Development of the Information System for Settlements in Mining Zones in Kosovo

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Abstract: - The general purpose of geographic information systems is to collect various data linked to location. This paper presents the establishment of a database for mining sources in settlements throughout Kosovo’s territory. The data collection on Kosovo’s mines was analogous until year 2000. The lack of a Kosovo mine database was deemed as one of the obstacles or difficulties faced by investment decision-makers. The property issues are considered to be directly related with expropriation. Properties registered in the register of rights over immovable property may not be deregistered for any purpose except for public needs. The developed database will support the calculation of social impacts on the settlements in mining sources and will provide data visualization that will help when creating perceptions regarding mineral source utilization. The final graphical and textual bases will be prepared in shape file stored in data base, which offers the possibility of usage by many geographic information systems software applications.

Key-Words: - Database, Expropriations, Property, Geographic Information Systems, Minerals

1 Introduction
Establishment of a database of settlements in mineral areas will provide an overview of the realistic situation in the field on the economic analysis of mining sources. The database will provide for definition of various relations and factors, approximate cost of expropriation for mineral use, time necessary for eventual displacement of the settlement. Expropriations and social effects have a special impact on time and cost factors. The developed database is a combination of field research and research undertaken by the Kosovo Cadastral Land Information System (KCLIS). Data on settlements is also gathered in Microsoft Excel, which may be used in the future to calculate data according to various models in conformity with user needs.

The Geographic Information System (GIS) data are prepared in Microsoft SQL Database, which represents an additional facilitation for further data migration and processing by the users.

Upon presentation of an economic analysis on the feasibility of utilization of a mining source, the detailed project to define legal-property relations and initiate further expropriation procedures shall be compiled.

2 Geological Data and Expropriation Process in Kosovo
2.1 Geo Description of Kosovo
The global geographical position of Kosovo lays approximately between parallels 420 and 440 of the northern hemisphere of the globe and between meridians 200 and 220 of the eastern geographic longitude. Kosovo lays in the central part of the Balkans Peninsula – in Southeast Europe. The surface of Kosovo is 10 908 km2, and a population of over 2 million inhabitants. Over 40% of its inhabitants are in age between 0-15 years. The population is multiethnic and consists of: 92% Albanians and 8% other communities (Serbian, Turkish, Bosnian, Roma, Ashkali). Merely the Albanian population has three religious confessions (muslim, catholic and orthodox) [1].
Kosovo has a variety of geological content as well as various mineral qualities and quantities. Only a small number of minerals are researched, and few of them are utilized, whereas some will only be used in the longer perspective. Because of the indications and content of minerals in Kosovo, and because of their occurrence in Kosovo, the Independent Commission on Mines and Minerals (ICMM) has conducted a geo-physical survey in 2006 to assess the occurrence and sorts of minerals available. Ministry of Energy and Mines (MEM) prepared a plan that delineates perspective mineral areas in Kosovo. The delineation was performed to provide for clearer vision for mineral utilization in the future and will serve various studies that may be carried out to conduct certain economic and strategic assessments. The extent and delineation of perspective mineral zones is presented in the Fig. 1.

![Map of Kosovo and perspective zones](image)

Fig. 1: Perspective zones in Kosovo

The most significant minerals in these perspective zones are: coal minerals, lead minerals, zinc minerals, copper minerals, nickel minerals, chrome minerals, aluminum minerals, iron minerals, silver minerals.

2.2 Property expropriation and legal foundation

Mining and mineral processing played a significant role in Kosovo’s economic development, business activities, education, infrastructure and growth of income per capita. Expropriations are necessary for further development of mineral utilization. “Expropriation” means all actions of an expropriating body which include:

- Withdrawal of a legitimate right or interest over a property that belongs to one person and transforming that property into a public immovable property, or
- Compulsory transformation of servitude or another right of use into public immovable property.

Expropriation is a necessary tool used by all democratic authorities in obtaining access to properties and using the property for common interest. The expropriation procedure is an essential state instrument and provides for legal deprivation of individuals from property possession when the property represents a common economic interest. In Kosovo expropriation is regulated by the Law on Expropriations [2]. This law determines the procedures, including legal remedies, for the protection of individuals from non-proportional interventions on the right to property. These procedures consist of preparatory activities, determination of a common interest, expropriation decision and compensation decision. The Law on Expropriation determines: rules and conditions, in accordance with which the Government or Municipality may expropriate property rights and other rights over the immovable property of a person which is further transferred to public property; it also determines authorizations on limitation and temporary use of immovable property; it defines rules and procedures to be followed in determining the amount and payment method for expropriation or limitation of property rights, as well as other provisions that regulate various issues pertaining to expropriation or limitation of property rights. When expropriation is performed by the Government in achieving wider economic interests of the society, in line with this law, they supersede all current plans of municipal authorities or other public and individual plans.

