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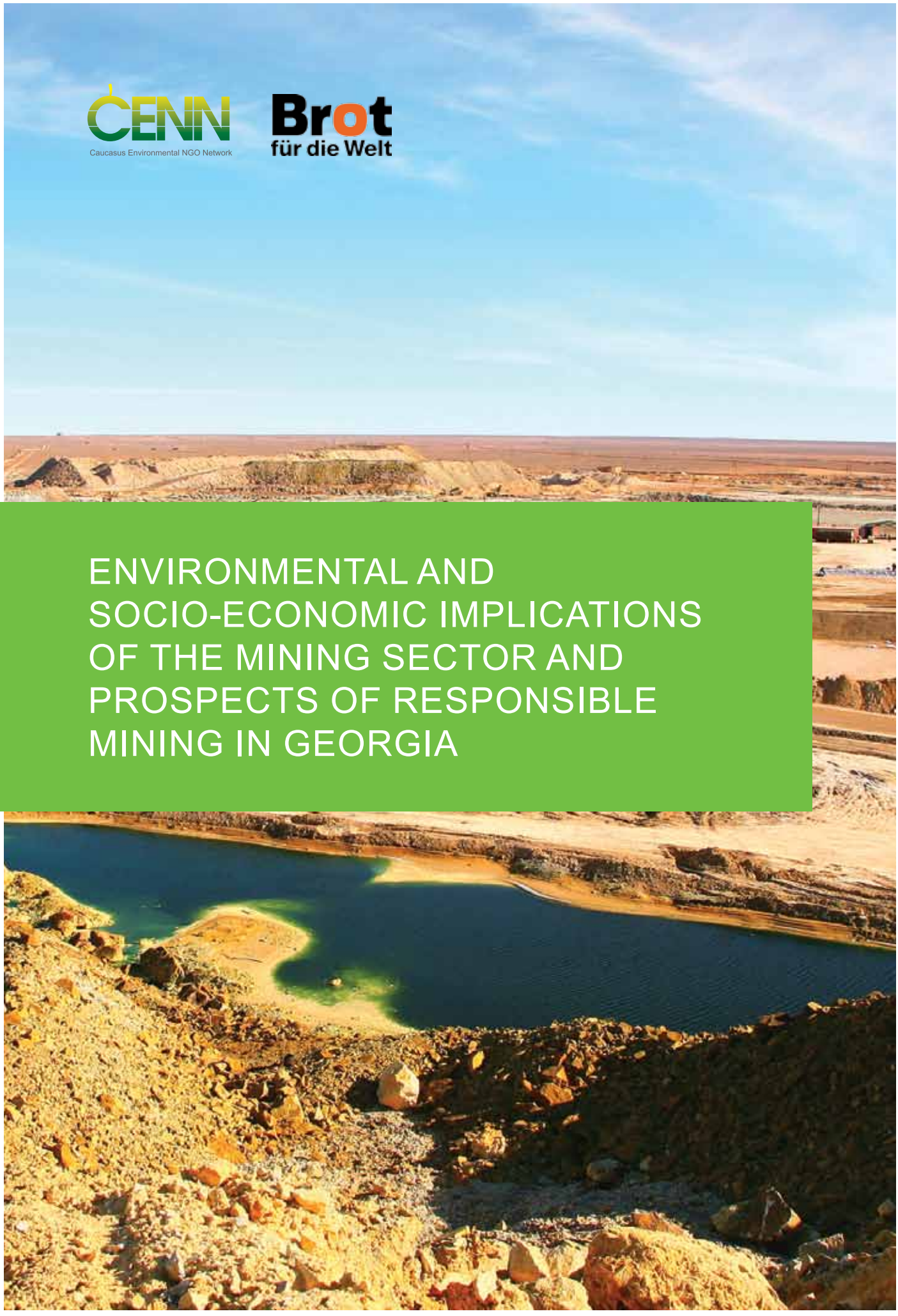


ENVIRONMENTAL AND SOCIO-ECONOMIC IMPLICATIONS OF THE MINING SECTOR AND PROSPECTS OF RESPONSIBLE MINING IN GEORGIA

The study was prepared within the framework of the project 'Promoting Environmental and Social Accountability in the Mining Sector in the Caucasus', which is being implemented with the financial support of the Bread for the World Protestant Development Service (BftW). The content of the publication is the responsibility of the implementing organisation alone.

CONTENT

INTRODUCTION

The mining industry is an important part and one of the main driving forces of the country`s economy. It contributes to infrastructural development of regions, creates employment and increases the possibilities for diversification of public revenues.

During the Soviet period the mining industry in Georgia was relatively well-developed. Extracted minerals included: polymetals, manganese, coal, oil, barite, arsenic, diatomite, bentonite clays, raw materials for cement manufacture etc. creating a favourable basis for the development of a processing industry.

The collapse of the Soviet Union resulted in the decline of industry, including mining in Georgia. Since gaining independence, the Government of Georgia has initiated a number of unsuccessful reforms. A unified state policy and a long-term strategy on the development of the mining sector have never been adopted. In this regard the EU-Georgia Association Agreement signed in 2013 may lead to important changes in the mineral extraction and processing industry.

It shall be noted that current and future economic impact of mining poses a serious risks to the natural, cultural and socio-economic environment. State regulations relevant to mineral extraction and processing either do not exist or are ineffective. The risks of negative impact are associated with human health, restriction of other economic activities (agriculture, tourism, etc.) near mining sites, degradation of the terrain, pollution of air, water and soils, destruction of important species of flora and fauna, damaging and destruction of monuments of cultural heritage, etc.

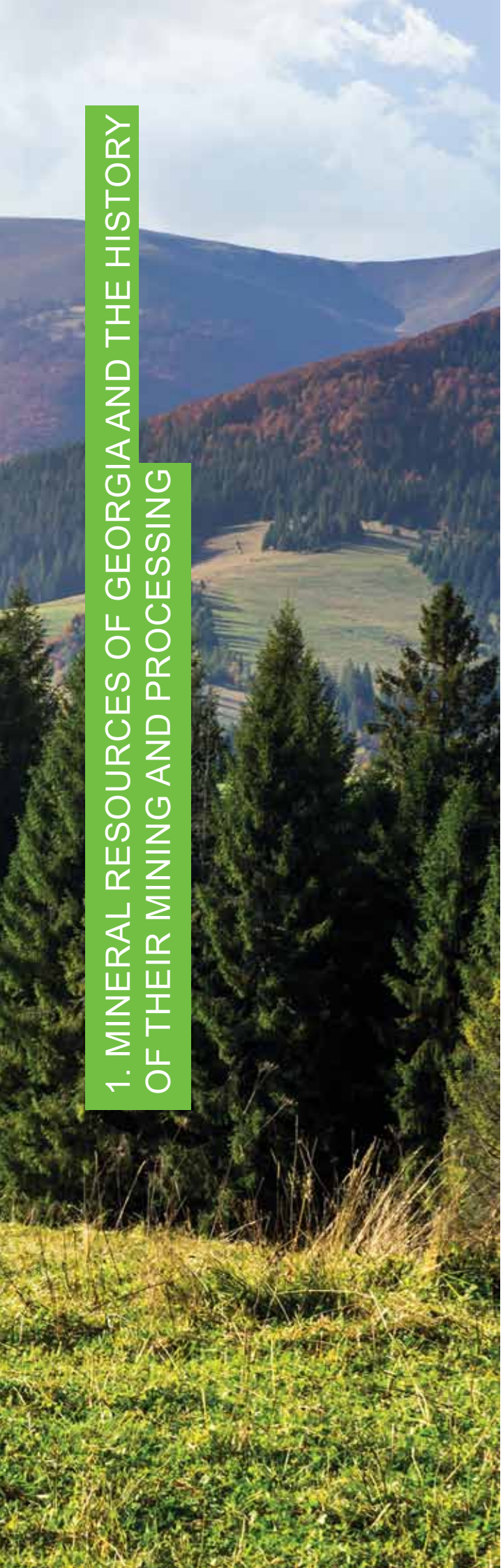
The existing situation provokes active public responses, manifestations, lawsuits, etc.

