



**Republika e Kosovës**  
**Republika Kosova-Republic of Kosovo**

*Qeveria - Vlada - Government*

**MINISTRIA E ZHVILLIMIT EKONOMIK**  
**MINISTARSTVO EKONOMSKOG RAZVOJA**  
**MINISTRY OF ECONOMIC DEVELOPMENT**

**MINING STRATEGY OF THE**  
**REPUBLIC OF KOSOVO 2012 – 2025**

Prishtina, 2012

## ABBREVIATIONS

Ag	Silver
KPA	Kosovo Privatization Agency
WB	World Bank
EU	European Union
Bi	Bismuth
ÇB	Çuka e Batllavës
Cd	Cadmium
Co	Cobalt
Cr	Chrome
Cu	Copper
ESTAP III	Energy Sector Technical Assistance Project III
REE	Rare Earth Elements
Fe	Iron
KGD	Kosovo Geo-database
INKOS	“Inkos” Institute j.s.c
JORC	Joint Ore Reserves Committee
KEK	Kosovo Electric Corporation
ICMM	Independent Commission for Mines and Minerals
DM	Dardan Massive
MED	Ministry of Economic Development
PGM	Platinum Group Metals
Mn	Manganese
Mt	Million tons
Ni	Nickel
SOE	Socially Owned Enterprise
NGO	Non-Governmental Organization
OMAC	Laboratory - Ireland
P	Phosphorus
Pb	Lead
PERC	Pan-European Reserves and Resources Reporting Committee
KQP	Kosovo Quarry Plan
MRMP	Mining Resource Management Plan
RWE	Rheinisch-Westfälisches Elektrizitätswerk.
SWOT	Strengths, Weaknesses, Opportunities and Risks
TPP	Thermal Power Plant
t/v	Ton/Year
t	Ton
UNFC	United Nations Framework Classification
Zn	Zinc

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## EXECUTIVE SUMMARY

Kosovo's sustainable economic and social development and the welfare of its citizens represent the main priority of Kosovo's state institutions.

The accomplishment of this priority depends on planning and implementing structural economic reforms, which provide for optimal utilization of Kosovo's natural and human resources and open the path for private sector-stimulated economic development through the provision of adequate business environments and sustainable employment possibilities, which will represent the foundation of country's long-term economic development.

The Mining Strategy of Republic of Kosovo is a document prepared by the Government of Kosovo to provide for realistic and rational utilization of mineral resources with the aim of achieving sustainable development of mining resources. This document should serve as guidelines for relevant institutions in conducting responsible management of mineral assets, and aims at valuating existing mining resources and identifying new mineral resources.

The primary purpose of this strategy is to establish prerequisites for prompt and sustainable development of the mining sector, which should, in turn, contribute to the improvement of social wellbeing in the Republic of Kosovo.

The Mining Strategy of the Republic of Kosovo is drafted in line with the economic vision of the Government of Kosovo, in which sustainable economic development, mining sector empowerment, the adoption of adequate legislation, structural economic reform and education of new generations represent the foundation of Kosovo's economic future. This strategy is based on four basic pillars. These pillars represent the framework for the establishment of action plans and policies, which define how the relevant institutions and mining sector will engage in exploring and developing mining resources and the mining sector in general.

### **First pillar: Provision of favorable conditions for the economic valorization of mining resources, attraction of investments.**

Kosovo's institutions shall establish a clear legislative foundation and sectoral policies, with the aim of supporting and developing the mining sector. Such legal foundation will regulate the continuation of the mining sector restructuring, advancement of their competitive abilities in the local and international market and opening of new perspectives for utilization and processing of mineral resources. Valorization of mineral resources/reserves encompasses the placement of Kosovo's mineral resources, especially lignite and Pb-Zn ores, in the center of its economic development. Further objectives include generation coal-powered energy and production of basic metals for export, which should have a positive impact on the foreign trade balance. Furthermore, through such policies, the Government aims to establish a strong generator of Small and Medium Enterprise development, as the basis for the utilization of mineral resources for accomplishing the objectives of the Government of Kosovo economic vision.

**Second pillar: Enhancement of human and institutional capacities in the mining sector**

Enhancement of relevant scientific and educational capacities will make possible the development of mining industries, in conformity with market requirements and international standards. Kosovo has an invaluable human capital and professional expertise in this field, however, currently there is an immediate need to renew and further develop this capital, in order to guarantee sustainable development of key institutions and of the sector in general.

**Third pillar: Social considerations and community benefits**

This strategy also defines actions and initiatives to be treated in the mining sector, based on the country's comparative advantages, in order to ensure that the mining sector development will play a direct impact on the lives of citizens as natural owners of such resources. Community participation and benefits, through employment and local infrastructure development, will have a significant social impact and may stimulate regional development in Kosovo.

**Fourth pillar: Environmental care**

Friendly and healthy environment is of primary importance for Kosovo citizens. Subsequently, this strategy pays great considerations to environmental protection and envisages the conduct of all necessary measures to minimize any adverse environmental impacts caused by mining activities.

The abovementioned pillars envisage a number of objectives, developmental policies and activities. Objectives are delineated in this strategy, whereas developmental policies will establish a clear framework for sustainable economic development and friendly environmental treatment, while supporting mineral exploration, extraction and processing and the overall development of Kosovo's mining sector. Actions/measures comprise support for relevant institutions, in order to ensure that the mining sector provides substantial and sustainable benefits for the country's economy and minimizes any adverse impacts.

## 1. INTRODUCTION

The Mining Strategy represents an assessment of the current situation and of the perspective of this sector, deemed substantial for the country's economy, as well as of the mineral potentials of the country and challenges that have to be faced by its administrative and technical institutions, and Governmental programmatic measures aimed at sustainable long-term development.

The experience to date of other countries rich in natural mining resources shows that the application of adequate policies for the utilization of mineral resources resulted in their respective accelerated development.

Republic of Kosovo is rich in natural mining resources, among which energy and colored metal resources represent the most significant potential for overall development. In this aspect, it is worth to explicitly make note of lignite, lead, zinc, silver and gold, silicate mines of nickel and cobalt, iron – nickel, bauxite, manganese, and a considerable number of non-metallic minerals, industrial and construction geological materials. Rational and well-managed use of these resources can provide for a prompt and sustainable economic and social development of Kosovo.

Sustainable economic and social development represents a key priority for the Government of Kosovo. The accomplishment of this priority depends on the planning and implementation of structural economic reforms that provide for optimal use of Kosovo's mining and human resources, as well as sustainable employment possibilities in the country's long-term development.

The Mining Strategy of Republic of Kosovo is a document prepared by the Government of Kosovo to provide for realistic and rational utilization of mineral resources with the aim of achieving sustainable economic development. This document should serve as guidelines for relevant institutions in conducting responsible management of mineral assets, and aims at valuating existing mineral resources and identifying new mineral resources. This will help in providing for a prompt and sustainable development of the mining sector and will contribute to the welfare of all citizens of Republic of Kosovo.

The Mining Strategy covers the period 2012-2025. It will be implemented by relevant stakeholders of the mining sector. The Ministry of Economic Development is responsible for the coordination and supervision of the implementation of the Republic of Kosovo Mining Strategy.

### **Mining Strategy implementation principles**

Utilization of mining resources represents one of the most significant pillars of Kosovo's economic development and employment stimulation. This Strategy comprises work of sector's professionals, inputs of local authorities, mining enterprise development plans, the plans of the Independent Committee for Mines and Minerals, and is in full harmony with the Economic Vision and Action Plan for Sustainable Economic Development, adopted by the Government of Kosovo. Partnership with the civil society and regular communication with citizens will help this strategy provide benefits for the entire Kosovo society.

The development of a sustainable mining industry will provide for the operationalization of existing mines throughout Kosovo and the opening of new mines, which will, in turn, provide new employment and business opportunities not only for the mining sector but also for ancillary industries and services. This requires a higher level of exploration activities to identify new mineral resources and to develop new mines and mine processing industries. Key characteristics of this strategy's economic vision are:

- To provide for long-term economic/social benefits for Kosovo;
- To contribute in the achievement of economic development objectives;
- To contribute to environmental protection and mitigation of negative effects;
- To provide for the attraction of new investments in the sector.

## **2. VISION AND MISSION OF THE MINING SECTOR**

### **2.1 Vision and Mission**

#### **VISION**

Development of mineral resources and expansion and modernization of mineral processing industry, to guarantee sustainable economic development, new employment possibilities and improved welfare for the citizens of the Republic of Kosovo.

#### **MISSION**

Provision of all legal and institutional prerequisites for prompt enhancement of investments in the mining sector, strengthening of human resource capacities, improved interest of the community and provision of environmental sustainability.



### 3. LEGAL AND INSTITUTIONAL FRAMEWORK

#### 3.1. Mining Sector Institutions and Enterprises

##### 3.1.1 Institutions

**Ministry of Economic Development:** has been established by Decision of the Kosovo Assembly No. 218 of 24.02.2011, and with the Regulation No. 02/2011 on Areas of Administrative Responsibilities of the Office of the Prime Minister and Ministries.

MED is responsible to develop policies and strategies on economic development, monitor public enterprises, develop and implement policies/documents and strategies on the energy sector, mining, post and telecommunications, and the information technology sector, energy balance documents, energy efficiency and renewable energy sources, in line with the applicable legislation. It cooperates in the development and implementation of international agreements in the energy sector, mining, post and telecommunication, and the information technology sectors. It also cooperates with the business community and business associations with the aim of creating a suitable business environment.

MED holds all other responsibilities of the former Ministry of Energy and Mining pertaining to the Energy and Mining sectors.

**Independent Commission on Mines and Minerals:** established with the Regulation No. 2005/2 of January 2005 (as amended with the Regulation No. 2005/38 of July 29, 2005 and the Law No. 03/L-81 of June 13, 2008), is a independent agency in line with Article 119 paragraph 5 and 142 of the Constitution of the Republic of Kosovo, and as of the entry into force of the Law on Mines and Minerals (30/L-163), it operates pursuant to this law.

**Kosovo Privatization Agency (KPA):** is an independent public body, which exercises its functions in a completely autonomous manner, in conformity with Law No. 04/L-034 on the Kosovo Privatization Agency.

**Other government bodies:** such as the Ministry of Finance, Ministry of Environment and Spatial Planning, and the Ministry of Labor and Social Welfare, play key roles in monitoring other social, economic and environmental components of the mining industries.

##### 3.1.2 Sector enterprises

**“Trepça under KPA Administration”:** has inherited the former complex of socially owned Mining and Metallurgic enterprise ‘Trepça’, comprising a number of mines, floatation, metallurgies and chemical industry companies. Currently, four mines are operating with limited capacities (‘Trepça’ in Stanterg, Cernac, Belloberde and Artana). Closure of the mines in beginning of 90s and the consequent closure of the mining production industry, has greatly affected the increase of the unemployment scale. It is widely known that in 1989, Trepça mines

employed some 7 thousand employees, whereas the entire Corporation employed over 22.000 employees. Currently, 2.500 persons are employed and 2.500 are supported by low-income social schemes, all funded by the Kosovo Budget. Important feasibility studies were performed on mine operability and their economic potential, resulting in their assessment as profitable<sup>1</sup>.

In accordance with the applicable legislation of Republic of Kosovo and in line with Article 50 of the Law on Reorganization of Certain Enterprises and their Assets, No. 04/L-035, of 26 October 2011, in lieu with the Resolution of the Special Chamber of the Supreme Court of Kosovo No. SCR-05-001 of 09 March 2006, and the subsequent decision of the Special Chamber of the Supreme Court of Kosovo Nr. SCR-05-001-R008, R009 and R011 of 19 May 2011, the Kosovo Privatization Agency issued a moratorium on Trepça's core Enterprises and Trepça's other Enterprises, which entered into force on 8 November 2011.