2.2.1 Expropriation process methodology and management

Expropriation process management is carried out according to the Law on Expropriations [2], and includes the following:

- Mapping of the certain surface zones, to the general and strategic general interest, as vision to the decision-making authority,
• Preparation of the required documentation, for the area proposed as a common public interest,
• Publication of the area outlined as a common interest, in line with the Law on Expropriation,
• Decision on preventing new construction investments in this area,
• Development of the technical property-legal documentation for expropriation,
• Determination of the criteria for assessing real estate property,
• Price proposal for the property and the assets in the delineated area,
• Study and collection of the requests of the residents for the mining area,
• Deadlines and responsibilities for the implementation of expropriation in certain phases,
• Development of the budgetary plan for expropriation of the area announced as a common interest,
• The strategy drafted for emergency and permanent expropriation,
• Development of the budgetary plan for partial or full expropriation of the area declared as a common interest.

2.2.2 Expropriation through KCLIS
The role of land in the country’s economy is very significant. Cadastral information for the lands are multidimensional and are used for many purposes, both for the public and the private sector. KCLIS has been developed as unified system, including cadastral data of the lands, the rights to immovable property; land use, addresses; and it will eventually include other data, such as: environmental conditions, buildings and facilities, land value, etc, for many purposes. Expropriation always depends on the KCLIS documentation. This documentation can be divided into two groups: textual and graphical documentation.

2.2.3 Database from the cadastral information system
Based on the projecting task of expropriation and on the project’s technical description, a database with the following content shall be created:
• Coordinate register ( Y, X, H,) from: (i) the referent/trigonometric network, (ii) polygonal network, (iii) separate cadastral plot limits which undergo expropriation, and (iv) expropriation lines
• Register of submissions,
• Recapitulation of surfaces,
• Possession lists (certificates of rights over immovable property),
• Orto-photos with cadastral maps in vector shapes above,
• Cadastral maps with the old cadastral situation, at scales 1: 2 500; 1:1000, 1: 500 pending availability,
• Cadastral maps with the new existing situation from the field, at scales 1: 2 500; 1:1000; 1: 500, pending availability.

These data on expropriation areas comprise the general foundation, while additional data may also be added. Cadastral documentation assessment clearly delineates which parts of the perspective are belonging to rural, urban or town areas. In certain occasions, there are town areas or entire towns included in a perspective area. Inclusion of a town or lake in perspective areas is unjustifiable; therefore those areas of specific character are removed from perspective areas.

3 Resettlement Strategy
Resettlement strategy is preceded with the systemized database for the location of the residential area. The resettlement process, with the aim to create appropriate conditions for the exploitation of the underground minerals, is a difficult process, which includes different challenges and is a very long process.

The resettlement should, certainly, follow an expropriation process, as described in the chapter above. There are two types of resettlements:
• Emergency resettlement,
• Normal resettlement,

An important component of the resettlement strategy is the provision of accommodation for the residents. Accommodation can be:
• Individual temporary accommodation, rented by the residents,
• Organized collective temporary accommodation,
• Permanent solution to accommodation and resettlement of the dwelling.

A normal resettlement for the needs of the Kosovo Energy Corporate (KEC) mine was carried out in the case of Hade village, Municipality of Kastriot. The Governmental group developed the resettlement criteria, always in consultation with the criteria and experience of the World Bank. In addition, it also made reference to the criteria of the Department for
Repatriation of the German Ministry of Mining, and their resettlement experience. The experience of other countries has indicated that resettlement duration can be from 4-10 years.

3.1 Social impact assessment in the mining area settlements

Expropriation and resettlement of residences has a direct or indirect impact to the community living in that area. For this purpose, the project addressed the perspective area for the community, social impacts to the residents, and different age groups. This project presents the social impact for the expropriation of Hade village, Municipality of Kastriot.

3.2 Demography in the perspective mining zones

The number of Kosovo population is still unconfirmed. The last general census in Kosovo was done in 1981. When also taking into consideration other facts such as, internal migrations, and emigrations, the uncertainties are larger, and the probability to find an exact number of the population is lower. Field data gathering for the project “Creation of the database of settlements in mining areas” was carried out through the assessment method and communication with the residents of the settlements in mining areas. Demography and other related elements are divided into two groups:
- Perspective areas with a possibility of opencast mining,
- Perspective areas with a possibility for underground mining.