The present report has been developed on the basis of the results of the studies of the global and local mining industry. It is aimed at providing stakeholders with information on best international approaches and practices, historical and current trends of the development of the mining industry in Georgia, relevant legislation and institutional set-up.

The report consists of nine chapters. The first chapter contains the history of the development of the mining industry in Georgia. The second chapter describes the Georgian legislative and institutional framework relevant to mining. The third chapter gives information about international development and financial organizations and the classification of projects implemented by them. The fourth chapter presents statistical data on mineral extraction in Georgia.

According to “Saqstandard” 2014, there are 6115 people employed in Georgia, which is 5.8% of overall employment.

The fifth and sixth chapters describe the impact of the mining industry on the socio-economic, natural and cultural environment. The seventh chapter is dedicated to responsible mining. In the same chapter the international policy and regulations relevant to effective management of the mining industry is discussed. The eighth chapter contains the results of cost-benefit analyses based on internationally accepted methodology. The last chapter provides recommendations developed by sectoral experts.



1. MINERAL RESOURCES OF GEORGIA AND THE HISTORY OF THEIR MINING AND PROCESSING

1.1 BRIEF DESCRIPTION OF MINERAL RESOURCES

The territory of Georgia is built of rocks of different geological ages and origin. Geological structures within the boundaries of Georgia (as well as in the Caucasus) developed to the background of active geodynamic processes (tectonics, magmatism, earthquakes, etc.) leading to the emergence of diverse minerals. Despite the small size of the territory, Georgia is rich in different minerals, including metallic minerals: gold, copper, lead, zinc, manganese, aluminium, arsenic, antimonite and nonmetallic minerals: barite, zeolite, bentonite clay, diatomite, ceramic raw materials, facing stones, semiprecious stones and construction materials. Coal, oil, gas thermal water deposits, as well as rich reserves of high quality fresh ground waters and mineral waters are found in Georgia. However, it shall be noted that the reserves of minerals discovered in Georgia often do not meet the requirements established for mineral deposits in terms of economic value.

1.2 BRIEF HISTORY OF MINING IN GEORGIA

Mining in Georgia has a long history. According to archaeological data, humans were extracting and using different minerals (chalcedony, basalt, obsidian, andesite, jasper, limestone, sandstone, etc.) as early as in the Paleolithic Era (Old Stone Age), however at that time mining was limited to finding and collecting minerals.

Remnants of workshops from the Metholithic Era (about 10-12 thousand years ago) have been discovered near outcrops of chalcedony and obsidian in Abkhazia, Achara, Upper Imereti, Kakheti and Javakheti. These minerals were used to make stone tools.

During the Neolithic-Eneolithic Periods (VI-IV millennium B.C.) when the first agricultural communities had emerged in Georgia and other regions of the South Caucasus, humans started using clay both in construction and pottery making along with the above-mentioned minerals.

The first metal (copper) artefacts have been found at these early agricultural sites. However, it is not yet known whether these items are made from native copper or mined ore.

Georgia along with central and eastern Anatolia (Turkey) and north-eastern Iran is considered the birth place of metallurgy. The oldest copper artifacts are found in Pre-Pottery Neolithic sites of IX-VII millennium B.C. in central and eastern Anatolia, while the oldest bronze (alloy consisting of copper and tin) items are found in Georgia in the remnants of ancient settlements (Arukhlo, Delisi, etc.) dated back to VI-IV millennium B.C.

The archaeological study (see below) of the Sakdrisi-Kachagiani mine and associated settlements and workshops (Dzedzvebi) gave rose to the hypothesis about the existence of the oldest gold mining site (IV-III millennium B.C.) on the territory of Georgia. The archaeological data, as well as written sources and mythical narratives point out that the territory of ancient and modern Georgia was populated by ironsmith nations (Chalybes, Mossynoeci) engaged in metal making since ancient times.

More than 200 deposits of copper, arsenic, antimony and polymetals and their outcrops are found in Georgia. It shall be noted that the traces of mining occurring in the past are found at almost all main deposits located along the main range of the Greater Caucasus.

The beginning of industrial mining in Georgia is associated with the commissioning of the Tkibuli coal deposit in 1846 (the deposit was discovered in 1825). In 1879 the Chiatura manganese mine was put into operation. In 1850, Russian engineers started exploration of Georgian minerals. At the same time they were producing gold with the panning method in the middle and upper reaches of the Enguri River. In 1861 the biggest gold nugget (365 gr) was found by V.Goliev in Upper Svaneti at the village Ieli.

In 1845, Petre Bagrationi, the Georgian chemist discovered the solvent action of alkali cyanide on gold at natural temperature conditions. This discovery made it possible to separate gold from gold containing ores and changed known gold production technologies. The method of Petre Bagrationi is used in mining processes of gold and other metals (mainly silver and copper), including the Kazreti mining-concentrating mill.

In the 20th century a number of deposits were discovered in Georgia: arsenic deposits in Tsana (the Tskhenistskali River – Lentekhi municipality) and Uravi (the Lukhunistskali River (right tributary of the Rioni River) basin – Ambrolauri municipality); polymetal deposit in Kvaisa (the Jejora rivers (left tributary of

the Rioni river) basin; oil fields of Samgori-Patardzeuli, Norio, Satskhenisi, Shiraki, Taribana, Mirzaani, etc.; the Tkibuli and Tkvarcheli coal mines were put in operation, etc.

1.3 DYNAMICS OF THE DEVELOPMENT OF MINING INDUSTRY IN GEORGIA

1.3.1 SOLID MINERALS

As it has been stated above industrial mining in Georgia began in the middle of the 19th century when the development of coal mines in Tkibuli (1846) started. In 1879 mining activities were started at the most important mining site in Georgia – the Chiatura manganese deposit. The Chiatura manganese deposit is the only deposit in Georgia that can be classified as “world class”. Other deposits, except for quarries for construction materials were not exploited in the 19th century. In 1917 a British company started exploration and development of the Artana (in the Kakheti section of the Greater Caucasus) copper-chalcedony deposit. The company was exporting the extracted ore – copper concentrate - to the Britain.

The intensive development of the mining industry in Georgia started in the 1930s. The most important resource exported from Georgia was Chiatura manganese. Up untill 1990s,the Chiatura manganese deposit accounted for 40% of the world’s manganese production and its export made up 75-80% of the annual budget of Georgia. The price of Chiatura manganese in international markets has dropped as a result of the discovery of rich manganese deposits worldwide (in central Africa and Brazil).

In the 20th century, active mining activities were taking place at coal deposits in Tkibuli, Tkvarchceli and Vale (black coal) and barite deposit in Chordi. White barite of the Chordi deposit was the best in the USSR in terms of quality and third in terms of reserves. During this period metallic arsenic was being mined at the Zopkhito deposit. Metallic arsenic was being exported to Ukraine to be used in manufacturing of electrical apparatus.

