The Sustainble Aggregates Planning in South East Europe

Croatian Geological Survey,
Department for mineral resources Sachsova 2, 10000 Zagreb

Geological and Geophysical Institute of Hungary Department of Earth Resource, Stefánia Street 14., Budapest, 1143 Hungary

Željko Dedić, Engineer of Geology, Expert Associate
Ph.D. Slobodan Miko, Engineer of Geology

Katalin, S, Engineer of Geology; MFGI
Ph.D. Horvath, Z., Engineer of Geology, MFGI

Introduction

- The goal is to determine how to make planning better in Partners respective countries.
- They were asked to create a guidance document that reflects the situation in each country, and the input of their stakeholder network.
- They should also identify planning aspects that are applicable and relevant in all SEE countries because their inclusion in the Joint SNAP-SEE Vision and the Aggregates Planning Scheme would increase cohesion and harmonization

Introduction

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

• aggregates planning policy must be developed considering strategic issues which are then interrelated to the regional/local (operative) planning level.

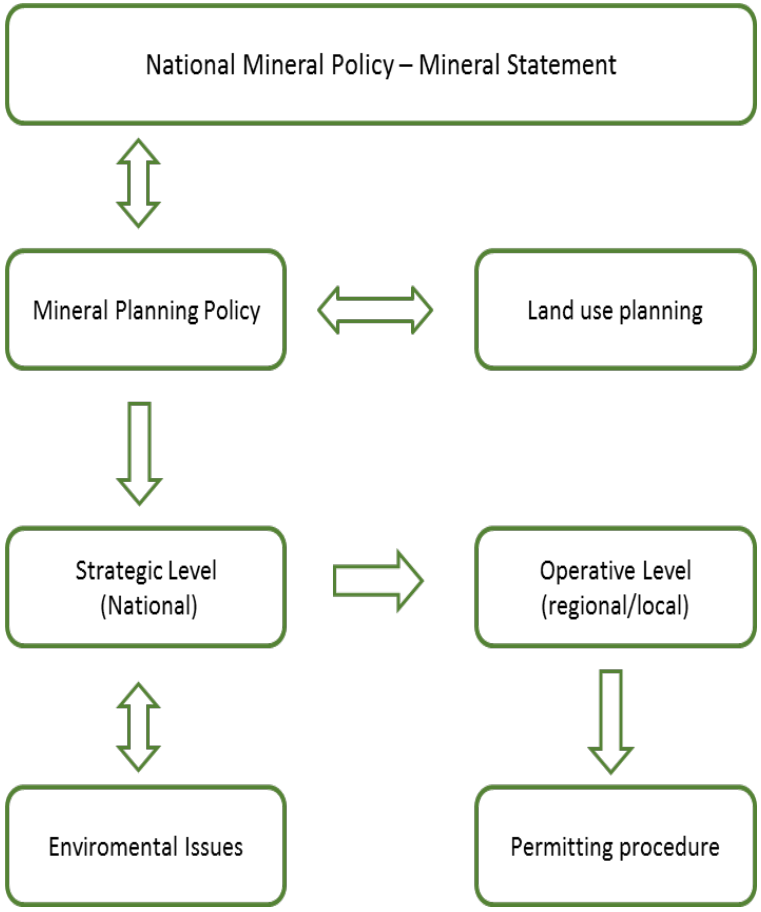
•It is important to utilise a hierarchical planning principle

Introduction

•A National Minerals Policy first has to provide a "Mineral Statement". Regarding aggregates two crucial issues have to be included:

•**first** has to create the awareness of society's needs for minerals, and specifically for aggregates, and in the case of aggregates of the need for access to local resources.

•The **second** really crucial issue is that it sets the supply of minerals, and specifically of aggregates, as a resource for the benefit of society, and that it sets a balanced approach in the assessment of exploration and development of extractive activities



National Mineral Planning Policy (Tiess 2011; EC 2010b).

•Introduction

The main aims that relate to minerals planning as follows:

- **Social progress which recognizes the needs of everyone**: to provide for the benefits of increased prosperity through an adequate supply of minerals that society needs now and in the future, together with protecting and improving amenity;
- **Effective protection of the environment**: to protect things that are highly cherished for their intrinsic qualities, such as wildlife, landscapes and historic heritage; and to protect human health and safety by ensuring that environmental impacts caused by mineral extraction and transportation are within acceptable limits; and to secure, without compromise, restoration and aftercare to provide for appropriate and beneficial after-use;
- **Prudent use of natural resources**: to help conserve non-renewable resources for future generations through efficient use, recycling and minimization of waste; to protect renewable resources from serious harm or pollution; and to promote the use of appropriate alternative materials; and
- **Maintenance of high and stable levels of economic growth**: to ensure an adequate supply of minerals that are needed at prices that are reasonable; and to safeguard mineral resources for future generations.