The Moratorium Decision on Trepça Complex means that from 8 November 2011, all activities, procedures and operations aimed at determining the value, execution or fulfillment of requests and interests related to Trepça or its assets, shall be suspended and may only recommence on the basis of permits issued by the Special Chamber of the Supreme Court of Kosovo on Kosovo Privatization Agency related-matters.<sup>2</sup>

**Kosovo Energy Corporation (KEK i.s.c.):** is a Kosovo public owned enterprise which owns and operates lignite mining, electricity generation, distribution and supply assets. Part of KEK is its Coal Production Division, responsible for the following activities: coal production, coal transportation, separation and storage before its transfer to TPPs for combustion. Until 1990 some 5600 employees were employed in the "Kosova" coal mines<sup>3</sup> in Mirash and Bardh, while currently these mines employ 3600 employees.

**NewCo Ferronikeli:** systematic explorations in Kosovo to discover Ni-Co sources began in 1961. The exploration of the nickel ores and its processing and finalization started in 1984. Two open cast mines function as part of Ferronikel (Çikatova and Gllavica), including the geological exploration unit and the foundry. In 1984-1999 a total of 7,092,090 t of ores with 1,21% Ni have been exploited, and from 1984 to 1997 a total of 36,728 t Ni metal were produced. After 1997 the Ferronikel foundry was not in operation.

The European market for ferronickel produced in the foundry in Drenas is known since its first production. Around 90% of production is sold in the European market.

In 1990, a total of 1944 people were employed in Ferronikel, and in 1999 there were 1424. Ferronikel was privatized in end 2006 to company IMR-Alferon, and currently hires around 1000 employees.

**Magnesium mines of Golesh and Strezovc:** before the war, the magnesium mine in Golesh – Magurë produced caustic and non-flammable magnesium for users all over former Yugoslavia, and was able to export to other countries in the Balkans and to Italy. The archived documents of Magura mine show that between 1964 and 1992, in total 4,250,000 tons of magnesium were

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<sup>1</sup> Feasibility Study of Trepça and Artana mines, June 2006. Documentation of the Complex "Trepça under KPA Administration".

<sup>2</sup> Moratorium notification by the Kosovo Privatization Agency, Legal Department, Prishtina, November 2011.

<sup>3</sup> Kosovo Energy Corporation - "Questionnaire Report on Bardh and Mirash Mines", Kastriot, April 2006.

exploited. Magnesium exploitation in Strezoc mine started in 1956. In 1973, the separation plant became operational. Utilization of magnesium resources was performed in both surface and subterrestrial manners. These two mines were privatized by the “Iminggrup mgo” LLC Company in 2007.

After the conditions of the Privatization Agreement were not fully met by the buyer (“Iminggrup mgo”), the KTA Board in 2010 took a decision to impose a financial fine, including; MIM Golesh with 6,357,094 €, and XIM Strezoc with 5,475,119 €. Hence, even after the privatization process, these mines have not managed to consolidate and start production.

**Kosovo bauxites:** related operations date back to 1966, and exclusively include usage of bauxite through open-cast methods. Before closure of the mine in 1990, this mine realized annual productions of up to 100,000t. In 1989 this mine employed 596 employees, whereas in 1999, after the war, 340 employees went back to work there. Due to market losses, it was active in production of limestone, aiming to prepare for utilization of bauxites. The company is undergoing privatization and is currently not operational. All employees are currently on forced leave. The company is performing asset maintenance and mine safety operations.

**Marlstone mine Sharr Cement:** functions as a limited liability company, commercialized based on an agreement between UNMIK and Swiss company Holcim for a ten-year period between 13.06.2000 and 13.06.2010. As of 2010, SOE “Sharr Cement” operated as a commercialized company under PAK monitoring.

In 2010, the PAK Board of Directors approved the privatization of commercialized companies, including the privatization of SOE Sharr Cement. Annual capacities of production in this factory are 0.6 million tons of cement.

### 3.2. Legal framework

Following are the laws, sublegal acts and Government Decisions which may influence mining sector regulation.

- Law No. 03/L-163 on Mines and Minerals;
- Law No. 2004/28 on Precious Metals;
- Law No. 03/L-215 on Access to Public Documents;
- Law No. 03/L-139 on Expropriation of Immovable Property;
- Law No. 03/L-205 on Amendments and Supplements to Law No. 03/L-139 on Expropriation of Immovable Property;
- Law No. 04/L-045 on Public-Private Partnerships;
- Law No. 03/L-184 on Energy;
- Law No. 03/L-185 on Energy Regulator;
- Law No. 03/L-201 on Electricity;
- Law No. 03-L-133 on Natural Gas;
- Law No. 03/L-116 on District Heating;
- Law No. 2003/14 on Spatial Planning;

- Law No. 03/L-106 on Amendments and Supplements to the Law No. 2003/14 on Spatial Planning;
- Law No. 03/L-025 on Environmental Protection;
- Law No. 04/-L-035 on Reorganization of Certain Enterprises and their Assets;
- Law No. 04/L-033 on the Special Chamber of the Republic of Kosovo on Kosovo Privatization Agency related matters;
- Law No. 04/L-034 on Kosovo Privatization Agency;
- Law No. 2004/42 on Scientific Exploration Activity;
- Law No. 02/L-33 on Foreign Investments;
- Law No. 03/L-229 on Protection of Competition;
- Law No. 03/L-087 on Publicly Owned Enterprises;
- Law No. 02/L-123 on Business Associations;
- Law No. 04/L-006 on Amendments and Supplements to the Law No. 02/L-123 on Business Associations;
- Law No. 03/L-226 on Grant for Use and Exchange of Immovable Municipal Property;
- Administrative Instruction No. 01./2011 on Rules and Procedures for the Collection of Mineral Royalties;
- Regulation No. 02/2011 on the Content of Geological Research Programs and Elaborations of Geological Research Results;
- Regulation No. 04/2011 on Treatment of the Mining Sector Community;
- Regulation No. 05/2011 on Organization and Functions of the State Museum of Crystals and Minerals;
- Regulation No. 06/2011 on Mining Safety;
- Government Decisions on ownership policies for central POEs No. 11/39 and No. 13/39;
- Government Decision on KEK J.S.C. restructuring, No. 06/2005;
- Government Decision on KEK J.S.C. unbundling, No. 04/36 of 2008;
- Government Decision No. 02/46 of 02.11.2011 on prohibition of the use of inert materials from riverbeds, banks and spaces adjacent to rivers throughout Republic of Kosovo.

## 4. CURRENT STATE AND POTENTIAL OF THE MINING SECTOR

### 4.1. Mining resources<sup>4</sup>

The territory of the Republic of Kosovo is characterized with a complex geological formation. This is proven by numerous older and contemporary geological formations.

The great formational diversity, the intrusive and effusive activities, sediment effects and tectonics have impacted the formation of numerous important mineral types and resources, as well as energy, metallic and non-metallic minerals.

#### 4.1.1 *Energy minerals*

Based on research conducted to date and the status of energy mineral resource reserves, the Republic of Kosovo has at its disposal considerable coal (lignite) reserves and small quantities of radioactive minerals.

##### 4.1.1.1 *Coal*

Coal (lignite) represents Kosovo's most important energy resources, which supplies around 97% of the overall electricity production.

First coal explorations in Kosovo have started in the beginning of the XX century, when it was concluded that Kosovo is home to vast coal reserves. In 1922 started the initial sub-terrestrial utilization of Hade and Babush (Lipjan) mines. Systematic research of the Kosovo coal basin started between 1952 and 1957. During this period, preparatory works were conducted for economic utilization of the Kosovo basin coal, with the transformation from sub-terrestrial mining to overcast open mining, considering the possibilities for massive utilization of the available resources for coal-powered thermal power plants and industrial coal processing purposes.

The main purpose of such research was acquaintance with the expansion, form, age and tectonics of the coal basins, and especially with the assessment of the coal layer's quality and depth.

The most important coal basins are:

- Kosovo basin;
- Dukagjini basin; and
- Drenica basin.

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<sup>4</sup> Annex 1 - Summary of the data on Kosovo's main mineral resources.

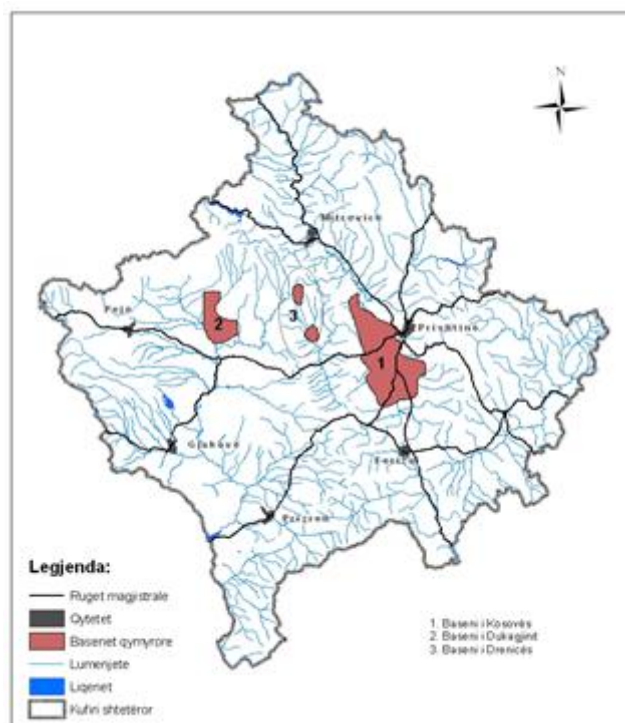


Fig. 1 Coal basins in Kosovo

Assessed lignite resources<sup>5</sup> in Kosovo are provided in Table 1.

Table 1. Coal reserves in the Republic of Kosovo

Coal basins	Reserves		
	Geological	Balance*	Non-balance**
<b>Kosova</b>	10, 091, 000,000	8,772,000,000	1,319,000,000
<b>Dukagjini</b>	2, 244, 830,000	2,047,700,000	197,130,000
<b>Drenica (Skenderaj f.)</b>	106, 631,000	73,188,000	33,443,000
<b>Total</b>	<b>12,442,461,000</b>	<b>10,892,888,000</b>	<b>1,549,573,000</b>

### *Kosovo coal basin*

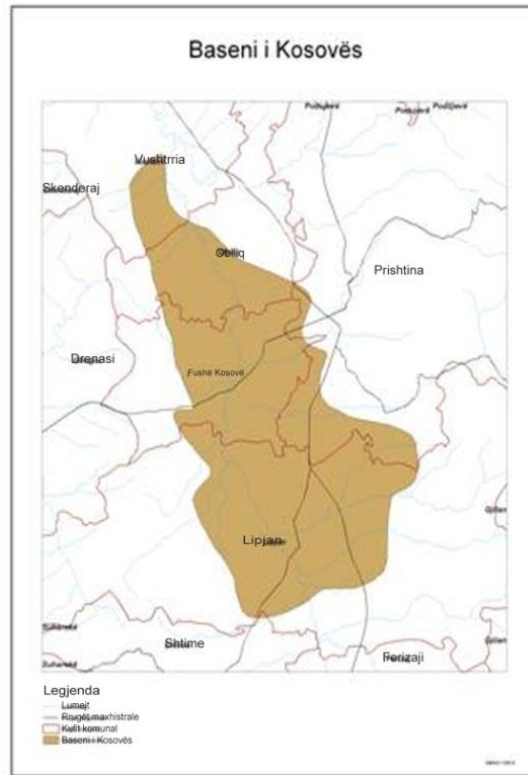
The Kosovo coal basin lies in the central part of Republic of Kosovo. In the geo-morphological and geographic aspect, the Kosovo coal basin is known as Kosovo Plain, which is presented as typical lowland, the longitudinal axis of which extends in the direction NNW – SSE, ranging from Mitrovica in the north to Kaçanik in the south. The width of Kosovo Plain, respectively Kosovo coal basin is approximately 85km, whereas the average width of the basin is around 10

<sup>5</sup> Revision clause No, 152, University of Prishtina, 2008, in relation to: “Geological coal reserve assessment study”, Kosovo Basin, Prishtina 2007, p.81, Inkos Institute

\* Balance reserves are reserves in which coal caloric values exceed 5.450 kJ/kg

\*\* Non-balance reserves are reserves in which coal caloric values are under 5.450 kJ/kg

km. This basin covers a surface of approximately 850 km<sup>2</sup>, whereas the surface of Kosovo basin (the productive part) covers a surface of 300 km<sup>2</sup>.