In 1975 one of the largest non-ferrous metal processing plants in the South Caucasus – the Madneuli (Kazreti) plant was - put into operation in Bolnisi Municipality. The plant was based on the gold-copper-barite-polymetal Madneuli deposit. Processed non-ferrous metals were exported to Ural, Armenia and Azerbaijan (Dashkesan plant) to produce non-ferrous metals. Later it was discovered that these ores contained gold as well (1 gr/t).

By the 1980s the mining industry of Georgia was extracting 45 types of solid minerals accounting 20-22% of the country's economy.

In the 1990s, the mining industry of Georgia was hit by a severe crisis which resulted in the closure of almost all mining enterprises.

The Law on the Entrails of the Earth adopted in 1996 created the legislative basis for the use of mineral resources. Since then the interest of investors towards minerals, especially gold, manganese and mineral waters found in Georgia has increased. In 2012 a license for extraction of barite on the Chordi deposit was issued to Turkish investors. Mining activities started in 2013.

At present the most important mining sites in Georgia include: the Madneuli gold-polymetal, Chiatura manganese, Tkibuli coal and Chordi barite deposits (Appendix 02).

1.3.2 OIL AND GAS

Commercial extraction of oil in Georgia started in the 1930s and lasted till the 1980s. The total annual production of small oil fields (Mirzaani, Patara Shiraki, Supsa, Norio, Satskhenisi, Taribana and Chaladidi) was 20-55 thousand tons on average. In 1973 high-rate wells were drilled near Tbilisi (Samgori-Patardzeuli-Ninotsminda, Samgori South Dome, Teleti) which resulted in increased production of oil – exceeding 3 million tons a year (in 1984, 3.3 million tons of oil was extracted in Georgia). In 1970-80, oil extraction in Georgia exceeded 27 million tons, with an approximate total value of 23 million USD at today's exchange rate. However, as a result of irresponsible extraction practices (operation under high pressure) the quality and quantity of the extracted oil has reduced significantly. Due to this reason and the unstable political situation in Georgia from 1989, oil extraction in Georgia was halted until 1995.

The oil production in 1997 reached 130,5 thousand tons. Production of oil declined over the following years. In 2000, oil production

had fallen to 110 thousand tons, in 2001, – to 100 thousand tons, in 2002, – 78 thousand tons, while in 2003 oil production rose again to140 thousand tons. Reduced oil production varying around 50 thousand tons can be observed from 2004: 100 thousand tons in 2004; 58 thousand tons in 2005; 55 thousand tons in 2006; 56 thousand tons in 2007; 52 thousand tons in 2008; 53 thousand tons in 2009; 51 thousand tons in 2010; 49 thousand tons in 2011; 48 thousand tons in 2012; 51 thousand tons in 2013 (according to official data provided by companies, according to the National Statistics Office of Georgia).

Relatively large-scale gas production in Georgia – extraction of associated gas at the Samgori-Patardzeuli oil field - started in the second half of the 1970s. During peak oil production (1980-1983) the volumes of extracted associated gas reached 300 million m^3. Extraction of non-associated gas started in 1983 after the Rustavi gas deposit was discovered. Extraction of associated and non-associated gas took place at the Ninotsminda site too, where gas is still being produced. Annual gas production during the last 5 years in Georgia was 16.5 million m^3. 2.8 billion m^3 gas in total is produced in Georgia, out of which non-associated gas made up 552.8 million m^3. Currently only small-scale gas operations are active in the country.

At present 16 oil fields and 2 gas deposits are in operation in Georgia. According to data of geological surveys, the total reserves of oil in Georgia is 2, 4 billion tons, 1,15 billion tons out of which is presumably under the Black Sea. Potential reserves of natural gas in the eastern part of Georgia is 180 billion m^3 (Varshalomidze, 2008).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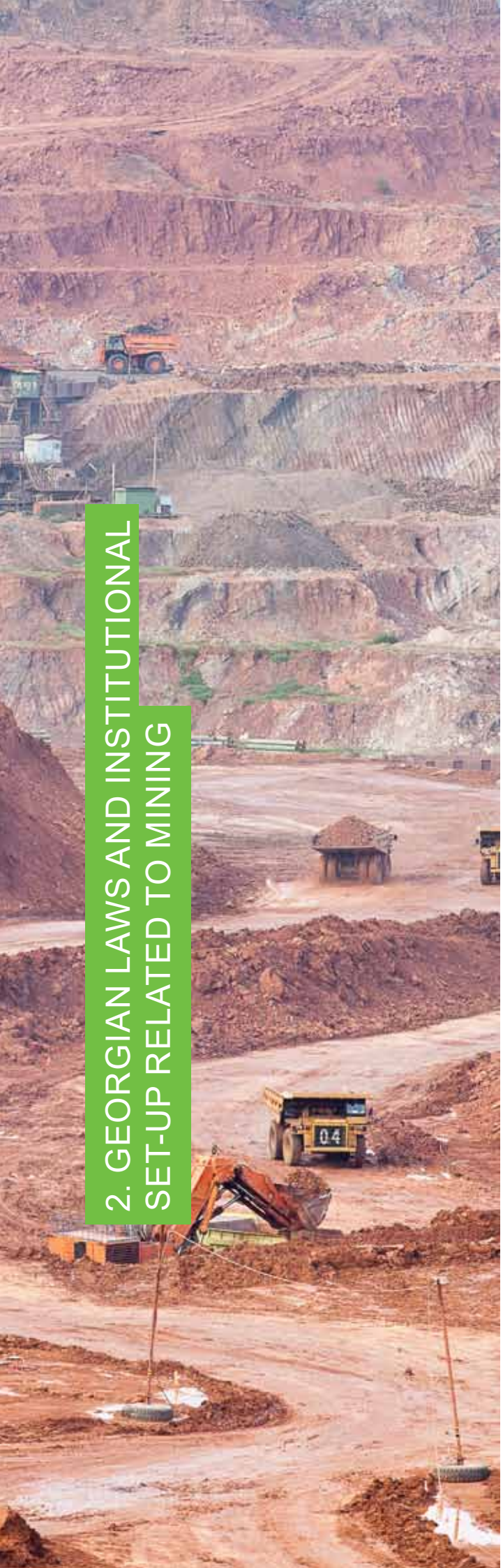


2. GEORGIAN LAWS AND INSTITUTIONAL SET-UP RELATED TO MINING

2.1 NATIONAL LEGISLATION

2.1.1 CONSTITUTION OF GEORGIA

According to paragraph 3 of the Article 37 of the Constitution of Georgia, “everyone shall have the right to live in healthy environment and enjoy natural and cultural surroundings. Everyone shall be obliged to care for natural and cultural environment”, meaning that the supreme law of the country sets the main principles for the mining industry. According to paragraph 2 of Article 34 of the Constitution “every citizen of Georgia shall be obliged to care for the protection and preservation of the cultural heritage. The state shall protect the cultural heritage by law”.

2.1.2 LAW OF GEORGIA ON ENTRAILS OF THE EARTH

The Law of Georgia on Entrails of the Earth adopted by the Parliament of Georgia in 1996 is one of the Georgian mining regulations directly related to extraction of mineral resources. According to this law ‘‘Entrails of the Earth are the parts of Earth’s crust exposed on the surface or located in soil layers and water bodies or under soil layers and bottoms of water bodies that are available for exploration and exploitation”, while “minerals are those entrails of the Earth, extraction and processing of which are economically feasible and environmentally acceptable”. The purpose of this Law is to ensure the rational use of entrails of the earth and minerals by taking into account environmental carrying capacities, needs of present and future generations and the principles of sustainable development.

