, instruction, practical example, best practices or other (please specify)	Name and year of document	Link and/or please attach document
BUL	Legislation	Regulation on the Conditions and Procedures for Assessment of the Compatibility of Plans, Programs, Projects and Investment Proposals with the Scope and Objectives of Conservation of the Protected sites (Natura 2000 sites), 2007	http://goo.gl/h00Fze
CRO	legislation	Uredba o ekološkoj mreži (NN 124/13; 105/15) Pravilnik o ocjeni prihvatljivosti (NN 146/14)	http://narodne-novine.nn.hr/clanci/sluzbeni/2013_10_124_2664.html http://narodne-novine.nn.hr/clanci/sluzbeni/2014_12_146_2738.html

POR	See pages of EIA authorities above (14).		
IT2	Planning tool (one example)	Piano intercomunale delle attività estrattive della Provincia di Forlì Cesena	http://www.unionemontanacquacheta.fc.it/documents/871412/871903/Elab+3+VAS.pdf/167017ce-7031-4546-a29d-f4f0e5eb66e2

*even if not in English

16. Is the rehabilitation/restoration of NEEI activity sites mandatory post operation? Yes/No.

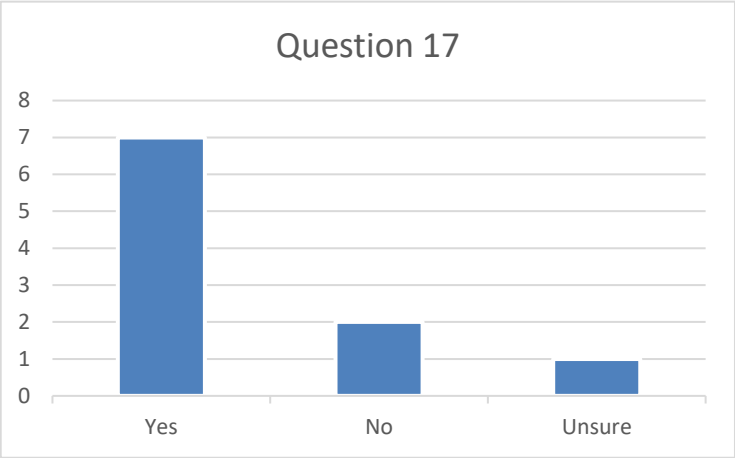
yes	no	Don't know
ALB2; BUL; CRO; IT2; KOS; POR; ROM; SLVN it is specified in permission for operation); SPN		SLVK (no information)



17. Is long term short/monitoring of effects on species or habitats a binding part of the NEEI activity? Yes/No.

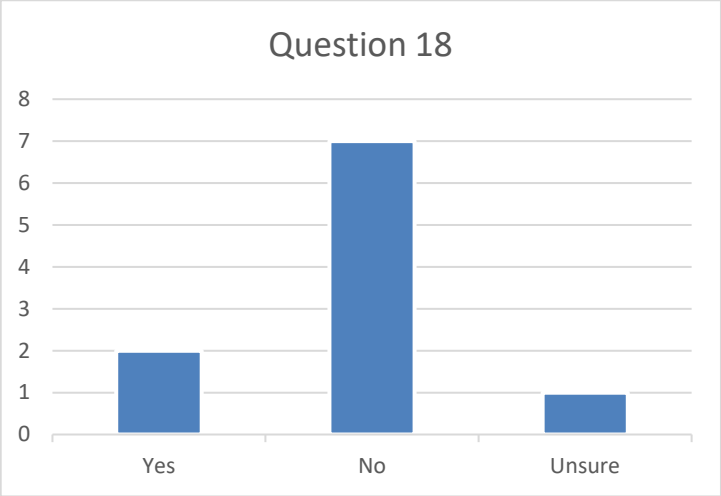
yes	no	Don't know

BUL (some cases); CRO; IT2: POR (following the requirements made in permitting/impact assessment decision); ROM; SLVN it is specified in permission for operation); SPN	ALB2; NO	SLVK (no information)



18. Do you have thresholds to consider that a NEEI activity should be submitted to Appropriate Assessment? Yes/No.

yes	no	Don't know	Detail
SLVK; SLVN	BUL; ALB2; CRO; KOS; POR; ROM; SPN		**BUL -** According to the Article 31, para (1) of Biological Diversity Act any plans, programmes, projects and building-development proposals that are not directly related or necessary for the management of the special areas of conservation and that, either individually or in interaction with other plans, programmes, projects or building-development proposals, are likely to have a significant negative impact on the special areas of conservation, shall be assessed as to the compatibility thereof with the protection purposes of the relevant special area of conservation. **SLVK -** According to Act 24/2006 – annex No. 8 - Threshold limits for EIA



18a. If yes, please provide the specific thresholds:

Country	Threshold	Limit
SLVN	P R A V I L N I K o presoji sprejemljivosti vplivov izvedbe planov in posegov v naravo na varovana območja, priloga 1 in priloga 2	

18b. If there is any document relevant on this matter, could you please provide it*?