*Fig.2. Kosovo coal basin*

The Kosovo coal basin has a developed network of roads, railroads and air transport, which connect the Republic of Kosovo with the countries of the region and further. In the mining aspect, this road and railroad transport infrastructure is of great importance for the coal use, as coal utilization usually encompasses solutions related to its displacement, especially if they are located over the recoverable lignite fields.

In the geological aspect, the Kosovo basin is localized within the mighty series of Pliocene, which shows great variations from the petro-graphic content and facial characteristics viewpoint. The depth of this series, in specific sections, shows relatively wide diapasons, as a consequence of the paleo-relief morphology and other sedimentation processes.

Based on geological research conducted to date, the Kosovo coal basin holds a sole coal layer with complicated structures and interferences, mostly by clay and carbonates. The presence of such interruptions, especially in the peripheries of the basin, often creates a wrong impression of the presence of more than one such coal layers. The coal layer material contents comprise mostly xilit coal and soil coal. These two types of coal are present commonly in various proportions.

The Kosovo basin, in comparison to numerous other coal basins of similar quality (similar lignite type), has economic and mining-usage advantages, since within the geological boundary the



overall quantity of overburden is around 15,857,000 000 m<sup>3</sup>, which represents a favorable overburden/coal ratio of 1.76 m<sup>3</sup>/m<sup>3</sup>.

According to the data of KEK j.s.c., extraction of coal to date by the Bardh and Mirash open cast mines, mainly for energy needs, has started in 1958. By the end of 2010, in total 300,004,439 tons of lignite were extracted. Also, the coal of the Kosovo basin was used through under-ground methods between 1922 and 1958, in the mines of Hade, Dardhishtë, Sibovc and Babush. Until 1958, the methods of underground extraction yielded in around 9,100,000 tons of extracted coal.

According to available references<sup>6</sup> average coal extraction costs for the Kosovo basin are assessed at 7.8 to 11 €/ton.

Average costs of extraction (operational costs) represent dynamic categories which should practically be determined in the annual operational plans for the used fields.

Settlements in the Kosovo coal basin. The overall analyses conducted to date in the Kosovo basin include assessment of the fields settlements and population. There are 68 settlements in the Kosovo basin, stretching in five municipalities; Vushtrri, Kastriot, Fushë Kosova, Prishtina, and Lipjan.

The aerial recording of 2004 shows that the settlements placed over the Kosovo basin surface cover 35.65 km<sup>2</sup>, or if the space is to also count the safety belt around the basin, aiming for its entire use, than the defined geologically bounded space stretches in 43.31 km<sup>2</sup>.

### **Dukagjini coal basin**

Dukagjini basin represents a special morphological-tectonic unit, formed on top of rather complicated old structures. The Axis of this basin has a meridian exposure, aimed at Northeast-Southwest. The Dukagjini pool covers a surface of 1,700 km<sup>2</sup>. The River Drini i Bardhë flows almost through the very middle of the basin.

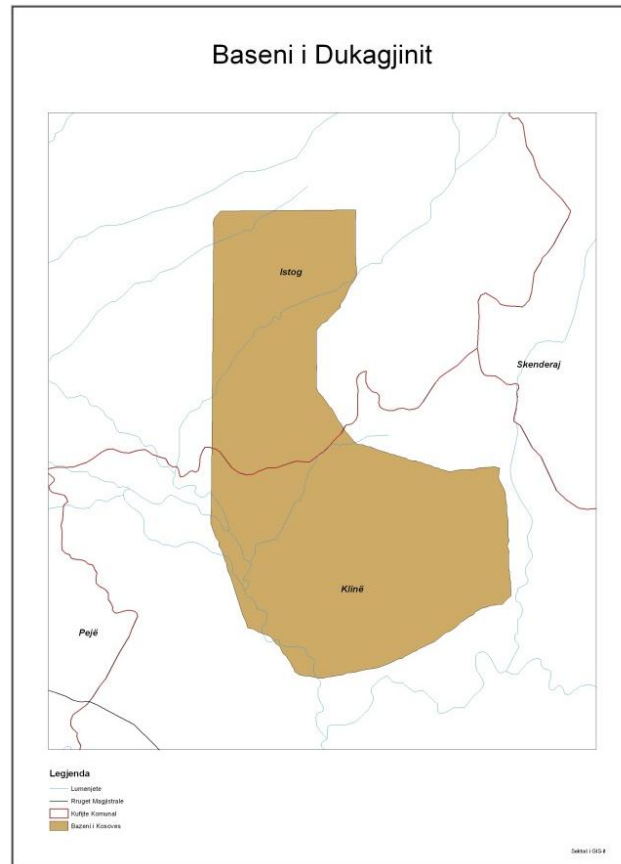
Dukagjini basin has good traffic connections. The railway Fushë Kosova – Peja passes in the south, while a branch from this line leads to Prizren. The entire basin is characterized with paved roads Pejë – Gurakoc – Mitrovicë, Pejë – Klinë – Prishtinë, Gurakoc – Burim and Gurakoc – Klinë. There are also secondary category roads that lead to the surrounding villages, most of which are paved.

Since the Dukagjini pool has a well-developed road and railway traffic network, while coal utilization should foresee solutions for the displacement of the infrastructural facilities that are placed within the usable fields.

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<sup>6</sup> RWE - “Lignite resource allocation”, Prishtina 2006. As per this study, the cost of utilization per ton of lignite is between 7.8 - 11 €/ton.





*Fig.3.Dukagjini coal basin*

Dukagjini coal basin lies almost at the center of the Dukagjini plain. According to the exploration scale, the total explored space is divided in five (5) fields, listed from north to south:

- Field “Tuçep”
- Field “C”
- Field “B”
- Field “A” and
- Field “Klinë – Kusar”, with an overall surface of 49 km<sup>2</sup>.

Coal explorations in the Dukagjini coal basin, in the post second world war period, commence with the overall geological explorations and studies for the compilation of geological maps. The compilation of geological maps was aimed at providing the basic data and assisting the planning of further exploration in the future.

*Dukagjini basin assessment.* The coal basin of Dukagjini is characterized with a low level of geological research conducted in comparison to the Kosovo basin, therefore the need for further complex research in this case becomes even more pressing. Geological research needs to continue in the direction of Peja, Gjakova and Prizren cities whereas the initial indication from previous geologic research in these directions is encouraging.

The exploration performed to date, although limited in quantity and space, have provided the data for a preliminary calculation of reserves<sup>7</sup>, which are presented in Table 2. The research has concluded that the overall volume of overburden reaches 5,916,000,000 m<sup>3</sup>.

Dukagjini coal basin belongs to the new and soft-lignite types of coal (xilit type). The Dukagjini basin coal layer is over 52 meters deep in the northern, eastern and southern sides, whereas its depth is lower than 20 meters in the basins peripheries, especially in the southeast part.

*Economic assessment of Dukagjini basin.* The analysis undertaken, in comparing the coal basins of Kosovo and Dukagjini, lead to the conclusion that in Dukagjini basin there is a deficiency as regards mining activities which would require an in-depth analysis to consider the relevant factors while taking into account all possible impacts for the region, especially from the economic impact – agricultural aspect.

*Dukagjini basin settlements.* In the (explored part of) Dukagjini basin there is a considerable number of settlements. 19 settlements are placed in the surface of the Dukagjini coal basin, belonging to Burim and Klina municipalities.

Based on evidence provided by the aerial recording performed in 2004, the overall surface covered by settlements placed over the Dukagjini coal basin reaches 5.83 km<sup>2</sup>.

### ***Drenica coal basin***

The Drenica coal basin lies between the Kosova basin in the east and Dukagjini basin in the west. The basin is characterized by two fields: Skenderaj Field (3.97 km<sup>2</sup>) in the north and Gllabar-Drenas Field in the south (1.5 – 2.0 km<sup>2</sup>.)

The basin's direction is similar with the direction of meridians, with a slight western deviation and an overall length of around 30 km, with the maximal width at around 10 km.

The communication lines between the source and other centers are good. The coal resources in the fields of Skenderaj and Drenas are connected through the paved roads Skenderaj–Drenas and further with the inter-urban road Prishtinë – Pejë and Mitrovicë–Podgoricë, whereas Drenas also has a railway connection to the railroad Prishtinë–Pejë.

In hydrographical aspect, all waters from the northern part of Drenica basin flow into river Klina which is further discharged into river Drini i Bardhë.

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<sup>7</sup> Revision clause No, 152, University of Prishtina, 2008, in relation to: “Geological coal reserve assessment study”, Kosovo, Dukagjini and Drenica Basin, Prishtina 2007, Inkos Institute

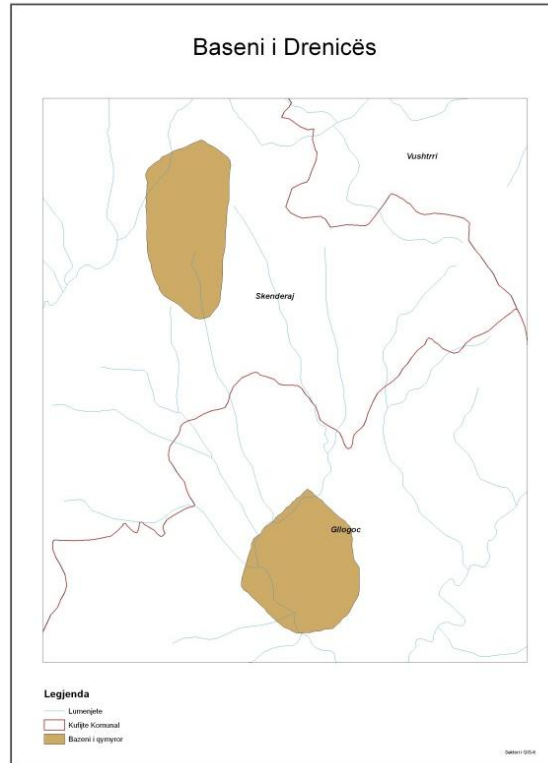


Fig. 4. Drenica coal basin (Skenderaj and Drenas fields)

In the Drenica basin, the first geological explorations and punctures started in 1955. During 1965, geological explorations continued in the Gllobar-Drenas field, and identified coal presences in this basin, respectively the compact layer of xilit quality coal. Skenderaj coal field was explored in 1965 and 1980.

*Source of Drenica basin (Skenderaj field).* Based on geological research results the boundaries of the source are established and coal reserves are calculated. The width of overburden is 35 m, whereas the average width of the coal layer is around 23 m.

The geological reserves of Drenica basin (Skenderaj field), deriving from the conducted calculations, are presented in Table 1.