2.1.3 LAW OF GEORGIA ON LICENCES AND PERMITS

The Law of Georgia on Entrails of the Earth is directly linked with the Law on Licenses and Permits which further specifies licensing conditions. The Law on Entrails of the Earth regulates the use of mineral resources, the rights and obligations of mineral resource users, the role of the state in mineral extraction, safety requirements to the use of mineral resource, recovery of damages, etc. The Resolution

#136 of the Government of Georgia made on August 11, 2005 on Approval of the Regulations on the Rule and Conditions of the Issuance of Licenses on Extraction of Mineral has similar objectives.

2.1.4 LAW OF GEORGIA ON ENVIRONMENTAL PROTECTION

The Law of Georgia on Environmental Protection of 1996 (with 15 amendments) is part of the framework of Georgian environmental legislation and therefore covers all fields associated with the natural environment. The main purpose of this law is to protect basic human rights provided by the Constitution of Georgia, as well as to protect and preserve the environment, so that it is safe for human health; ensure, with legal foundation, the protection of the environment against all harmful impact; ensure with legal foundation the preservation and improvement of the quality of the state of the environment.

2.1.5 LAW OF GEORGIA ON CULTURAL HERITAGE

The Law of Georgia on Cultural Heritage was adopted in 2008. The issues of protection and conservation of archaeological heritage during construction of large-scale facilities of special importance and mining operations are regulated by Article 14 of the law: "Conditions for Implementing Large-Scale Land Development".

Resolution #57 of the Government of Georgia made on March 24, 2009 "on the Rule and Conditions for the Issuance of Construction Permits" and Resolution #160 of the Government of Georgia made on August 23, 2006 "On the Introduction of Changes and Amendments to the Resolution #140 of the Government of Georgia made on August 11, 2005 "On the Rule and Conditions for the Issuance of Construction Permits"

The resolution specifies the list of facilities, including mining facilities, in which construction permit applicants are required to submit the results of a study of cultural heritage protection zone and an archaeological survey along with other required documents to the administrative body responsible for permitting (Resolution #160 of the Government of Georgia on the Rule and Conditions for the Issuance of Construction Permits).

2.1.6 OTHER REGULATIONS RELATED TO CULTURAL HERITAGE

– Law of Georgia on Museums – June 22,2001;

– Law of Georgia on Export and Import of Cultural Property – May 7, 2003;

– Resolution #181 of the Government of Georgia on the Rules for Establishing Cultural Heritage Protection Zones – May 14, 2012.

2.1.7 INTERNATIONAL CONVENTIONS RELATED TO CULTURAL HERITAGE RATIFIED BY GEORGIA

UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, 16 November 1972, active in Georgia since February 4, 1993;

Convention for the Protection of the Architectural Heritage of Europe (revised), Valetta, January 16, 1992), active in Georgia since February 23, 2000;

Convention for the Protection of the Architectural Heritage of Europe, Granada, October 3, 1985), active in Georgia since February 23, 2000;

Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, UNESCO, Paris, November 14, 1970, active in Georgia since February 4, 1993;

Convention for the Protection of Cultural Property in the Event of Armed Conflict, the Haague, May 14, 1954, active in Georgia since December 4, 1992;

Convention for the Safeguarding of Intangible Cultural Heritage, UNESCO, Paris, October 17, 2003, active in Georgia since June 18, 2008.

EUROPEAN INTEGRATION AND SHORTCOMINGS OF THE CURRENT LEGISLATION

On June 29, 2014 the Government of Georgia signed the EU-Georgia Association Agreement (ratified on July 18, 2014). The agreement was made between the European Union, the European Atomic Energy Community, and their Member States, one side, and Georgia on the other. The document commits Georgia to approximate its legal, economic, social, political and environmental standards to those of the EU member states. Article 313 of the Chapter 5 of the Agreement deals with industrial and enterprise policy and mining: "Enhanced cooperation should improve the administrative and regulatory framework for both EU and Georgian businesses operating in the EU and Georgia, and should be based on the EU-'s SME and industrial policies, taking into account internationally recognized principles and practices in this field". Moreover, the agreement stresses, that "the Government of Georgia shall carry out gradual approximation of its environmental standards to those of the EU aimed at preserving, protecting, improving and rehabilitating the quality of the environment. The Parties commit to develop joint environmental programs, ensure conservation of biodiversity and protect the environment from industrial pollution. Approximation covers the following environmental fields: air and water quality, waste and chemical management, environmental impact assessment and strategic environmental assessment. Cooperation shall aim at mitigating and adapting to climate change including in the areas of research, development, demonstration, deployment and diffusion of safe and sustainable low carbon and adaptation technologies".

In this regard Georgian legislation has serious shortcomings. The Law on Environmental Impact Permit adopted in 2007 abolished the regulations governing environmental permits. Environmental strategic assessment is not currently regulated by Georgian legislation. Furthermore, article 11 allows the government to exempt an enterprise from conducting environmental impact assessment if it is in the interest of the state. However, what constitutes 'in the interest of the state' is not defined in the legislation.

Therefore, Georgia on its way to EU approximation must introduce relevant changes to the current legislation to meet the commitments undertaken by the country.

2.2 INSTITUTIONAL FRAMEWORK OF THE GEORGIAN MINING INDUSTRY

2.2.1 STATE INSTITUTIONS AND THEIR MANDATES

The Ministry of Environment and Natural Resources Protection, the Ministry of Economy and Sustainable Development and the Ministry of Energy are the state institutions responsible for implementing international and national legal regulations in the mining sector. The table below contains brief information about the roles and mandates of these institutions:

TABLE 1. STATE AGENCIES AND THEIR ROLES IN THE REGULATION OF THE MINING SECTOR

State institution	Mandate
Ministry of Environment and Natural Resources Protection	
Department of Environmental Supervision	State supervision of environmental protection and use of natural resources throughout Georgia. The main fields of activity of the department include: supervision of the implementation of the requirements for the protection of ambient air, soil, minerals and biodiversity, including the requirements of the Georgian forestry legislation, use of natural resources, waste management and chemical safety, as well as supervision of the implementation of environmental permit conditions.
National Environmental Agency	Management of the state unified information fund on mineral resources; development and management of a unified information fund on the land, geological, geodesic and cartographic resources; registration of conducted and ongoing industrial and scientific-geological works, registration of deposits of mineral resources and deposit occurrences; development and updating of the state balance and cadastre data bases; issuing licenses on use of natural resource (except for oil and gas) in accordance with the Law of Georgia on Licenses and Permits and other laws, as well as management and coordination of activities related to licensing.
Service of Soil Resources Protection and Minerals	Development of the state policy of sustainable management and wise use of land resources and minerals and participation in its implementation; planning measures to mitigate desertification and land degradation; creation of a data base of contaminated lands and participation in their remediation; establishment of a system for evaluation of contamination; participation in identification of groups of minerals; participation in decision making on privatization or leasing of lands of the minerals fund.
State Inter-agency Reserves Commission	There is an operation at the ministry, which is in charge of approval of mineral reserves (excluding oil and gas) and registering them on the state balance sheet.