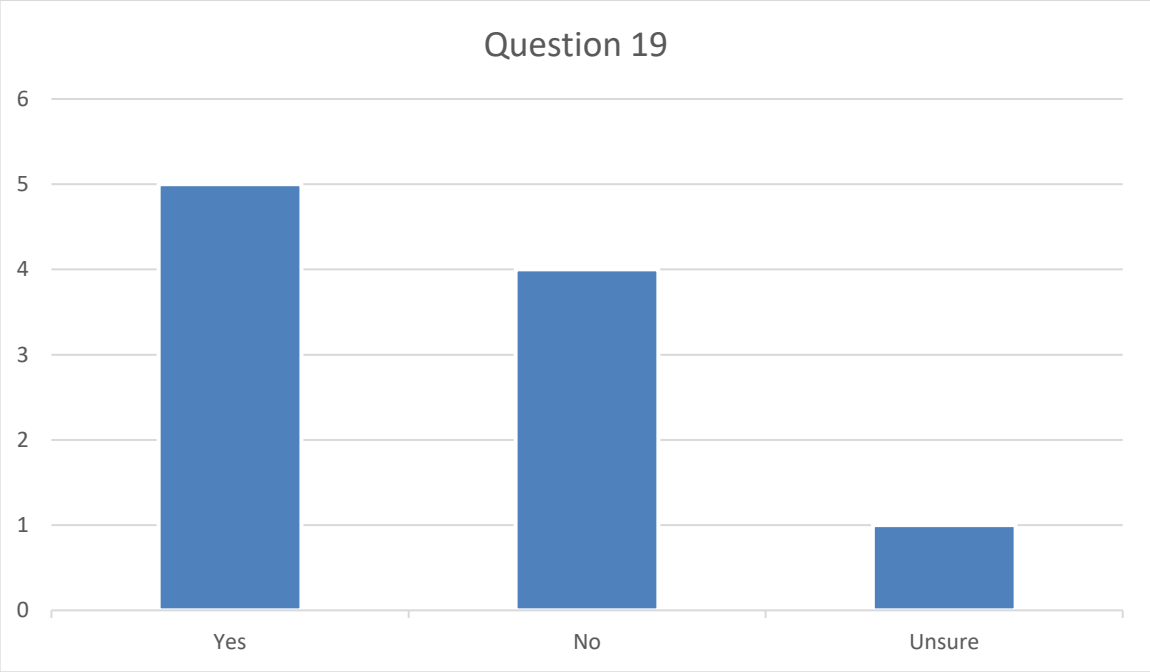
Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document

*even if not in English

19. Are there any specific measures available to promote sustainable use of non-energy mineral resources? Yes/No.

yes	no	Don’t know

BUL; IT2; POR (General Directorate of Energy and Geology); ROM; SPN	ALB2; CRO; KOS; SLVN	SLVK (no information)



19a. Do those measures focus on:

i) Efficiency? Yes/No

yes	no	Don't know
BUL; IT2; POR; ROM; SPN		

ii) Recycling? Yes/No

yes	no	Don't know

ROM; SPN; IT2	POR

19b. If there is any document relevant on this matter, could you please provide it*?