The mass of overburden in the same field amounts to 69,503,000 m<sup>3</sup>, while the ratio between overburden and coal geological reserves is 0,76 m<sup>3</sup>/m<sup>3</sup>, while for balance reserves it amounts to 1,08 m<sup>3</sup>/m<sup>3</sup>.

*Coal quality.* The data presented in the geological elaborate on the coal reserve for the Skenderaj<sup>8</sup> field shows that the maximal coal quality is present in its south-central part at namely 9,213 kJ/kg while its average quality is 7,117 – 7,955 kJ/kg, and minimal coal quality is 4,188 kJ/kg, in the eastern part.

<sup>8</sup> Revision clause No, 152, University of Prishtina, 2008, in relation to: “Study on the assessment of geological coal reserve in Kosovo”. Kosovo, Dukagjini and Drenica Basin, Prishtina 2007, Inkos Institute.

*Other presence*

The perspective for finding new coal resources is favorable and realistic, since the geological preconditions are rather positive. There are indications that coal will also appear in other locations. The appearances and indications in the Dukagjini basin found earlier, taking into account the scarce exploration conducted in this basin, are promising as regards the existence of new coal resources, especially in the southern part of Peja valley, in the Gjakova and Prizren parts.

One of the potential locations is the Neocene basin of Krivareka, which represent a tectonic pool formed in the boundaries of Dardan Massive in the east and the Vardar zone in the west. The width of the coal layer in this zone reaches 5m. Research conducted in this basin was rather symbolic.

*Existing open cast mines Mirash-Bardh*

Coal production in open cast mine Mirash has started in 1958, and in open cast mine Bardh in 1969. These two open cast mines are developed and face the final phases of exploitation. They now make a common coal field. Utilization of these mines is envisaged to end in 2012.

Annual production capacities for the two mines was 28.000.000 m<sup>3</sup> overburden (solid mass) and around 17.000.000 tons of coal. Maximal production from these two mines was realized in 1988 and included 20.830.450 m<sup>3</sup> of overburden and 10.619.869 tons of coal.

Since 2010, coal is also produced from the New Mining Field (Sibovc Southwest), which is currently under development.

**4.1.1.2 Uranium**

Geological uranium explorations were conducted in the sixties of last century and included eastern and northeastern Kosovo. Exploration works with regional radiometric prospects and adequate geo-physical measurements were conducted by Geozavod, which possesses complete notes and results of the conducted research. According to the data published by the research company, the explorations have concluded that a uranium-carrying stream in trachites is rich in uranium and thorium. Average depth of the vein is 1.4 meters, and it was concluded that its decline and expansion goes up to the depth of 64 meters, with uranium contents ranging from 0,02 to 0,16 percent.

In Kosovo, there is a number of geological formations that may be considered currently as great potentials (granitite, vulcanite (especially alkaline), permo-thrasic sediments, tertiary terogenic basins, etc.) which should be subject to further explorations.

Note: Exploration, balancing and eventual utilization of radioactive resources remains a responsibility of the state of Kosovo, in harmony with international regulations pertaining to their full evaluation.

#### ***4.1.1.3 Other resources (Petroleum and Gas)***

In Republic of Kosovo, petroleum and gas explorations started in 1963-1968 by “Naftagas” from Novi Sad. Later, interest on geological structural research was also shown by INA (Zagreb). The outcome of these explorations was the determination of six structural tectonic-facial units, as potential for appearance of hydro-carbons. Of special importance is the unit of the northern part of Dukagjini basin, for which there is a stated need for continuation of exploration activities, which would result with an assessment for possibilities of presence of petroleum and gas in Kosovo<sup>9</sup>.

#### **4.1.2 Metallic minerals**

##### ***4.1.2.1 Lead (Pb), Zinc (Zn) and Silver (Ag)***

The most important lead and zinc resources and appearances are located in the so called “Metallogenic Trepça strip”, which lies in the northeastern part of Republic of Kosovo, ranging from Albanik (Leposavic) to Gllame (Gjilan). The strip length is over 80km, whereas its average width is around 30km.

In Republic of Kosovo, there is number of developed mines (main mines) and a number of resources and mines that were assessed before but never developed. The (main) developed mines are: mine “Trepça” in Stantërg, Hajvalia, Badofci, Kizhnica, Artana, Bellobërda and Cërnaci.

The most important presences and resources (mines previously explored and assessed) are: Melenica, Zjaqa, Magjera, Gjidoma, Tërstena, Rashani, Vidishiqi, Mazhiqi and Gumnishta in the Stantërg area, Quka e Batllavës southeast of Podujevës; Kaltërina e Përroi i Ngjyrosur in the Artana area, as well as Kallugjerica and Gomile, in the northern part of Kosovo. The resources of zinc and lead in Cërpulë, in southwest of Mitrovica deserves a continuation of intensive research, since previously undertaken research has resulted in favorable outcome.

#### ***Main sources***

##### **Stantërg**

The geologic-tectonic construction of the metallogenic area of Stantërg and its surroundings is complex, characteristic for the presence of massive bodies of sulfite mines of great economic importance, with Pb/Zn ratios around 1.4 : 1.0.

Mineral resources in Stantërg and further are explored since 1924, mining operations commenced in 1927m while first products from this mine are extracted since 1930. Ore production in the Trepça mines in Stanterg was continuous since its inception, with a short 8-

<sup>9</sup> Kosovo Bauxites – “Mine Questionnaire Report”, Klina, April 2006.

month interruption in 1945. The production continued until 1991, when the mine practically closed, after all Albanian staff was forcefully expelled from work.

Geologic reserves of the “Trepça” mine are well explored and practically all mineral bodies are “touched” by mining activities and sampled. The samples taken in some working locations of horizon X (ten) during 2003, analyzed in OMAC laboratories in Ireland, yielded in high quality results, much more favorable than the data from the previous elaborations. These facts raise trustworthiness in Stantërg reserves.

The accumulated experience and results gathered through geologic research, there are studies on these occurrences in the aspects of body geometry, mine quality, mineral floatability, metallic connection structure and texture of the mineral composites<sup>10</sup>. The metallogenic mine area Trepça consists of the main resource, where the current mine is opened, and a number of smaller resources. These resources have been explored to different extents; however, in the aspect of poly-metallic structures, their mines are similar to those of the mother resource.

Trepça mine has a modern infrastructure and pursues a contemporary model of sub-terrestrial mines, with three services and airing wells; has developed 12 horizons, while between the three last horizons there is a ramp that provides for the application of contemporary mechanisms for ore development and preparation. The mining infrastructure and the contemporary filling methods provide for ore utilization capacities of between 500.000 and 650.000 tons of ore per year. The achievement of full mining capacities is subject to the inclusion of an appropriate number of staff and provision of investments envisaged to refresh the mechanism and eliminate ‘bottlenecks’ in the system.

In addition to the main source, the metallogenic area of Trepça mine is also characterized with a number of surrounding sources, which were explored to different geological extents.

The most prosperous and interesting location is the one lying in a triangle between villages Rashan – Tërstenë – Gumnishtë. Full definition of reserves in this location requires additional explorations from both the existing Trepça mine (Corridors M1, M3 and M5) and from the surface.

Reserves per location in the Stanterg region are provided in Table 2.

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<sup>10</sup> Floatation mine, Trepça-Artana “Feasibility Study”, June 2006

*Table 2: reserves per location in Stanterg area<sup>11</sup>*

No	Mine-Locality	Ore Quantity (t)	Quality (%)		Ag (g/t)	Metal (t)		(kg)
			Pb	Zn		Pb	Zn	Ag
1.	Stanterg	20,754,000	4.02	4.02	76.0	834,311	674,505	1,577,304
2.	Melenica	2,552,000	5.80	5.80	85.0	148,016	107,184	216,920
3.	Magjera	600,000	3.80	3.80	72.0	22,800	18,000	43,200
4.	Mazhiq-Maja Madhe	1,500,000	3.30	3.30	60.0	49,500	42,000	90,000
5.	Gjidomë-Mazhiq	2,000,000	3.30	3.30	60.0	66,000	56,000	120,000
6.	Rashan-Tërstenë	2,500,000	3.30	3.30	60.0	82,500	70,000	150,000
7.	Zjaqë	5,175,000	2.83	2.83	16.0	146,453	112,815	82,800
8.	<b>TOTAL</b>	<b>35,081,000</b>	<b>3.85</b>	<b>3.85</b>	<b>65.0</b>	<b>1,349,579</b>	<b>1,080,504</b>	<b>2,280,224</b>

Stanterg mine and its surrounding sources hold reserves of around 35 Mt, or expressed in mine quantity in ore: 1,349,579 tons of lead, 1,080,504 tons of zinc and 2,280,224 kg of silver<sup>12</sup>, and currently represents one of the most significant sulfite ore potentials for Pb and Zn in the region.

#### **(Artanë, Hajvali, Badocv, Kizhnicë) Mine complex**

The mine complex encompassing Artanë, Hajvali, Badocv, Kizhnicë, lies in wide surface of the eastern part of Republic of Kosovo. These represent typical poly-metallic sources and are characterized by high contents of precious metals, namely gold (Au) and silver (Ag).

The metalogenic area of the lead-zinc mine complex Artanë – Kishnicë - Hajvali, covers a surface of around 400 km<sup>2</sup>, it is spread over a number of municipalities: municipality of Prishtina (mines Hajvalia, Badocvi, Kizhnica and floatation in Kizhnicë), municipalities of Artana and Gjilan (mine Artana and mineral fields of Prroi i Thartë and Kaltrina) and municipality of Podujevë (mine under opening “Çuka e Batllavës”).

The entire mineral-bearing region of Artana, Hajvalia, Badocv and Kishinca, including the surrounding sources, holds ore reserves of in total 16,037,342 tons, with the following average contents Pb - 4.67 %, Zn - 6.52 % and Ag – 89.91 g/t; or, expressed in metal quantity in ore, the sources are home to 749,354 t lead, 1,045,444 t zinc and 1,441.879 kg silver<sup>13</sup>.

#### **Mine complex Belloberde/Cernac**

Mines Cernac and Belloberde lie in the northern part of Kosovo, whereas the common floatation of these two mines is located in Leposavic.

The Belloberde mine includes three mine bodies, while the ratio Pb / Zn is around 1.2 : 1.0. Lead and zinc mineralizations in the Cernac source mines are present in a number of threads, the width

<sup>11</sup> Ore reserves as resources (no categorization) in Trepca mines, Mitrovica, 2012

<sup>12</sup> Ore reserves as resources (no categorization) in Trepca mines, Mitrovica, 2012

<sup>13</sup> Ore reserves as resources (no categorization) in Trepca mines, Mitrovica, 2012



of which is between 0.5 and 20 meters, and the intensive difference of thread width is caused by mine dilutions present in the produced ore (between 45% and 55%), although the primary ore at source is rich and holds Pb/Zn ratio of 2.3:1.0.

In total, the Belloberde/Cernac mine complex, which lies in the territory of Leposavic municipality, holds ore reserves of 7.55Mt<sup>14</sup>, with average metal contents in ore of Pb - 6.85 %, Zn - 5.07 % and Ag – 96.13 g/t, or expressed in metal quantity in ores: 516,645 t lead, 382,373 t zinc and 725,256 kg silver.

***Total reserves/resources in the main sources***

In general, Trepça sources cannot be reported in a cumulative manner through a table. In an effort to present realistic geological potential of Trepça, physical data<sup>15</sup> was collected from locations presented in Table 3.