State institution	Mandate
Ministry of Economy and Sustainable Development	
LEPL G.Tsulukidze Mining Institute	Development of effective and safe mining technologies; Study of mine slope stability; Development of new environmentally friendly explosives and development of technologies for blasting operations; Study of the seismic effect caused by a single blast and development of techniques for reducing its harmful impact on engineering structures; Development of software for determining optimal parameters of drilling and blasting operations; Metal processing through blasting; Development of systems for protection of people and mining facilities from explosions; Identification of properties of rocks and building materials and quality control; Development of new sound-damping and low-heat building materials production technologies; Chemical analysis of ores and their concentrates; Analyses of water and soil (except of microbiological); Technological testing of metallic and nonmetallic minerals by mechanical (gravitation, magnetic and electrostatic separation, flotation) and chemical (hydrometallurgy) methods for assessment of deposits' economic potential; Environmental problems of the mining industry.
Ministry of Energy	
State Agency of Oil and Gas	Choosing locations for investments and making decisions on the design of agreements with investors; development of tender conditions and auction rules; conducting tenders and auctions and identifying winners; issuing licenses to investors on behalf of the state for carrying out oil and gas activities; approving and granting all relevant rights, allotments, permits and certificates; issuing licenses on oil and gas processing and oil and gas transportation (operation licenses) on behalf of the state; approving all relevant permits and funds.

2.2.2 INTERAGENCY COOPERATION

The above-mentioned ministries, as well as other governmental structures are obliged to cooperate with each other on specific issues within their competencies and authority by using available human and material resources. Unfortunately, there are many cases of inefficient and ineffective management of administrative (interagency) resources or consolidated decision-making. E.g., the Kobi-Gudauri road rehabilitation works implemented by the Ministry of Infrastructure and Regional Development in the Mtskheta-Mtianeti region in May 2013 resulted in the destruction of travertines, which according to representatives of the Ministry of Environment and Natural Resources Protection, should have been assigned the status of natural monument. This is an example of ineffective cooperation (in this specific case) between the Ministry of Environment and Natural Resources Protection and the Ministry of Infrastructure and Regional Development.

3. INTERNATIONAL DEVELOPMENT ORGANIZATIONS ACTIVE IN GEORGIA AND CATEGORIES OF DEVELOPMENT PROJECTS

International development organizations have been providing assistance to Georgia since it gained independence: the total cost of projects implemented with the financial assistance of the World Bank in 1994-2014 exceeds 2 billion USD, the cost of projects financed by EBRD from 1996 till present amounts to 1.989 million euros, the cost of projects financed by the Asian Development Bank from 2007 till present,1.357 million USD, the cost of projects financed by the German Reconstruction Credit Bank (KfW) from 2007 till present, 235,297,757 euros, and the cost of projects funded by USAID from 1992 till present,1.5 billion USD. Financial assistance provided by the EU within the ENP from 2007 till present amounts to 400 million euros. Projects funded by international donor organizations cover the following priority areas: energy, infrastructure, agriculture, institutional and municipal development, strengthening democracy, and xenvironmental protection.

All of the above-mentioned institutions have environmental and social safeguard policies, relevant targets, and action plans. The approach used by the development agencies is to minimize environmental and social impacts of economic development projects implemented within assistance programs. Therefore, any project should be evaluated at the earliest possible stage in terms of risks posed to the natural and social environment and maximum involvement of all stakeholders (individuals, groups or organizations) should be ensured. It is recognized that economic development projects implemented though participatory processes create a solid basis for long-term economic growth and poverty reduction around the world.

To integrate environmental and social considerations into a specific project the above-mentioned international development agencies group projects into the following categories:

- *Category A – a proposed project is classified as Category A if it is likely to have significant adverse impact on natural and social environment (e.g., large-scale mining, large-scale energy and infrastructural projects, etc.).*

They will be required to prepare detailed ESIA.

- *Category B – a proposed project is classified as Category B if its potential adverse environmental and social impacts are site-specific. Therefore, the requirement for ESIA depends on the character of the project and the procedure has to be determined by the donor on a case by case basis.*

- *Category C – a proposed project is classified as Category C if it is likely to have minimal or no adverse environmental and social impacts. These projects are required to prepare a simplified ESIA.*

The main purpose of categorization is to determine the appropriate extent and type of environmental and social assessments, the type of information to be disseminated and the level of public involvement. The criteria used for categorization are as follows: type, location, sensitivity, and scale of the project as well as the nature and magnitude of its potential impacts on the natural and social environment. Environmental and social risks, as well as the past and on-going impacts of a project have to be assessed regardless of its category.

It should be noted that none of the mining companies operating in Georgia have experience in the design, operation and public involvement corresponding to relevant international standards.

INTERNATIONAL DEVELOPMENT ORGANIZATIONS ACTIVE IN GEORGIA

World Bank – WB

The World Bank Group was created in 1944. It is based in Washington D.C. (USA). The World Bank, employing more than 10,000 professionals, operates its offices in more than 120 countries. The Group is a family of the following organizations governed by their member states: the International Bank for Reconstruction and Development (IBRD), International Development Association (IDA), International Finance Corporation (IFC), Multilateral Investment Guarantee Agency (MIGA), International Centre for Settlement of Investment Disputes (ICSID).

European Bank for Reconstruction and Development – EBRD

was established in 1991. The Bank is the largest financial investor in the area of its activity, from Central Europe to Central Asia and from South Mediterranean to Eastern Mediterranean. Its mission is to support the development of open market economies in the countries of this region. The Bank is owned by the EU, European Investment Bank and 64 countries.

Asian Development Bank – ADB

was established in 1966. The main purpose of its activity is to improve living conditions of the population of the Asia-Pacific region (around 1.6 billion people). Investments are aimed at alleviating poverty and creating a world in which everyone can share the benefits of sustained and inclusive growth. The Bank mainly invests in infrastructure, health care services, financial and public administration systems, sustainable use of natural resources and helps developing member countries of the region evolve into thriving, modern economies that are well integrated with each other and the world.

German Reconstruction Credit Bank (KfW)

is one of the leading institution supporting sustainable development in the world. The creation of KfW is linked with the economic development of the Federal Republic of Germany. Since its establishment in 1948, KfW has supported the development of progressive ideas in Germany, Europe and worldwide. For this purpose the Bank has allocated 1 trillion euros over the past 65 years. The Bank owned by the Federal Government of Germany is focused on the development of small and medium enterprises, promotion of export, protection of the environment and promotion of sustainable development in general.

United States Agency for International Development – USAID

is the United States Government agency that works to end extreme global poverty and enable resilient, democratic societies to realize their potential. The Agency was established in 1961 at the initiative of John F. Kennedy. USAID carries out U.S. foreign policy and at the same time expands stable, free societies, creates markets and trade partners for the United States. With less than one percent of the federal budget, USAID works in more than 100 countries.

European Union – EU

is a political-economic union of 28 member states that are located primarily in Europe. With a combined population of over 500 million inhabitants (2013) the EU has the world's third largest population. The EU in 2014 generated a nominal gross domestic product (GDP) of 18.451 trillion USD. As of 2014, the EU has the largest economy in the world, generating a GDP bigger than any other economic union or country. The EU's GDP per capita is 36,393 USD (2014) occupying the 16th position in the world. The EU operates through a system of supranational institutions and intergovernmental-negotiated decisions made by the member states. The institutions are: the European Commission, the Council of the European Union, the European Council, the Court of Justice of the European Union, the European Central Bank, the European Court of Auditors, and the European Parliament. The European Parliament is elected every five years by EU citizens.