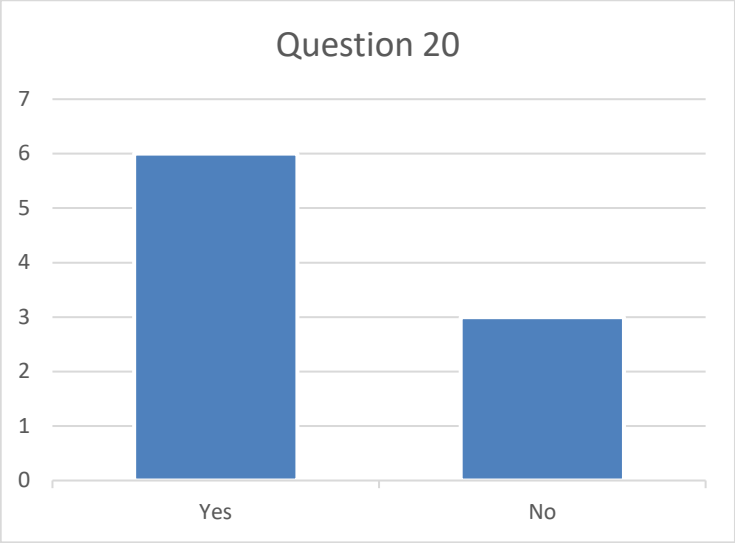
Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
BUL	Strategy	National strategy for development of the mining industry, 2015	http://www.me.government.bg/bg/themes/nacionalna-strategiya-za-razvitie-na-minnata-industriya-1575-295.html
POR	From a Portuguese institution - National Laboratory of Energy and Geology - , we have: "Good Environmental Practices Extractive Industry: A Reference Guide: F. Brodkom (2000)". *As Boas Práticas Ambientais na Indústria Extractiva: Um Guia de Referência*. *Online*:		LNEG: http://www.lneg.pt/CienciaParaTodos/edicoes_online/diversos/praticas_ambientais
ROM	Policy document	Romania's Energy Strategy for 2007-2020 updated for 2011 - 2020	https://peterlengyel.wordpress.com/2013/04/05/strategia-energetica-a-romaniei-2011-2020-plus-oameni-si-natura/
ROM	Policy document	Mining Industry Strategy for the period 2012-2035	http://sdtr.ro/upload/STUDII/4.%20Raport%20-%20Activitatile%20din%20sectorul%20primar.pdf
SPN	National legislation	Real Decreto 975/2009,de 12 de junio,sobre gestión de los residuos de las industrias extractivas y de protección y rehabilitación del espacio afectado por actividades mineras	**https://www.boe.es/diario_boe/txt.php?id=BOE-A-2009-9841**

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
		Royal Decree 975/2009, of 12th June,on the management of mineral wastes and the protection and rehabilitation of areas affected by mining activities.	
SPN	Guidance	Manual de restauración de terrenos y evaluación de impactos ambientales en minería (Instituto Tecnológico Geominero de España. Ministerio de Industria y Energía) *Manual on the rehabilitation of soils and environmental impact assessment in mining activities (Technological Geo-mining Institute of Spain.Ministry of Industry and Energy).*	http://info.igme.es/SidPDF%5C065000%5C106%5C65106_0001.pdf
IT2	Planning tool (an example. Each local authority, Regions, has his own plan that includes all the elements mentioned above)	Piano regionale delle attività estrattive	https://www.regione.sardegna.it/documenti/1_82_20080110174612.pdf

*even if not in English

20. Do you have any strategic spatial planning concerning the extractive industry? Yes/No

yes	no	Don't know	Detail
CRO; IT2; POR; ROM; SLVN (National programme of mineral resources); SPN	ALB2; BUL; KOS		**ALB2 –** no N2K sites in Albania yet **POR** - but only at site level. Where Natura 2000 overlaps a protected area, the PA land spatial planning assesses the options and conditions for NEEI at site level



20a. If yes, does it take into consideration Natura 2000 sites? Yes/No

yes	no	Don't know
CRO; IT2; POR; ROM; SPN	KOS	SLVK (no information)

20b. If there is any document relevant on this matter, could you please provide it*?

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
CRO	Strategy	Strategija prostornog uređenja RH (NN 76/13)	http://narodne-novine.nn.hr/clanci/sluzbeni/2013_06_76_1533.html
POR	Land spatial plans of protected areas	2010	see above (1.4)
ROM	Policy document	Romania's Energy Strategy for 2007-2020 updated for 2011 - 2020	https://peterlengyel.wordpress.com/2013/04/05/strategia-energetica-a-romaniei-2011-2020-plus-oameni-si-natura/

Country	Type of document (legislation, guidance, instruction, practical example, best practices or other) (please specify)	Name and year of document	Link and/or please attach document
ROM	Policy document	Mining Industry Strategy for the period 2012-2035	http://sdtr.ro/upload/STUDII/4.%20Raport%20-%20Activitatile%20din%20sectorul%20primar.pdf
SPN	Regional legislation	Ley 3/2008, de 23 de mayo, de ordenación de la minería de Galicia. *Regional Law of Galicia 3/2008 of 23th May 2008 on the planning of mining activities in Galicia.*	**http://www.xunta.es/dog/Publicados/2008/20080606/Anuncio26DC6_es.html**
IT2	Planning tool (an example. Each local authority, Regions, has his own plan)	PIANO REGIONALE ATTIVITA' ESTRATTIVE della Campania	http://www.sito.regione.campania.it/lavoripubblici/Elaborati_PRAE_2006/indice_prae_2006.asp

*even if not in English