*Table 3: Main sources of Lead-Zinc (silver) and main reserves<sup>16</sup>*

Location	Ore (t)	Pb (%)	Zn (%)	Ag(g/t)	Pb (t)	Zn (t)	Ag (kg)
Stanterg	35,081,000	3.85	3.85	65.0	1,349,579	1,080,504	2,280,224
Cernac/BB/Gom	7,544,227	6.85	5.07	96.13	516,645	382,373	725,256
Compl. Artane/ÇB	16,037,227	4.67	6.52	89.91	749,354	1,045,444	1,441,879
<b>TOTAL</b>	<b>58,662,569</b>	<b>4.46</b>	<b>4.28</b>	<b>75.81</b>	<b>2,615,578</b>	<b>2,508,321</b>	<b>4,447,359</b>

As may be seen in the table data, the Stanterg mine covers 59.80% of the total Trepça reserve, and 47.43% of the total metal quantities (Pb+Zn), which is comprehensible when considering the intensive ore utilization from this mine in the previous 8 decades. The Artane, Hajvali and Kishnica mine complex holds 27.34% of the total reserve and 35.02% of the total metal contents (Pb+Zn). Leposavic area mines take only 12.86% of the total Trepça reserves, and 17.54% of the total metal quantities.

In addition to basic metals (lead and zinc), ores from Trepça metallogenic area are characterized with a high content of silver, which is mostly concentrated in lead concentrates.

Trepça ores contain other metals like gold (Au), bismuth (Bi), cadmium (Cd), selenium (Se), tellurium (Te), indium (In), germanium (Ge), etc. However, balancing, concentration and separation of these metals is not conducted at concentrate phases, and is only possible through the metallurgical treatment of concentrates. Gold content in minerals cannot be determined in the balance, but all sources also contain this metal which is extracted in the final phase of metallurgical processing, through refinement. It is calculated that the average gold content in minerals is 0.8 gr/t.

<sup>14</sup> Ore reserves as resources (no categorization) in Trepca mines, Mitrovica, 2012

<sup>15</sup> Ore reserves as resources (no categorization) in Trepca mines, Mitrovica, 2012

<sup>16</sup> Ore reserves as resources (no categorization) in Trepca mines, Mitrovica, 2012



Production in the past. Between 1930 and 1980, the following quantities of minerals, concentrates and metals were produced in Kosovo: mine Pb-Zn: 45.87 Mt, with 2.98 Mt Pb-concentrate and 2.882 Mt Zn-concentrate, Ag-2,461 t, Bi-1,860 t, Cd-827 t, Gold -10,771 kg.

Between 1979 and 1998, 21.3 Mt of minerals were processed, containing 3.1 % Pb and 2.2 % Zn; namely 649 000 t Pb and 442 500 t Zn were produced. Furthermore, 1200 t Ag and 2 600 kg gold were extracted. In a 70 year-long experience, only Stantërg produced over 36 Mt minerals, over 2.1 Mt Pb, 1.4 Mt Zn and 3.6 t Ag.

#### *4.1.2.2 Nickel (Ni) and Cobalt (Co)*

Silicate nickel mine exploration in territory of Kosovo dates back to 1958, when the first mineralizing nickel appeared in the territory of Gllavica, in the vicinity of Magurë magnesium mine.

There are two open cast mines, as part of Ferronikel: Gllavica and Çikatova (Dushkaja, Suka).

**Silicate nickel mine “Gllavica”** is located around 20km Southwest of Prishtina. Nickel source Gllavica lies in the peridotite massive of Golesh, in the eastern slope of Gllavica hill. It is directed almost precisely between North and South and is around 1 050 m long. The source lies over the peridotites, in the form of a cover and covers a surface of around 32 ha. The nickel source “Gllavica” belongs to the group of silicate sources with conveyance crusts. The formation of this source is connected with the formation of the serpentinite conveyance crust formation.

In 1967, intensive geological research resulted in the discovery of a new similar source in Çikatova close to Gllavica.

**Silicate nickel mine “Çikatova e Vjetër”**, is located in the region of peridotite massive of Dritan (Dobroshevc), of the Drenas municipality. It is located 20 km west of Prishtina, and 12 km from the Gllavica source.

There are two mineral sources (mineral bodies) that form the nickel source „Çikatovë e Vjetër“: „Dushkaja“ and „Suka“. Assessed geological reserves in the two mines are around 13 Mt, with average Nickel content of 1.31% and Cobalt content 0.06%<sup>17</sup>.

The Nickel utilization started in 1982, while the foundry was operational since 1984. Between 1982 and 1999, 7 092 090 tons of minerals containing 1.21 % Ni were extracted; while between 1984-1997 in total 36 728 tons of nickel metal were produced. The work in open cast surface mines has ceased since 1999.

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<sup>17</sup> Association of Kosovo Engineers – “Sustainable technical-technological development and the environment”, Scientific Conference, Prishtina 2002, p. 157-164, and Ferronikeli – “Mine Questionnaire Report”, Prishtina 2006.

Ferronikel was privatized in special spin-off procedures by decision of the Kosovo Trust Agency, in accordance with UNMIK regulations. Upon privatization by NewCo Ferronikeli Complex L.L.C. (April 2006) utilization commenced in both mines in 2007.

#### ***4.1.2.3 Bauxites***

The bauxite carrying region is part of the ultra-basic rock massive of Rahovec. The bauxite source and appearances are most common in Mali i Gremnikut, 5 to 10 km southeast of Klina. The bauxite mineralization in this region is related to carbon deposits of upper Kretak at the turonian – mastrichtian level.

Kosovo bauxite belongs to the group of ferro – bauxites because of its rather high presence of iron. The current reserves are assumed to be around 2.7 Mt, while the reserves of the accompanying lime reaches the figure of 40 Mt<sup>18</sup>.

Production in the past. The mine started its operation in 1966. Between 1966 and 1990 3 255 615 t bauxite was used. Since the end of 60s and the beginning of 70s, the largest annual production exceeded 200 000 ton/year.

#### ***4.1.2.4 Iron-nickel, chrome, manganese and copper***

Kosovo is rich, with a number of small-scale sources and presences of iron, which contain different quantities of nickel, cobalt, chrome and copper. The iron-nickel sources and presences in Kosovo stretch from Ivaja, close to Kaçanik, in the south to Vërbovc (Drenas) in the north, which are present in shape of lenses, layers and sub-layers. The main presences are in the zone Sedllar-Petrashticë-Caralevë. Another similar area lies between Caralevë – Dugë - Karaçicë. Smaller-scale presences also appear in the vicinity of villages Çikatovë, Nishor, Breshance and Goriqë in Northwest of Theranda (Suhareka).

The region of Qëndresa (Tërstenik) represents an area with presence of iron-nickel which was researched in more detail. The source of iron-nickel is located close to village Tërstenik, around 1.5 km from the railroad that connects Peja and Fushë Kosovë, north of railway station Bajicë. The source holds over 0.5 million tons of ore, with average contents: Fe – 34.39% (max. 41.5%), Ni - 0.98% (max.- 1.9%), Cr – 1.39% and Co – 0.1%.

#### **Chrome (Cr)**

Chrome research was conducted in many locations in Kosovo, in the ultra-basic massive of Gjakova, Rahovec, Luboten, Brezovica, Golesh, Dobroshevc, etc. Chrome presences are also connected to dunites, and shapes of lenses, disks of deranged mineral forms.

<sup>18</sup> Kosovo Bauxites – “Mine Questionnaire Report”, Klina, April, 2006.

The ophiolitic complex of Gjakova stretches in a surface of around 80 km<sup>2</sup>, and makes part of the ophiolitic complex of Mirdita, in the Albanian part of which many chrome sources are discovered that carry much larger reserves than those in the territory of Republic of Kosovo. The most famous source was the chrome mine of Deva, which is located in southwestern part of Kosovo, close to the border with Albania. The following sources of this region were also famous: Babaj Bokës, Kralevica, Pllanik-Ponoshec, Popovc, Çafë Prush, etc.

Chrome mineral entities of the Brezovica region are located in a number of ultra-basite levels. Chrome concentration is connected to dunites. In Brezovica region, common are also chrome presences and unused sources located in ultra-basic rocks between Ostrovica and Jazhinca. Some 20 presences are discovered in the ultra-basic massive of Rahovec. These presences and sources can be economically feasible, especially those in the eastern part of the massive. New explorations conducted in 2010-11 revealed a chrome source in the vicinity of village Llapqeve. Chrome explorations and its discovery in Llapqeve were performed by “Arsi sh.p.k”, pursuant to the exploration license issued by the ICMC.

Chrome mines are utilized in almost all regions with chrome presence in Kosovo, with some 1.02 Mt of chrome mines used until 1991, when its utilization seized.

### **Manganese (Mn)**

The most significant Mn source, according to data available of the Trepca Complex, is found in the Artana area, where the conveyance of Pb-Zn leads to the mineralization of Mn-Fe. The assessed manganese resources in this source reach 5 million tons of minerals, with contents of Mn amounting to 22%.

Mn ore valorizations should be conducted after the technical reviews of the state and approach opportunities to the closed Mn mine and programmatic explorations of the Mn concentration effects in concentrate ores, through floatation and magnetic concentration methods, should be reviewed prior to the Mn ore valorization from this location.

### **Cuprum (Cu)**

There are a number of cuprum mineralization appearances. Basic research included numerous territories in the Sharr mountains, close to Dragash (Okravno, Kukolan, Ovniste), and in Bjeshkët e Nemuna, Pashtrik, Junik, Rexhancë (close to Hani i Elezit), Karadak (Pidiq, Binaq, Çelik), Guri Kuq (Petkoviq), Karavan Sali etc. Cuprum mineralizations are connected to different metallogenic eras. In western Kosovo, such mineralizations are connected to spilit-diabas-keratofir vulcanizations.

There is no available data on reserves/resources. However, common cuprum presence shows that there is a high potential for further exploration of cuprum sources.

#### *4.1.2.5 Rare metals and rare earth elements*

In the southern part of Kosovo a variety of rare earth elements and rare metals were discovered, including arsenic, molybdenum, tin, tungsten and mercury. In the eastern part, presences of antimony are common, while in the north there are presences of mercury, antimony, arsenic, etc. There are no further details on these resources, since there are no relevant geological explorations

Rare earth elements (REE) are found close to Nebregosht and Manastirica. Geo-chemical analyses resulted in a spectrum of around 20 elements (niobium, lanthanum, cesium, scandium, zircon, etc.). Current level of knowledge on REE is insufficient for adopting an assessment, due to scarce data from explorations.

#### *4.1.2.6 Gold and platinum group metals*

##### **Gold (Au)**

In Republic of Kosovo, gold is present as a paragenesis with copper, lead and zinc mines, but also in a clear (born) shape in river alluvial depositions. To date, gold and silver were only extracted from lead-zinc mines.

Scarce exploration was performed to date the wider territories of Artana, Junik, river Tërnavë, Dragash, close to Prekovic (Krivareka), Gllama and east of Koretisht.

Gold is found in lead-zinc mineralization and sources. In Artana mine, gold content is highest, making this mine the source with highest gold content in Kosovo. Gold resources in Artana mine are assessed to reach 2.700 kg.

By source, the following gold composition is assessed: Stantërg: 0.6 g/t, Belloberdë: 0.7 g/t, Cërnac: 1.0 g/t, Hajvali: 0.5 g/t, Kizhnicë: 1.1 g/t, Badoc: 0.25 g/t, Artanë: 1.6 g/t, Crepulë: 0.13 g/t<sup>19</sup>.

##### **Platinum (Pt)**

There are no available researches on the presence of platinum group metals (PGM) in Kosovo. However, the exploration conducted in the northern part of Republic of Albania has indicated that PGM can be found in the ultra-basic massive of Gjakova. Analyses of these sources have resulted in a positive correlation between platinum and chrome concentrations. There is a need for further detailed exploration.