Innovation
Branding
Solution
Marketing
Analysis
Ideas
Success
Management

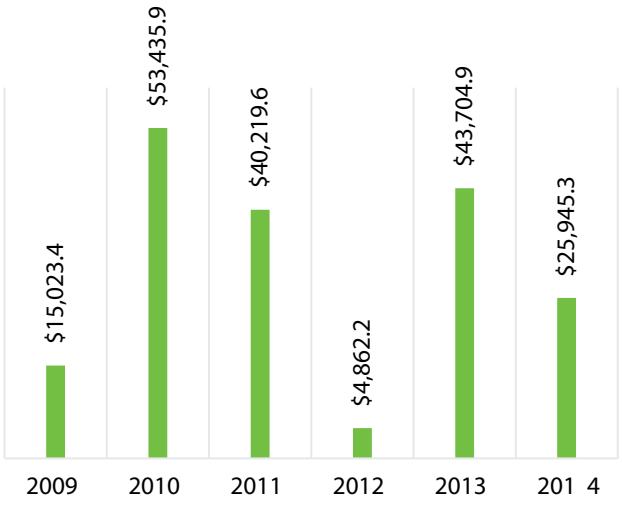
4. STATISTICS OF INVESTMENTS MADE IN THE MINING SECTOR OF GEORGIA (2009-2015)

4.1 SIZE OF INVESTMENTS

According to data from the Ministry of Environment and Natural Resources Protection, the number of licenses for mineral extraction increased from 135 (2010) to 810 (2015). Therefore, the role of the mining sector in the economy of Georgia increased in terms of attracting the biggest direct foreign investments (6% of the total biggest foreign investments, 1st quarter of 2014), job creation (5.5% of the labour force engaged in industry, 1st quarter of 2014) and average salary (average monthly nominal earnings per employee – 712.5 GEL, 2012).

(Diagram 1) The biggest direct foreign investments within any 6 month period berween 2009-2014, amounting to 53,435,900 million USD, was made in 2010. In 2013, investments made in the mining sector of Georgia amounted to 43,704,900 USD, in 2011 – 40,219,600 USD. The lowest index was recorded in 2012 – 4,862,200 million USD.

DIRECT FOREIGN INVESTMENTS IN THE MINING SECTOR OF GEORGIA (THOUSAND USD) 6 OVER MONTH PERIODS BETWEEN 2009-2014

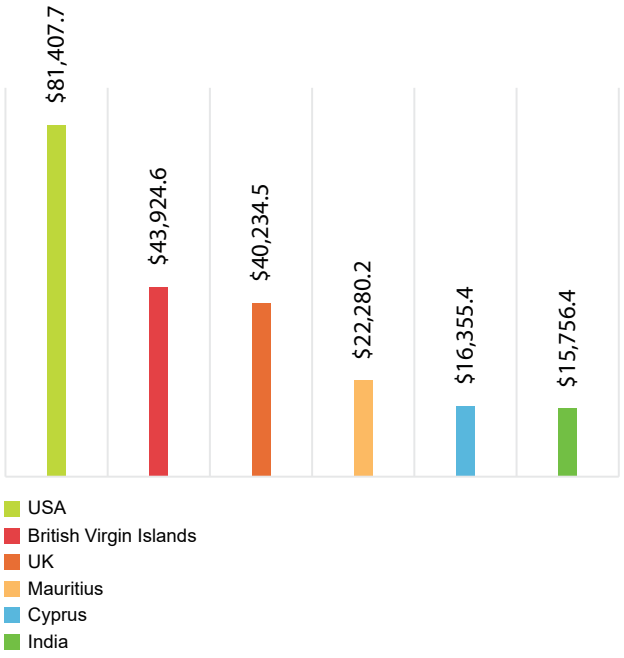


4.2 INVESTMENT SOURCES

According to data from the National Statistics office of Georgia, the top 6 investor countries over 6 month periods between 2009-2014 are as follows (Diagram 2):

- USA – 81,407,700 USD
- British Virgin Islands – 43,924,600 USD
- UK – 40,234,500 USD
- Mauritius – 22,280,200 USD
- Cyprus – 16,355,500 USD
- India – 14,756,400 USD

TOP 6 COUNTRIES INVESTING IN THE MINING SECTOR OF GEORGIA (THOUSAND USD), 6 MONTH PERIODS BETWEEN 2009-2014



MINING COMPANIES ACTIVE IN GEORGIA THAT HAVE MADE SOLID FOREIGN DIRECT INVESTMENTS DURING 6 MONTH PERIODS BETWEEN 2009–2014

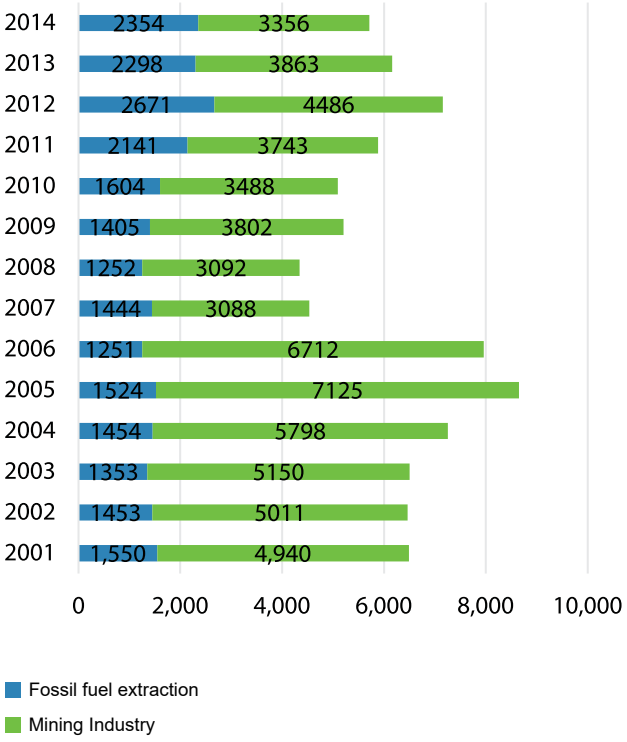
№	Company
1	JSC RMG Copper (former JSC Madneuli)
2	Canargo Georgia Limited
3	Ninotsminda Oil Company Limited Representative Office in Georgia
4	Jindal Petroleum (Georgia) Limited Branch Office in Georgia
5	Strait Oil and Gas Georgia Ltd
6	Frontera Resources Georgia Corporation LTD
7	Kinland Georgia Mining LTD
8	Canargo Limited Representative Office in Georgia
9	HeidelbergCement Georgia LTD
10	Askana LTd
11	Georgia oil & Gas limited Branch Office in Georgia
12	JSC Norio Operating Company
13	Chempioni 1o LTD
14	E.J.S. LTD
15	JSC Norio Oil Company
16	Timali LTD
17	JSC Bolnisi Tuff
18	Elegio LTD
19	Black Sea Energy Georgia LTD
20	Mining-Industrial Company Limited
21	Gelati 2007 LTD
22	Ecometal LTD
23	Frontera Eastern Georgia Limited
24	Dogani LTD