Depending on the mining possibilities, a questionnaire was developed for the residents of the respective settlements. The following questions were often addressed by the landlords:
- When will the project start?
- How many of us can be employed?
- Do we resettle soon from our homes?
- Can I choose another settlement?
- Who is responsible and who funds the project, etc?

Based on the offers for the landlords, the model for the data collection and their accuracy is developed. The increased interest for the resettlement has a direct effect to the increase of the community needs. An important position, which the residents see in cases of resettlements, is the creation of new households, and allocation of lands for construction, by registering new land plots for the new households. This is also done with the aim to define the legal ownership relation, so that the benefits from the land are realized by every household.

Presentation of the database to the community clarifies their orientation. The newest such example in Kosovo is the resettlement of the Hade village, Municipality of Kastriot, a process that started in 2004. In 2004, the database for the cadastral area of Hade showed 225 registered owners. However, by the end of the process in 2006, there were 653 owners (households) with a total 1448 residents. After receiving the residents’ requests, and the process development, the number of households, respectively owners had increased to 653. It results that the number of family members in the beginning of the process was 6.4, and at the end of the process, 2.2. This example indicates the rapid increase of the number of households, with the aim to acquire more benefits from the expropriation and new resettlements.

3.2 Information system database

Presentation of the database was done in two separate groupings: a) general overview of all perspective areas b) detailed presentation of the data for every area. The data include the registration of living standards of the population, their age-groups according to respective territory. Various industrial buildings, commercial facilities, religious sites, and graveyards in perspective areas are accounted for, and listed in a unique coordination system. General living standard assessment for the residents of the perspective mining areas is rather complex due to different types of settlements, distinguished according to their:
- geographical position,
- economic facilities in their surroundings,
- development of the current various businesses,
- development of a new infrastructure for the provision of products, etc.

Difficulties in data collection appear due to the absence of residents in mountainous areas and because migrations to the Western Europe. The following tables provide an overview of the population according to age-groups for each coal basin in the Republic of Kosovo. The database was developed from all required elements for the settlements in mining areas, including number of residents, age-groups, employees, social situation of employees, schoolchildren, economy of territories in perspective areas. Table 1 shows only the division of age-groups and number of residents based on [3].
Table 1: Age groups

<table>
<thead>
<tr>
<th>Kosovo coal basin</th>
<th>Age-group</th>
<th>Nr. of residents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kosovo</td>
<td>07-15</td>
<td>12.406</td>
<td>28.2</td>
</tr>
<tr>
<td></td>
<td>15-18</td>
<td>6.651</td>
<td>15.1</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>24.964</td>
<td>56.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>44.021</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Drenas</td>
<td>07-15</td>
<td>647</td>
<td>23.2</td>
</tr>
<tr>
<td></td>
<td>15-18</td>
<td>290</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1.853</td>
<td>66.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>2.790</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Skenderaj</td>
<td>07-15</td>
<td>548</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td>15-18</td>
<td>262</td>
<td>5.3</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>4.132</td>
<td>83.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>4.942</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Dukagjin</td>
<td>07-15</td>
<td>1.897</td>
<td>36.5</td>
</tr>
<tr>
<td></td>
<td>15-18</td>
<td>871</td>
<td>16.7</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2.432</td>
<td>46.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>5.200</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

The Table 1 indicates that the age-groups 7-18 comprise around 30% of the residents. These data facilitate the assessment, population’s education in the region, and provide a possibility to analyze the project development for the required expropriation and resettlement. In Fig. 2 is presented the database view of developed perspective zones.

Graphical presentation of the data in this report is aimed at providing an overview of the settlement types in mining sources. In the Fig. 3 are presented the four types of lands located in future mining development areas.

4 Conclusion

Collection, systemization and processing of the existing documentation, as well as the data collection from the ground for each perspective area, made possible for the development of a new database in the model described above. The database was developed with the features and the required detailed attributes of the dwellings in the mining area. According to the Kosovo integrated WebGIS [4], the graphical database was prepared in shape file. The created model facilitates the future steps in updating the mining data. With the use of these data, and the investors’ interests for the perspective mining zones, national institutions increase the probability of the results for decision-making, as it facilitates:

- Economic analysis of the mining source,
- Determination of types of lands, communities, residents’ age-groups, etc.
- Calculation of costs for the expropriation for mining purposes,
- Calculation of costs for the required expropriation and eventual resettlement of the dwellings,

Indeed, several other analysis and studies have to be developed based on this database model, also taking into consideration the timing and economic requirements.

References:
[2] Assembly of Kosovo, Law on Expropriations of Immovable Property (Law No. 03/L-139-March 2009)