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<sup>19</sup> Floatation Mine, Trepça-Artana - "Feasibility Study", June 2006, and Floatation Mine Kizhnicë and Artanë, "Mine Questionnaire Report", Kizhnica, April 2006.

### 4.1.3. *Non-Metallic minerals*

#### 4.1.3.1 *Industrial metals*

Other than energy and metallic minerals, a variety of non-metallic minerals are also important for any market economy.

#### **Magnesium**

The familiar magnesium source lies in the southern part of the ultra-basic massive of Golesh, in the vicinity of village Magurë. The magnesium source in Golesh belongs to the hydro-thermal type and is localized within serpentinites. Mineral entities have lens and thread forms<sup>20</sup>, and are between 1-6 m wide.

The sedimentary magnesium source in Strezoc lies in the northern part of Kamenica pool and comprises of eight different magnesium entities, tens of meters in width.

Magnesium is also present in the serpentine massive of Dubofc (Vushtrri), as a hydro-thermal thread between 7 and 25 m in width (used for the most part).

Magnesium reserves in Magura mine are assessed to be around 2.4 Mt, and in the Strezoc mine around 1.7 Mt<sup>21</sup>.

*Production in the past.* Two main magnesium mines, Golesh and Strezoc, have initially operated as open-cast mines, and have only later applied the underground extraction methods.

Between 1964 and 1999, the magnesium mine in Golesh has utilized some 4.6 Mt of minerals, containing 44.49% MgO, 0.2-5.0% SiO<sub>2</sub> and 0.2-1.5% CaO.

Strezoc mine the surface open-cast usage was initiated in 1962, only to continue with underground activities in the beginning of 1986. In Dardana (Kamenica), sintering plant was opened in beginning of 1986. Nominal annual capacities of this plant were around 20 000 tons of magnesium sinter.

#### 4.1.3.2 *Technical minerals*

#### **Kaolin**

The largest kaolin source is located in the southeast of Lower Karaçeva, east of Gjilan. The Lower Karaçeva mine is operational since 1965. Overall, 372 000t of this mineral were utilized in Kosovo between 1970 and 1981. The assessed reserves of the Lower Karaçeva source reach around 3.2 million tons.

<sup>20</sup> XIM „Strezoci“ and MIM „Goleshi“ –“Mine Questionnaire Report”, Prishtina, April 2006.

<sup>21</sup> XIM „Strezoci“ and MIM „Goleshi“ –“Mine Questionnaire Report”, Prishtina, April 2006.

Republic of Kosovo also possesses four unblocked mineral fields, with total reserves of around 14 Mm<sup>3</sup>.

Two sources (Badoci and Lower Karaçeva) are deemed to have the highest economic value.

Kaolin was quite explored in the past, but the economic limitations of this resource have conditioned its limited use.

### **Halloysite**

Halloysite is a clay mineral of alumo-silicate type, with empiric formula  $Al_2Si_2O_5(OH)_4$ . It represents a mineral with good micro-structural properties and is characterized with high clarity, which enables its use for pharmaceutical and chemical industries. This mine is discovered in the lead-zinc Artana mine area. The white or blue-white clay mineral was found during the utilization of Pb-Zn in the source Përroi i Ngjyrosur. Halloysite resources inside the lead-zinc mine of Artana are supposed to reach around 2 Mt. Halloysite utilization can not be viewed separate from ore production in Artana mine; therefore, the utilization of this mineral is technically and economically related to the complex utilization of ores and minerals from the Artana mine.

Halloysite presence makes Kosovo one of the five its sources in the world, the other four being New Zealand, Turkey, China and Utah/USA. Current global production is supposed to be around 150 000 t/y. Further exploration of this mineral is deemed to be of great importance<sup>22</sup>.

### **Bentonites and bentonite clay**

Bentonite presences and sources are mostly concentrated in the southeastern part of Kosovo. Republic of Kosovo possesses seven mineral fields rich in this mineral, with total resources of around 25 Mm<sup>3</sup>. However, further exploration of bentonites is recommended<sup>23</sup>.

### **Quartz**

Quartz as a high quality industrial mineral is present in eastern, central and southern Kosovo. Its most known presences and sources are located in: Strezoc, south of Binça, west of Bukovik and Debelde, etc. The quartz reserves of Strezoc source are calculated to be around 2.53 Mt, in Binça area 3.1 Mt, and in Bukovik source (southeastern part of Kosovo) around 19 Mm<sup>3</sup>.

Kosovo possesses 33 mineral fields, with total resources of around 340 Mm<sup>3</sup>. However, the level of quartz presence explorations is low, making further explorations required.

Many other industrial mineral presences and sources are discovered in the Republic of Kosovo, most economically significant of which, both in the sense of utilization and processing, include: Asbestos, Diatomite, Talc, Sepiolite, Lucite, etc<sup>24</sup>.

<sup>22</sup> Floation Mine Kizhnica and Artana, "Mine Questionnaire Report", Kizhnica, April 2006.

<sup>23</sup> ICMM - "The compilation of Geo-Scientific Map of Kosovo", Prishtina, June 2005, page 67

<sup>24</sup> ICMM - "The compilation of Geo-Scientific Map of Kosovo", Prishtina, June 2005, page 64

**Clay**

Kosovo possesses large clay resources. The most significant sources are Gjakova (containing gray to yellow-gray clay, up to 8m in width) and Landovica, northwest of Prizren (characteristic for its alluvial and sandy layering. Average width is 17 m).

In Skenderaj, alluvial clay reaches up to 9 meters in width. Another source is Llapashtica e Epërme, located west of Besiana (Podujevë). The series of colored clay there reaches the depth of up to 10m. Southeast of Ferizaj, clays up to 8.5m in width were explored through means of exploration perforation. Similarly, southeast of Dardana (Kamenica), Miocene clay is accumulated, with its width varying between 5 and 30 m.

**4.1.4 Construction materials****Strong silicate rocks**

The Republic of Kosovo is home to many presences and sources of strong silicate rocks, which are appropriate for use in construction. The most significant silicate rocks, which could be used for construction material production are andesine, trachite, lathite, pyroclastite rocks, sandy rocks, gabbros, dunites, debases, basalt, granite, granodiorite, gneiss, migmatite and quartzite.

To date, the strong silicate rocks were rarely explored and used, while due to their high quality they may become an important resource for construction material production in the future. The main possible use of hard silicate rocks, as raw material for construction, could be production of aggregates and the perspective usage as decorative and dimensional stones.

The strong silicate rock sources which could be deemed as highly valuable are mainly located in the northern, northeastern and eastern part of Kosovo. The PGK results show that further intensification of geological exploration in this field is recommended.

**Strong carbon rocks**

Considerable reserves of calcareous minerals were explored and verified, while their main use is as geological materials in construction and industry.

Marble and marbled calcites are mainly found in the country's western part. They are used as decorative stones. In Kosovo, marble presences are discovered in the vicinity of Mitrovica and Gjilan, red marble in Junik, breccias marble in Deçan, all of which can be used as decorative and dimensional stones.

Only three presences of dolomites were found in Kosovo, while the scarce analysis conducted on the issue shows that they have values of MgO (Manganese Oxide) up to 16%. Therefore, they are classified as dolomitic calcareous minerals. Such dolomites are found in western Kosovo, west of Peja, and out of the PGK activity area.



Sources of travertine are limited to the spring of mineral water in the vicinity of Banja e Pejës. Other small sources of formations can also be found in the area of carstic calcareous minerals. These sources don't have any significant economic importance.

Republic of Kosovo possesses 276 fields of calcareous minerals, covering around 7690 Mm<sup>3</sup> and 120 mineral marble fields covering in total 2186 Mm<sup>3</sup>. There are only two dolomite mineral fields with overall resources comprising 1.4 Mm<sup>3</sup><sup>25</sup>.

### **Sand and gravel**

There are around 110 sand and gravel presences and sources. From this number, only some of the larger presences and sources have adequate mineral and granular composition, which makes them suitable for raw material for concrete production.

Sand and gravel reserves of the Republic of Kosovo are concentrated in the main river beds, and due to intensive activities in utilizing sand and gravel, part of these rivers' landscapes are severely damaged.

It is assessed that total sand and gravel resources amount to around 331 Mm<sup>3</sup>. Since environmental impacts of sand and gravel processing are severe and because of different destinations of the lands where these sources are located, this activity results as without perspective, and such operations should be replaced with more favorable activities in usage of strong silicate and carbonated rocks.

However, being that sand and gravel layers and depositions in riverbeds are renewable (annual river inflow), the allowance of such utilization should be restricted and subjected to detailed, professional elaborates.

Decision No. 02/46 of 02.11.2011, issued by the Prime Minister of the Republic of Kosovo, prohibits the utilization of inert materials from riverbeds, riverbanks and areas in their vicinity throughout Republic of Kosovo. The decision also envisages the temporary (3 year) prohibition of all utilization activities in rivers and around them. This decision is deemed necessary to ultimately stop further river degradation.

### **Quartz sand**

Quartz sands, as construction minerals, are present in the central, southeastern and southwestern part of Republic of Kosovo. The most renowned sources are Mirosale and Sllovi. There are also less explored presences in Pashtrik close to Mazrekaj, Kojushë, Milaj etc. According to PGK, Kosovo has four unblocked mineral fields, with total resources reaching the amount of 12 Mm<sup>3</sup>.

### **Marlstone**

Marlstone is found in the north-western and south-eastern parts of Kosovo, in Paleogene sediments. The most important marlstone deposit is situated in Hani i Elezit. The banked and homogenous marlstone, with a thickness of about 50 m, is the main ingredient for the cement production and has been exploited (by SHARRCEM) since 1963.

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<sup>25</sup> BEAK Consultants –“Kosovo Quarry Plan”, Prishtina, March 2006



Only four mineral fields of marlstones are listed in the KQP with total resources of approximately 25 Mm<sup>3</sup>.

**Decorative and dimensional stones**

Kosovo has a good potential for decorative and dimensional stones. The research conducted to date is rather scarce and additional geological research and exploration is necessary. Kosovo Geo-database (KGD) contains over 116 locations characteristic for dimensional and decorative stones. Currently, only a small proportion is used in little stone quarries, by different Kosovo enterprises employing an insignificant number of employees.

The appropriateness of decorative and dimensional stones remains to be explored. There is no data on the suitable blocks for usage, nor regarding losses in usage. Thorough technical and petro-graphical research is necessary, along with further expansion of the database on reserves/resources.

## 5. ANALYSIS OF COMPETITIVE CAPABILITIES - SWOT

SWOT analysis represents a useful instrument for the identification of internal factors influencing mining sector development, including its strengths and weaknesses, as well as external factors, such as opportunities and threats that may influence mining sector development.

The table below presents strengths, weaknesses, opportunities and threats related to the current state of Kosovo's mining sector. SWOT analysis was performed based on detailed analyses of materials, studies and exchange of ideas with experts and representatives of relevant sectoral institutions.

Strengths refer to the advantages which provide and facilitate sustainable development of the mining sector. They may be used to diminish and mitigate weaknesses and to reduce threats.

Weaknesses are deficiencies that hinder and burden the development of the sector. A number of various weaknesses were identified pertaining to the lack of the legal infrastructure, old technology, lack of capital for developing production capacities, old age of qualified staff in mining companies. These weaknesses are addressed in objectives I.1, I.2, II.2 and III.1.

Opportunities represent good chances for further development. Such opportunities are mostly related to reforms that will provide for investment stimulation, increase of mineral product demand, and increased value for such resources.