5. SOCIO-ECONOMIC IMPLICATION OF MINING

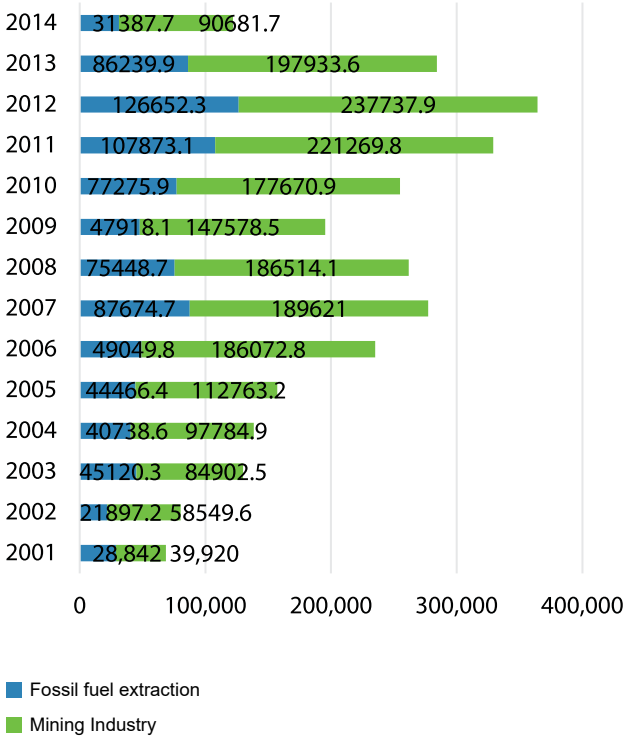
5.1 JOB CREATION

According to biannual data from 2001-2014, in 2001 the mining sector provided jobs for around 6,490 people, 1,550 of which were employed in energy related mining and 4,940 in other mining. According to biannual data from 2014, in 2001 the mining sector provided jobs for around 5,710 people, 2,354 of which were employed in energy related mining and 3,356 in mining other than energy related mining. Their average monthly salary amounted 712.5 GEL (2012). The highest number of miners was recorded in 2005, with 8,649 people, in 2006 it was 7,963 people, in 2004, 7,252 people and in 2012, 7,152 people. The number of people engaged in mining decreased in 2009, 2008 and 2010 to 4,532; 4,344 and 5,092 people respectively. Please refer to Diagram 3 and Table 3.

AVERAGE ANNUAL NUMBER OF PEOPLE EMPLOYED IN THE MINING SECTOR IN GEORGIA, 6 MONTH PERIODS BETWEEN 2001-2014.



AVERAGE ANNUAL NUMBER OF PEOPLE EMPLOYED IN MINING SECTOR IN GEORGIA, 6 MONTHS OF 2001-2014.



5.2 VALUE OF MINING PRODUCTS

The value of products mined during 6 month periods between 2001-2014 are presented in Diagram 4 and Table 4. The total value of products mined in 2001 amounted to 68,761,000 GEL (28,841,000 GEL in energy-related products; 39,919,000 GEL in non energy-related minerals). The value of products mined during the first half of 2014 amounted to 122,069,000 GEL (31,387,000 GEL in energy-related products; 90,680,000 GEL in non energy-related minerals). The highest index was recorded in 2012 when the total value of mined products amounted to 364,390,000 GEL (126,652,000 GEL in energy-related products; 237,737,000 GEL in non energy-related minerals) and in 2011, when the total value of mined products amounted to 329,142,000 GEL (107,873,000 GEL in energy-related products; 221,269,000 GEL – non energy-related minerals). The lowest index was recorded in 2001 and 2002 when the total value of mined products amounted to 68,761,000 and 80,446,000 GEL accordingly.

TABLE 3: AVERAGE ANNUAL NUMBER OF PEOPLE EMPLOYED IN THE MINING SECTOR IN GEORGIA, 6 MONTH PERIODS, 2001-2014.

Average annual number of people employed in mining sector in Georgia														
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014* 6 month
Energy related mining	1550	1453	1353	1454	1524	1251	1444	1252	1405	1604	2141	2671	2298	2354
Mining	4940	5011	5150	5798	7125	6712	3088	3092	3802	3488	3743	4486	3863	3356
Total	6'490	6'464	6'503	7'252	8'649	7'963	4'532	4'344	5'207	5'092	5'884	7'157	6'161	5'710

TABLE 4: GEORGIAN MINING PRODUCTION (THOUSAND GEL) (6 MONTH PERIODS, 2001–2014).

Georgia mining production (thousand GEL)														
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014* 6 month
Energy-related products	28841.9	21897.2	45120.3	40738.6	44466.4	49049.8	87674.7	75448.7	47918.1	77275.9	107873.1	126652.3	86239.9	31387.7
Non energy-related minerals	39919.5	58549.6	84902.5	97784.9	112763.2	186072.8	189621.0	186514.1	147578.5	177670.9	221269.8	237737.9	197933.6	90681.7
Total	68,761.4	80,446.8	130,022.8	138,523.5	157,229.6	235,122.6	277,295.8	261,962.9	195,496.6	254,946.9	329,142.9	364,390.2	284,173.5	122,069.4

6. IMPACT OF MINING ON NATURAL AND CULTURAL ENVIRONMENT OF GEORGIA

6.1 IMPACT ON GEOMORPHOLOGICAL CONDITIONS

From the perspective of the negative impacts of mining on natural forms of terrain, open-pit mining should be mentioned first. Open-pit mining operations cause full or partial destruction of the terrain of a mining site and adjacent areas. Anthropogenic landscapes formed by different sized ditches, pits and holes, as well as heaps and mounds created by mining waste substitute natural landscapes. Microdepressions as well as macrodepressions are also developed as a result of failure of shallow mines.

The evidence of degradation of natural terrain and the development of anthropogenic terrain as a result of extraction of ore and non-metallic minerals can be observed in all regions of Georgia. In this context the most notable is the Chiatura plateau, where manganese and industrial quartz sands have been mined using open-pit mining near the villages Bunikauri, Itkhvisi, Darkveti, Kveda Rgani, Mgvimevi, Perevi and Shukruti since 1950. The total area of quarries used to extract manganese and quartz sands exceeds 1,200 ha, the area of separate quarries is 2-10 ha. The depth of some sand quarries reach 30-40 m, slope gradient varies within 40-700. Some quarries are artificially terraced (as a result of the mining process). Surface flows developed on steep slopes of such quarries as a result of intensive rains creates erosion gullies. Washed mining waste forms small talus trains at the ends of gullies.

The total volume of mine waste accumulated on the Chiatura plateau is 2-3 million m^3. Waste forming different sized heaps at the entrances to quarries create an impressive picture of an anthropogenic landscape.

The natural landscape of Tkibuli has undergone considerable anthropogenic changes as a result of the open-pit and underground development of the Tkibuli coal deposit. The pits developed as a result of open-pit mining that took place at the deposit until the 1940s were 15-25 m deep and 1,200-1,500 m wide. These pits are still

be seen. It is obvious that the natural terrain and the landscape of mining sites have been completely destroyed. An anthropogenic terrain formed by terrircones (French for a form of relief created by heaps of mining waste disposed on land surface) are observed at the entrances to quarries. This landscape is shaped by flat, hummocky, conic and other forms of landscape. The height of this forms in the areas adjacent to the entrances to coal quarries is 10-20 m high, the diameter of their base reaches 15-20 m. Some of them are more than 300 m long. During intensive rains the terrain developed as a result of disposal of mining waste on the surface is exposed to erosion, causing gullying of its surface.

The development of the Akhalthikhe (Vale) brown coal deposit in the 1940-1970s led to a drastic change in the natural landscape. The process of land subsidence above former shallow mines led to the creation of a number 1-3 m deep and 2-3 m wide conic pits. The same reason contributed to the development of small new landslides and activation of old landslides along the right bank of the Potskhovi River. Moreover, different shaped terricons that have developed as a result of stockpiling of mining waste on the surface and still have distinct morphological features occupy around 20 ha.