•Introduction

•Planning for the supply of minerals has a number of special characteristics that are not present in other development (http://planningguidance.planningportal.gov.uk):

•minerals can only be worked (i.e. extracted) where they naturally occur, so location options for the economically viable and environmentally acceptable extraction of minerals may be limited. This means that it is necessary to consider protecting minerals from non-minerals development and has implications for the preparation of minerals plans and approving non-mineral development in defined mineral safeguarding areas;

•working is a temporary use of land, although it often takes place over a long period of time;

•working may have adverse and positive environmental effects, but some adverse effects can be effectively mitigated;

•since extraction of minerals is a continuous process of development, there is a requirement for routine monitoring, and if necessary, enforcement to secure compliance with conditions that are necessary to mitigate impacts of minerals working operations; and

•following working, land should be restored to make it suitable for beneficial after-use.

•Introduction

- The step of regional planning is especially important for the regulation of raw materials issues
- The determination of 'aggregates priority zones' encroaches on basic property rights and thus requires a settlement with the concerned landowner
- From a methodological viewpoint, two different approaches can be used in land planning
- The first approach is to limit the planning by excluding certain usages for a specific area
- In the second, alternative, approach the fields of other usage priorities reduce deposits that are worth extracting while the remaining fields become priority aggregates resource areas.
- **The final goal is to achieve supply security and resources efficiency.**

The content of the planning documents and methods

- The authorities responsible for aggregates planning **are mining, land use planning and other authorities** at national and regional level. Their competence (except Autonomous Province of Trento(IT)) cover only primary aggregates
- The planning documents for aggregates planning are Mining Strategy, Mining Act, and Regulations on procedure for granting concessions.
- **Ministry of Economy (department of mineral policy)** in close cooperation with national geological survey and the land use planning authorities, and other ministries e.g. environmental and land use planning (Ministry of Physical Planning and Spatial Plan) are in charge of planning documents and methods
- planning documents are updated every 5 to 10 years
- Generally an aggregate plan should be based on land use planning. Aggregate plans, integrated into land use plans, support the industry and relevant authorities to establish a stable aggregates planning framework over the long term. By overlaying mineral resource maps with areas reserved for other land-use purposes can help to identify potential areas of conflict so that future developments can be zoned away from these areas wherever feasible.

Why should authorities plan for minerals extraction?

- The most comprehensive answer for the above question can be cited from the **Slovenian stakeholders consultation.**

- The interactive workshop results and a discussion suggested many possible ways to improve practices and legislations towards better aggregates supply planning in Slovenia, including a need for national spatial planning and mining strategies, improvement of recycling of construction waste legislation, a suggestion for a better involvement of different stakeholders in aggregates planning process, a need for better distribution of concession fees among local communities/state and an importance to use best available technologies for mining and processing.

How should aggregates planning authorities plan for minerals extraction?

Aggregates planning authorities should plan for the steady and adequate supply of minerals in one or more of the following ways (in order of priority):

1. designating areas – where viable resources are known to exist, landowners are supportive of minerals development and the proposal is likely to be acceptable in planning terms. Such sites may also include essential operations associated with mineral extraction;
2. designating areas of known resources where planning permission might reasonably be anticipated. Such areas may also include essential operations associated with mineral extraction; and/or
3. designating areas where knowledge of mineral resources may be less certain but within which planning permission may be granted, particularly if there is a potential shortage in supply.

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How should aggregates planning authorities plan for minerals extraction?

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

1. Aggregates demand and supply sources:
2. Aggregates availability:
3. Potential impacts:
4. Life Cycle Analysis:
5. Scenarios (supply/demand):

How should aggregates planning authorities plan for minerals extraction? Example 1

Example: Contents of a Regional Minerals Plan (Croatia)