Threats represent extraordinary challenges, which hinder and slow down the identified advantages and accelerate certain weaknesses, thus hindering the utilization of various strengths. Global financial crises, low financial capacities, uncontrolled constructions covering mineral surfaces, and great environmental damages the mitigation of which is very costly, and eventual dissatisfaction with sector reforms represent some of the identified threats. These threats are addressed in objectives I.2, III.1 and IV.1.

<p><b><u>Strengths</u></b></p> <ul style="list-style-type: none"> <li>• Mining industry development is a Government priority</li> <li>• Considerable mining reserves</li> <li>• Some of existing mines are ready to be transferred from maintenance to generation phase</li> <li>• Existence of mining resources available for detailed exploration</li> <li>• Existence of new staff, to be subjected to training on new technologies</li> <li>• Relatively low labor cost</li> <li>• Suitable geographic position of Kosovo in the region</li> <li>• Extensive tradition in mining sector and high public acceptance for the mining industry</li> </ul>	<p><b><u>Weaknesses</u></b></p> <ul style="list-style-type: none"> <li>• Insufficient legal and regulatory framework</li> <li>• Predominantly obsolete technology</li> <li>• Lack own capital to invest in the development of generation capacities</li> <li>• Low potential of the local private capital for mining investments</li> <li>• The need for a more specialized staff on the legal and regulatory framework</li> <li>• Unfavorable age structure of the qualified staff in mining companies.</li> <li>• Negative environmental effects caused by mining activities</li> <li>• Lack of a permanent pollution monitoring system</li> </ul>
<p><b><u>Opportunities</u></b></p> <ul style="list-style-type: none"> <li>• Government reforms to attract investments</li> <li>• Increase of energy demand</li> <li>• Increase of demand for mining products</li> <li>• Possibility to generate added value by integrating all phases, including finalization of mining products.</li> <li>• Discovery of new mining resources</li> </ul>	<p><b><u>Threats</u></b></p> <ul style="list-style-type: none"> <li>• International global crisis</li> <li>• Global changes in the mining market</li> <li>• Possible regional instability</li> <li>• Poor public finance capacities for infrastructural development</li> <li>• Uncontrolled constructions in areas with national interest</li> <li>• Environmental legacy remains unresolved</li> <li>• Social discontent with the mining sector reforms.</li> </ul>

## 6. MINING SECTOR DEVELOPMENT CHALLENGES

Rapid and sustainable economic and social development of Kosovo significantly depends on the implementation of suitable economic and structural reforms than enable a more rational use of its natural and human resources.

The current situation of the mining sector doesn't allow for the achievement of this objective, therefore a mining sector reform and restructuring is required based on the principles of sustainable development and maximal benefits to the society and country from the utilization of mining resources.

Main economic challenges in the mining sector include:

1. Funding, rehabilitation of existing mines and their functionalization as soon as possible and at a reasonable cost;
2. Reorganization of mining sector SOEs;
3. Attraction of local and foreign investments in the mining sector, valorization and increase of the processing levels of certain minerals as products or byproducts.
4. Harmonization of university programs with mining sector needs and enticement of young generations' interests towards this sector;
5. Further exploration and identification of new mineral resources in Kosovo;
6. Mining sector processing industry development and exploration of new global markets.
7. Development of lignite-producing mines.

## 7. MINING SECTOR DEVELOPMENT OBJECTIVES, POLICIES AND MEASURES

The Government of Kosovo remains committed to ensure that the utilization of mineral resources will provide maximal benefits for Kosovo, in conditions of a free, open and transparent market.

To this end, the objective is to establish an attractive legal, regulatory and fiscal environment for investors, which will provide Kosovo with income that is proportionally equal with that of other countries with positive experiences in the optimization and utilization of mining resources.

Strategic objectives presented in this mining strategy are based on comprehensive analyses of:

- Current state of the mining sector;
- SWOT analysis;
- Governmental Program of the Republic of Kosovo; and
- Kosovo's dedication to the development of the mining sector, in line with international standards and environmental regulations.

Strategic objectives presented for each pillar contain policies and measures that will comprise a clear framework for sustainable economic development and environmentally friendly approach.

### **Pillar I. Provision of favorable conditions for economic valorization and utilization of mining resources and attraction of investments**

#### **Objective I.1. Completion of the legal and regulatory framework**

The Government of the Republic of Kosovo is working in the development of laws in order to provide for a legal and institutional framework which would enable the development and utilization of the mining sector to the benefit of the overall economic and social development of Kosovo. In order to achieve this objective, the Government shall be the main stakeholder in all decision-making processes related to the mining sector of the Republic of Kosovo.

An adequate legal and regulatory framework will provide for complete restructuring of the mining sector and mining enterprises, with the aim of rehabilitating and modernizing existing assets and attraction of investments, as well as establishing new businesses which would enhance production and processing of mineral resources in the country, thus creating new employment possibilities.

Regulation and sanctioning of the treatment of environmental issues, as well as social, expropriation matters and determination of methodologies for the closure of mining activities, licensing of exploration, projection and operation companies in the mining sector, determination of income to be obtained by the state from this sector, benefits to be enjoyed by the local communities represent some of the fields to be regulated by laws and subsidiary legislation. This legal infrastructure will provide for a more attractive environment for investments and the development of small and medium enterprises and creation of new employment possibilities.

***Measures for the accomplishment of this objective:***

- I.1.1 Completion of the legal foundation, to provide for reform and restructuring of the mining sector, in conformity with the best international standards;
- I.1.2 Completion of expropriation legislation in areas destined for mining activities;
- I.1.3 Compilation of the law on mining activity waste, based on European Union Directive 2006/12/ EC;
- I.1.4 Establishment of the legal foundation for treating and rehabilitating contaminated areas;
- I.1.5 Implementation of laws, subsidiary legislation and technical regulations on occupational safety;
- I.1.6 Determination of methodologies for mining activity closure and post-mining monitoring;
- I.1.7 Determination of privatization forms for mining sector enterprises and the manner of asset valorization;
- I.1.8 Determination of relations between land owners and mining permit holders;
- I.1.9 Compilation and implementation of clear procedures for the allocation of undeveloped mineral resources;
- I.1.10 Compilation of regulations on licensing of projection and revision companies.

**Objective I.2. Drafting of mining sector development policies**

The Government will play a crucial role in the process of restructuring and organization of mining companies in the country, with the aim of ensuring their revitalization in a transparent, economically efficient manner, in order to attract potential investors.

Therefore, development policies will be oriented towards the attraction of private investments, full sector reform, environmental protection and treatment of mining activity induced social issues and creation of sufficient institutional and professional capacities to respond to all challenges, with the aim of developing the sector under free and competitive market circumstances.

Valorization of mineral resources/reserves shall be conducted by placing them in function of the country's economic development, especially lignite and Pb-Zn mineral resources.

Lignite resources should be classified in groups, as per their destined use:

- Lignite-powered electricity generation resources, including full implementation of the Energy Strategy, utilizing the designated Sibovc Lignite Field (New Mining Field) capacities totally to the use of existing and new thermal power plants;

- Northern parts adjacent to the Sibovc lignite field will be divided into parcels by the Kosovo Geological Institute (KGI), and offered for privatization, thus assisting the development of small and medium enterprises (SMEs). Lignite fields of Drenica (Drenas and Skenderaj) shall be designated for commercial use by private investors;
- The Dukagjini basin's Tucep field will be designated for lignite chemical treatment with contemporary technologies, through private investments;
- Other specified fields of the Dukagjini basin (A, B, C and Kline-Kusar) shall be additionally explored in order to fully define their potential, in harmony with the classification regulations.

***Measures for the accomplishment of this objective:***

- I.2.1 Promotion and development of sustainable development principles (development which fulfills current needs, without harming the interest of future generations);
- I.2.2 Creation of suitable conditions for the attraction of private investments in the mining sector;
- I.2.3 Restructuring of the mining sector, with the aim of rehabilitation and modernization of existing assets, to ensure increased production and processing of mineral resources in the country. Special care will be paid to the reorganization of Trepça, in harmony with the interests of Kosovo's citizens;
- I.2.4 Valorization of mineral products and creation of conditions for the finalization of mineral products. Encouragement of the private sector for developing and processing mineral products;
- I.2.5 Ensuring transparency in all phases of mineral activity (licensing, exploration, utilization, processing and mine closure). Initiating the procedure for membership in EITI (Extractive Industries Transparency Initiative), aiming to increase the transparency in exploitation of mineral resources.
- I.2.6 Promotion of mineral resources, through the publication of relevant information and documentation needed to stimulate investments; inter-institutional cooperation aimed at providing a 'one-stop-shop' procedure for potential investors, organization of investment attraction conferences and engagement of diplomatic missions of the Republic of Kosovo abroad to promote mining sector investments;
- I.2.7 Promotion of sources of bauxite, manganese and other minerals for which geological information was obtained in advance, and their placement in the mining market during exploration or utilization phases.
- I.2.8 Creating of the conditions for community participation in all phases of the project and ensuring that the community will have benefits from mining sector.

- I.2.9 Treating the inherited historical environmental issues and strict implementation of laws and other regulations related with environment during the mining activities. Rational exploitation of mineral sources protecting in maximum the environment. This will require respecting the European Standards for environment protection by using the advanced technologies commercially proven, and environment recultivation after mineral exploitation.
- I.2.10 Care about the current mining sector employees who will be affected by sectorial reforms.

### **Objective I.3. Development of fiscal policies**

To stimulate country's economic growth, the Government will draft just and acceptable policies for the collection of mineral royalties, by utilizing the collected income in new investments in infrastructure, industry and other activities that impact employment growth, export increase, import decrease and general enhancement of the standard of living of the communities.

The state will benefit from the development of mining resources, among other, through: mining royalties, corporate income tax, utilization fees, licenses and all other taxes envisaged by Kosovo laws.

The process of determining the structure and nature of the taxes to be imposed on mining and on the mineral sector in general, represents a matter of public policies:

**Optimal mining taxation policies** – High government taxation levels imposed on the mining sector influence positively the state budget, but, in turn, often force mining companies to reduce their investments. Therefore, the stipulation of an optimal level of mining taxes represents a good indicator of the adequate management of public policies in a country.

**Optimal mix of taxes** – The mining sector can be subjected to different sorts of taxation, including various royalty taxes. The determination of the role and level of taxes is made by seeking a high economic efficiency and equal allocation of risks between partners (the state and mining companies, as well as by ensuring an easy application and calculation of such taxes.

The best global practices show that royalty levels are to be determined based on one of the following principles:

1. Royalty 1 (R1), calculated based on physical units of mining production;
2. Royalty 2 (R2), calculated on the basis of the value of mineral product sold, per unit or annually; and
3. Royalty 3 (R3), calculated based on the profit of the mining company at the end of the financial year;



**R1 Royalties:** calculated by each ton or m<sup>3</sup> of minerals extracted by the source, as suitable for resources valorized in the local market and which are not assessed per the content of any mineral (grade control). This can be appropriate for the determination of royalty taxes for quarries and extraction of all construction and aggregate materials, extraction and production of gravels, systemic bitumen and other similar materials. Appropriate charge levels for this royalty may be between 0.5 and 1.8€/m<sup>3</sup> of material extracted from the source.

R1 is also applicable in lignite utilization. Since lignite utilization is envisaged to be conducted at various level and capacities, by Small and Medium Enterprises (SMEs) and large scale production companies for use in power-plants and its chemical treatment, the respective institutions may determine the royalty level based on the Law on Mines and Minerals and in conformity with market development circumstances.

**R2 Royalties,** are calculated based on the corporate income accomplished through the sale of ore products (concentrates, metallurgic alloy or similar). This manner of royalty determination is suitable for lead and zinc mines. The acceptable rate for R2 royalties may be between 4% and 6% from the total value billed to the concentrate buyer, which also represents the net smelter return (NSR). R2 royalties are also adequate for the development of ferronickel ores, also at the rate of 4% - 6% of the overall income from product's market placement. Such norms would be considered to balance governmental requirements and company's business interests.