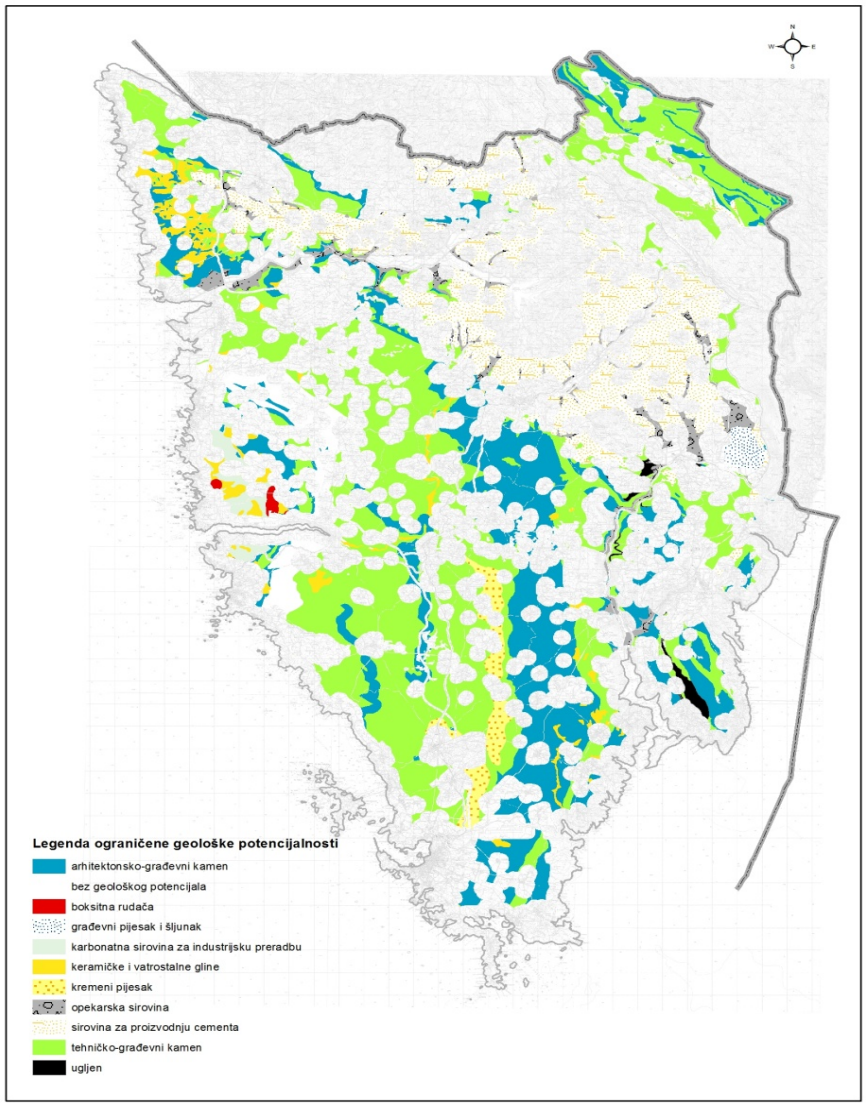
1. Geological mineral resource potential maps (scale from 1:10 000 to 1:100 000)
2. Data bases of mineral resource sites
3. Exploitation areas
4. Production and reserves data
5. Environmental protection conditions and restrictions
6. Market and development needs
7. Restoration recommendations
8. Delineated areas most favourable for extraction sites (areas with mineral commodities not in conflict with other land uses)
9. Stakeholder opinions on mineral policies (Local authorities, operators, NGOs, municipality officials)

Example 1: Croatia

Map of the basic geological potentiality of Istria County (1: 100, 000)

Map of prohibiting the exploitation of Istria County

Map of potential areas for exploitation of mineral resources in relation to the terms of use, physical planning and protection of Istria County



How should aggregates planning authorities plan for minerals extraction? Example 2

Example: The Austrian Mineral Resources Plan

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

Geology and aggregate potential

- In official planning documents in the SEE countries, geological (potential) maps exist at various scales starting from 1:500 000 the scale at national level (Hungary - National Land Use Plan, Romania), with details 1:50 000 for the most interesting areas (Romania, Hungary - a location map of areas of mineral resources management is part of the National Land Use Plan, and mining sites are marked in county and local land use plans), and in the Autonomous Province of Trento (IT) provincial geological maps – scale 1:10 000.

- **Example:** Sand and gravel maps

The evaluation of sand and gravel occurrences is based on the quality and quantity of the raw material and on the importance of the occurrence for local or regional supplies. These three criteria were combined in a 3D matrix in order to deduce the geological suitability of the sand and gravel in a Geographic Information System (GIS). The assessment of the quality of the raw materials is based upon two factors: (1) the lithological description of the material and (2) the use of the raw material.

Minerals/Aggregate inventory

- Minerals/aggregates inventories exist in the majority of the SEE countries, except in the Herzegbosnian Canton (Bosnia and Herzegovina) and Serbia. In other SEE countries inventories exist and they include all the data for the mining area with coordinates from GIS, position, size of the area, type of mineral, form of the activity (exploration, or exploitation), type of reserves and quantity of reserves, qualitative data on minerals such as percentage of valuable mineral

- Primary aggregates resources and reserves and production data linked as a part of a minerals GIS should ideally consist of:
  1. Spatial data related to the dimensions and shape of the exploitation field
  2. Proven reserves
  3. Type and Quality of aggregate

Secondary aggregates inventory

- In most SEE partner countries the secondary aggregates have poor inventories
- A country's national Ministry or Environmental Agency provides data on waste (C&D waste, mining waste, secondary aggregates) in accordance with the Waste Act or similar Acts

Example: **The Autonomous Province of Trento (IT)**: C&D waste plan has the following the contents:
1. A technical report including: (Types and quantities of the wastes to manage; Treatment methods; User base size; Organization criteria and management;)
2. Localization of the disposal and recycling plants and individuation of the adequate areas, where such plants can be located;
3. Individuation of the adequate areas for the localization of disposal and recycling plants complying with the provisions and forecasts of the provincial urban planning plan and the other plans, which are more relevant in the planning hierarchy;
4. The criteria and the technical standards for the design, installation and management of the plants;
5. The identification of the access to the plants;
6. Graphs in an adequate scale to highlight the contents of the plan

Aggregate Economics

- Most SEE partner countries do not collect statistical data, models or forecasts about the trend of consumption of aggregates and the trend of production of aggregates. Only the Autonomous Province of Trento (IT) has data about the construction volumes, but a model is not currently implemented.
- The assessment of aggregate economics should rely on the Sustainable Supply Mix (SSM) concept. The SSM uses multiple sources that together maximize the net benefits of aggregates supply across generations (Shields et al., 2006). SSM planning is related to the planning/development process by the respective stakeholders/authorities using these multiple sources in order to secure a sustainable supply of aggregates

Spatial planning and environmental impacts

- Most of the SEE partner countries have some procedure and criteria for identification of exploitations fields. Some countries have very well defined conditions.
- The principal issues that related to aggregate planning authorities should address in planning documents, bearing in mind that not all issues will be relevant at every site to the same degree, include:
- noise associated with the operation; dust; air quality; lighting; visual impact on the local and wider landscape; landscape character; archaeological and heritage features ; traffic; risk of contamination to land; soil resources; geological structure; impact on best and most versatile agricultural land; blast vibration; flood risk; land stability/subsidence; internationally, nationally or locally designated wildlife sites, protected habitats and species, and ecological networks; impacts on nationally protected landscapes (National Parks) nationally protected geological and geomorphological sites and features; site restoration and aftercare; surface and, in some cases, ground water issues; water abstraction.

Methodological procedure – aggregates protection/extraction and land use planning

- The Joanneum Research developed an effective methodology for assessing the conflicts that might occur over mineral extraction which was within the framework of the Austrian Mineral Resource Plan
- The core of this procedure is the utilization of various thematic maps, so-called natural potential maps, where certain information has been purposely selected and overlapped, with respect to, and serving the interests of, raw-material extraction. The thematic overlap of different forms of utilization identifies certain conflicts, which are ranked according to their priority and then resolved.
- The assessment procedure includes the following steps in evaluating:

✓ All relevant utilization structures
✓ The hydrological situation
✓ Near-surface mineral deposits

- Based on these settings, so-called 'positive and negative areas' regarding raw-material extraction have been identified and form the basis for decision makers.

Analysis of aggregates priority zones

- In Austria the analysis of aggregates priority zones is based on:
- Exclusion of mining prohibition areas according to provisions of the Mining Law (Article 82): housing development area (including centre area) and a 300 m clearance, further building land, water protection areas and protected areas;
- Conflict resolution with relevant surface claims as agricultural priority zones, green zones) and restriction related to other laws (water bodies and forests areas);
- Conflict resolution with the local land use planning, e.g. planning of road transport projects.

Social aspects

- Most of the SEE partner countries have obligatory public hearings during the licensing process, and in that way stakeholders are involved in spatial planning. In some countries social aspects are treated by expert opinion in the Geological report and in Mining plans and documents (Serbia, Romania, and Slovenia). But aggregates production is not evaluated through methods based on multi-criteria analysis which is based on the rating and preference of members of various stakeholders.

Restoration, and beneficial after-use

- In most SEE partner countries a quarrying company has an obligatory condition for getting the aggregate license that is to elaborate the restoration plan
- The problem is inactive (abandoned) quarrying sites.
- the quarrying company has to pay back all the missing restoration costs to the municipality and, if the company goes bankrupt, it will lose the deposit in favour of the municipality.
- The Mining authority (inspectorates) checks whether the production is the same as the entrepreneur has reported.
- There are many possible uses of the land once minerals extraction is complete and restoration and aftercare of land is complete. These include: development of new habitats and biodiversity; agriculture; forestry; recreational activities; waste management, including waste storage; and built environment, such as residential, industrial and retail where appropriate.

Thank you!