Such royalty determination manners are assessed to be more acceptable, in comparison to the application of higher taxes which are not based on companies' profits.

**R3 Royalties,** are calculated based on the mining company profits, and determined with the purpose of balancing and sharing the business risk between the Government and the mining companies, especially taking into consideration the frequent and great price volatility occurrences. This system is also suitable for application in mining companies, which exclusively use international exchange quotations for the prices of their products, such as colored metals like ferronickel, halloysite, magnesium, noble metals, rare earth elements, etc. the acceptable norm for R3 royalties would be between 10% and 14% of the values reported and published as profit by the company.

***Measures for the accomplishment of this objective:***

- I.3.1 Adoption of a more attractive fiscal framework for mining activities, by providing incentives for attraction of investments and establishment of new businesses;
- I.3.2 Review of mining royalties, with the aim of achieving a mining royalty level that is in line with the industry's standards and developing the processing industry, which will provide for added economic value, provide economic development and new employment possibilities;

#### **Objective I.4. Economic revaluation of the mining potential**

Macroeconomic and social impact of current and future mining activities in the Republic of Kosovo can be measured through economic valuation. Economic valuation should be conducted with the aim of creating a clear overview of the benefits brought by the mining industry to both the state and affected communities.

To date, a number of mining potential economic valuation studies were conducted, but all are disputable as results they provide regarding mineral reserves/resources vary to a great extent.

As a consequence, it is necessary to conduct thorough technical and economic studies for each mineral source or mine.

##### ***Measures for the accomplishment of this objective:***

- I.4.1 Assessment of the economic potential of the mining sector;
- I.4.2 Completion of mineral resource data, due to incomplete mineral data available;
- I.4.3 Implementation of studies on energy mineral sources and poly-metallic sources, by analyzing different scenarios of economic assessment of such sources.

### **Pillar II. Enhancement of human and institutional capacities in the mining sector**

#### **Objective II.1. Development of human and institutional capacities**

Further development of institutional, policy-making and regulatory capacities is very significant, while the functionalization of all necessary institutions, such as the Kosovo Geological Institute and the State Museum of Crystals and Minerals should be conducted in conformity with the law on Mines and Minerals.

The development of exploration capacities and capabilities for utilizing new technologies represents another field that requires further attention and support. To this end, research and scientific institutes in universities will also be supported.

Further, adequate engineering education should be provided to produce human capacities that are able to face contemporary production challenges and institutional requirements.

##### ***Measures for the accomplishment of this objective:***

- II.2.1 Strengthening and development of existing institutions;
- II.2.2 Development of the Kosovo Geological Institute;

- II.2.3 Establishment and development of an information system to follow on global development in mining industry, including developmental policies and economic trends;
- II.2.4 Enhancement of educational capacities coherent with EU standards on increasing education quality, in preparing specialists in geology, mining, economics, environment, etc. In special, the public university will be asked to develop educational programs at graduate engineer level for mining, with the aim of harmonizing local laws with European requirements;
- II.2.5 Capacity building in implementing modern communication and information technologies.
- II.2.6 Creation of adequate prerequisites for the rejuvenation of the labor market in active mines, as well as intensive training of supervisory and technical staff, in line with contemporary criteria;

### **Objective II.2. Exploration of mining resources and their reporting**

In the past, numerous geological explorations and deep perforations were conducted in Kosovo, in search of both coal and basic metals (lead, zinc, silver). However, there is an urgent need for the creation of geological maps, in scales between 1: 50 000 and 1: 25 000.

The establishment of the KGI will also provide for the institutional mechanism to draft such maps and to utilize and coordinate local capacities needed for this voluminous endeavor.

Undeveloped mining resources require proper researches and studies for the determination of possible potentials. Numerous detailed geologic researches are required for the determination of their economic justification and for the placement of reporting standards in accordance with the international classification scales.

#### ***Measures for the accomplishment of this objective:***

- II.1.1. Realization of geologic and mining research programs
- II.1.2. Consolidation and expansion of geo-scientific data
- II.1.3. Economic pre-assessment of mineral sources with international modern standards
- II.1.4. Compilation of feasibility studies for lignite reserves in the Kosovo, Dukagjini and Drenica Basins, in order to provide arguments for the new projects in these areas;
- II.1.5. Development of Special Interest Areas (compilation of complete information on Special Interest Areas for mining resources, announced by the Government of Republic of Kosovo);
- II.1.6. Preparation of the Mineral Resource Management Plan;

- II.1.7. Establishment of cooperation between local stakeholders, including industry, science, government and NGOs.
- II.1.8. Revaluation of mineral resources/reserves, as per the internationally acknowledged UNFC standards. The application of this system will provide for the establishment of a mineral database, in line with market economy criteria;
- II.1.9. Setting reporting standards on mineral resources by international classification.

### **Pillar III. Social considerations and community benefits**

#### **Objective III.1. Treatment of social issues and occupational safety considerations**

The government shall carefully address legacy social issues of the mining sector. The government shall continue to support Trepça, for another period, with limited subsidies. This will be done according to possibilities and in line with the most suitable approach. The Government shall continue to consult with employee organizations of the mining sector.

Safety, wellbeing and health of the people employed in the mining sector are important obligations. Prevention of work accidents in the mining sector shall be a task of the mining management and of the respective inspectorate.

Research, utilization and enriching mining companies shall ensure the application of preliminary working risk assessments, as well as implement the working health and safety rules and regulations. Safety and production can be independent from one-another and cannot be considered separately.

Rules regarding mining sector occupational sector are regulated by secondary legislation issued by MED – Regulation No. 06/2011 on mining safety.

#### ***Measures for the accomplishment of this objective:***

- III.1.1 Continuous support to Trepça, through limited subsidies;
- III.1.2 Compilation and implementation of staff re-qualification programs, for staff whose previous professions are no longer applicable;
- III.1.3 Strengthening quality control in the implementation process of working safety;
- III.1.4 Increasing the quality of the preliminary risk assessment;
- III.1.5 Application of the law, bylaws and technical regulations on working safety;
- III.1.6 Improvement of working conditions;
- III.1.7 Undertaking of all legal obligations, in order for the company to prepare its insurance of all risks towards third parties throughout the term of the License or

Permit, at the nominal value determined by ICMM, pursuant to Article 6, paragraph 1.4 of Law No. 03/L-163.

### **Objective III.2. Community participation and benefits**

Consultation with the community is essential to ensure full benefits from mining activities, however in the past community consultations were not sufficiently utilized. For mining operations, it was limited to issues of expropriations and resettlement. Consequently, community consultation and benefits are regulated with secondary legislation drafted by MED (Regulation No. 04/2011 on community treatment in the mining sector).

#### ***Measures for the accomplishment of this objective:***

- III.2.1 Institutional support in implementing the regulation (Regulation No. 04/2011 on community treatment in the mining sector);
- III.2.2 Support to the community development forum, aimed at proper representation of community interests and benefits;

## **Pillar IV. Environmental care**

### **Objective IV.1. Mitigation of past environmental problems**

Environment management process should distinguish legacy environmental liabilities and current environmental impacts generated by current and future mining activities. The former are usually a burden for the society, as their perpetrators can not be adequately identified.

Legacy environmental liabilities in the Republic of Kosovo are considerable and this document identifies problem areas, which were created as a result of the use of lignite and power generation, and as a result of multiyear operation of Trepça mines and metallurgy.

Such is the case with Trepça, as there was a history of environmental issues, including toxic/acidic leakages, uncontained waste, dust emissions and unsafe labor, uncontrolled discharges of waste, and unstable landfills.

These historic liabilities should be managed by the Government of the Republic of Kosovo, which, together with donors, have initiated actions for full elimination of problem areas, and to minimize other historic pollutions.

#### ***Measures for the accomplishment of this objective:***

- IV.1.1. Conduct of studies to identify mining activity waste and to determine ways to treating them;

- IV.1.2. Cooperation with specialized local and international institutions on mining activity waste treatment;
- IV.1.3. Cooperation/coordination of activities with donor organizations in resolving inherited environmental problems;
- IV.1.4. Rehabilitation of areas contaminated by mining activities, in line with the best international practices;
- IV.1.5. Compilation of project proposals for the rehabilitation of contaminated areas, to be funded through donations.

**Objective IV.2. Environmental protection from mining activities**

Protection and rehabilitation of the environment during mining usages shall be one of the main objectives and will be guaranteed through legislation, rules and strict limitations, in line with EU standards.

Mineral asset utilization should be beneficial for the community, and should be conducted while paying due consideration to the protection of human life and environment.

Negative occurrences as a result of mining activities appear with the opening and closure of the mines. Our institutions shall request that entities licensed for mining use addresses these negative occurrences even after the closure of mines. Therefore, the licensed entity shall be required to prepare a project for negative environment effects, preventive measures both during after the closure of the mine, until the hand-over of the mine.

The holders of mining rights shall be obliged to engage in the compliancy processes with communities and interest groups, in order to obtain their preliminary and informed consent, based on mutual interests, e.g. for the resettlement of communities from future areas of operations and reclamation/rehabilitation of mines, both open-cast and underground mines. This also includes the obligation for the reclamation of locations of past mineral processing, with the use of standard environment and cost assessment procedures.

***Measures for the accomplishment of this objective:***

- IV.2.1 Strengthening of mining activity oversight and inspection institutions
- IV.2.2 Determination of methodologies for the closure of mining activities and post-mining monitoring
- IV.2.3 Revision of possibilities for the development of a financial guarantee system for mine closure.
- IV.2.4 Conduct of a study on annual inflow of inert materials by the main rivers and compilation of a general plan on inert usage possibilities, from the environmental protection viewpoint;

IV.2.5 Review and adoption of the Kosovo quarry plan and compilation of an action plan on the regulation of respective activities and protection of the environment from current degradations;

IV.2.6 Complete adoption of European environmental standards;

IV.2.7 Promotion of public inclusion in the decision-making process.

## **8. MINING STRATEGY IMPLEMENTATION PROCESS 2012 - 2025**

Mining Strategy drafting process comprises two phases. The first phase includes the compilation of the Mining Strategy and its adoption by the Government and Assembly of the Republic of Kosovo. The second phase envisages the compilation of a three-year strategy implementation plan, which will be approved by the Government of the Republic of Kosovo one month after the adoption of the Mining Strategy by the assembly of the Republic of Kosovo.

### **8.1. Mining strategy implementation program**

The Mining Strategy comprises the basic framework that delineates objectives and developmental priorities of the mining sector. The Mining Strategy determines policies and measures for the development of the mining sector, which will, in turn, be beneficial for economic development and social welfare.

The Mining Strategy Implementation Program comprises an unavoidable mechanism, on the basis of which MED will be able to delineate its policies, allocate tasks and undertake specific actions, as well as monitor the implementation of the Mining Strategy.

The Implementation Program will group activities by pillar/objective, determine the timeline for their implementation, the institution responsible for such implementation and institutions supporting the activities, cost of implementation and overall planned cost and funding source.

The Implementation Program should serve as a basic document for the preparation of project proposals to be implemented in the future through funding by public institutions or donor organizations.

### **8.2. Methodology of program preparation and monitoring**

Preparation of the Implementation Program will be conducted in the second phase, as part of the Mining Strategy finalization. MED will conduct meetings and consult with all relevant mining sector institutions on the preparation of the Implementation Program, and will consider the Government Program, Mid-Term Expenditure Framework and donor investment programs.

Monitoring of program implementation will be conducted through a regular annual report, which should be issued no later than the second month of the following year.