Open-pit mining of barite-polymetallic, copper-sulphide and gold containing rocks in Kazreti (Madneuli) led to the change of the morphology of the local natural relief and the development of 1.7 km long, 700-800 m wide and up to 250 m deep depressions. The relative height of steps cut on the slopes of such quarries for the purpose of vehicle movement is 12-15 m. At certain locations, the slope gradient is 60-800. The natural relief of the mining site is completely destroyed, while adjacent areas are characterized by varying degrees of degradation.

Like the Tkibuli, Chiatura and Kazreti mines the other deposits of metallic and nonmetallic minerals found in Georgia were developed with open-pit mining. At certain deposits, this practice is still observed. As a result, the natural landscape of mining sites and adjacent areas are completely or partially destroyed. Depressions developed as a result of open-pit mining of quartz sands near the villages of Itkhvisi and Shukhruti on the Chiatura plateau is a clear illustration of large-scale degradation or complete destruction of the natural terrain. The area of depressions developed at the location of certain mines is 6-8 ha, the depth, 30-40 m, and the slope gradient 40-700. The walls of some mines are artificially stepped.

Chemical and agroindustrial materials, inert materials and other minerals (sand, cobble, clay, marble, limestone, andesite, agate, barite, zeolite, etc.) have been intensively mined in areas located 1,500 and 1,700 m above sea level since the 1950s which led to the development of anthropogenic terrains formed by micro and mezodepressions, conic pits, cavities and ditches of different shape and size in all parts of Georgia. For example, as a result of open-pit mining occurred on the chalcedony deposit in Akhaltsikhe Municipality in the 1930-1980s the natural terrain of the slopes of mount Amaghleba has been substituted by anthropogenic terrain. Large depressions have developed at the location of limestone quarries in Dedoplistskaro Municipality and the village of Kavtiskhevi (Kaspi Municipality) and clay quarries in Gardabami Municipality. Depressions 150-200 m long and 10-15 m deep with steep slopes are still observed on the southern slopes of the Nakerala Range (near the City of Tkibuli) at the location of quarries of construction materials (sand, limestone, clay) that were being mined in the 1940-1970s.

6.2 IMPACT ON NATURAL ENVIRONMENT

In some cases, open-pit mining has caused serious environmental problems along with undesirable geomorphological changes. In this regard, extraction of hundreds of millions of cubic meters of sand and gravel for construction purposes from the Black Sea coast of Georgia during the 20th century shall be noted first. As a result of this activity, the ability of beaches and the sea coast to resist the abrasive action of waves has considerably

decreased and became one of the main reasons for the intensive scouring and recession of the coastline.

It can definitely be said that adequate attention has never been paid to recultivation of open-pit mining sites. Engineering and biological measures (levelling artificial terrain and covering it with soil, grass seeding, tree and shrub planting, etc.) have almost never been implemented at open-pit mining sites.

Mining has affected other components of the landscape to varying degrees. Until recently, the problem of pollution of surface waters with hazardous toxic elements in the process of extraction and processing of minerals has never been paid adequate attention. The concentrating mill operating at the Kazreti copper-pyrite and barite-polymetal deposit can serve as an example. Until recent times waters polluted with Sulphur oxides flowed from the large open quarry and the mill to the Kazretula River – a right tributary of the Mashavera river used for the irrigation of the agricultural lands in Bolnisi and Marneuli municipalities. The pollution of soils with toxic chemicals transported by irrigation water and air was detected in soils located 20-40 km east of the Kazreti mill. The pollution of 70% of agricultural lands with copper and zinc exceeded the average pollution level, 17-20% of lands were heavily polluted. 81% of studied soils were polluted by manganese exceeding average levels, while 18% of soils were heavily polluted.

The pollution of surface waters with harmful, chemical and biogenic elements is still happening as a result of the development of a number of metallic and nonmetallic deposits and associated operational or closed concentrating mills and chemical plants. During floods and flash waters, polluted river waters spread over large riverside areas causing the pollution of soils to a varying degrees. E.g., tens of thousands of cubic meters of weakly consolidated clayish waste, with a high concentration of harmful toxic elements generated as a result of barite ore beneficiation are disposed of over about 5 ha of the former Kutaisi Lithopone Plant. The plant is located on a low terrace of the

Rioni River floodplain. During floods, certain portions of waste flows directly into the river. Moreover, moderate and strong winds blow up nonconsolidated fraction of barite ore waste, causing pollution of the ambient air of Kutaisi.

A similar picture is observed in the case of the former Kvaisa polymetallic plant, which was in operation until the 1990s. The plant located in the Jejora River basin (left tributary of the Rioni River) processed lead-zinc ore. The resulting waste rocks were disposed of in a specially built storage facility. The storage facility was located on a low terrace of the Jejora River protected from the river by a concrete wall. In the beginning of the 1990s this protecting wall had already been partially destroyed, causing the leakage of waste into the Jejora River.

Environmental problems associated with the development of arsenic deposits in the villages of Uravi (Ambrolauri Municipality) and Tsana (Lentekhi Municipality) shall also be noted. Processing and chemical enterprises associated with arsenic deposits were closed down in the 1990s. However, large amounts of waste and the ruins of different buildings on the Uravi (Uravi-1, Uravi-2, Uravi-3, and Uravi-4) and Tsana (Tsana-1, Tsana-2, Tsana-3) pose serious risks to the health of the local population. Surface waters are still being polluted with harmful chemical substances. Polluted waters cause the contamination of river sediments and soils of adjacent areas. Preliminary studies show that the concentration of arsenic in surface waters, soils and river sediments of the above-mentioned sites of Uravi and Tsana and adjacent areas exceeds or is close to the limits established by the World Health Organization.

Extremely high levels of pollution due to the operation of the Chiatura manganese processing plant were recently recorded in liquid and solid discharges of the Kvirila River. The darker colour of the Kvirila River (black) compared to the Dirula River (greyish) at the junction of these two streams observed during several days near the city of Zestaponi gives a good picture of the problem.

From the 1960s through the 1990s, peat was being extracted from peat-bogs developed in the Black Sea coastal zone of Georgia for the purpose of manufacturing organic fertilizers. The extraction of tens of thousands of m3 of peat from coastal peat-bogs resulted in pollution of surface waters with harmful biogenic elements at certain sites of peat-bogs. This process is still going on. Cut layers decay in quarries filled up with water producing large amounts of harmful biogenic elements and resulting in the pollution of peat-bog waters. Polluted waters flow into rivers, lakes and reach the sea.

The closed deposits of Kvaisa, Uravi, Tsana, operating mining facilities of Chiatura, the former Kutaisi Lithopone Plant and the peat quarries in the coastal zone of Georgia greatly contribute to the pollution of the river network of the Rioni River watershed. The results of the studies carried out at the mouth of the Rioni River in 1988 showed that the concentration of toxic nitrogen compounds in river water was 4-6 times greater than the concentration limits, for copper, 1-2 times; for phenols, 4 times greater, etc., while the Black Sea Navigational Directions published in 1903 recommends captains of ships entering the Poti port to fill water reserves from the Rioni river.

It shall be noted that zeolites are widely used as dietary supplements for livestock due to their absorbing capacity. Recent studies showed that certain minerals of zeolites (erionite, mordenite, mazzite, roganite, etc.) are carcinogenic. In Georgia, zeolites have been used without identifying minerals contained in it. This poses a serious risk to human health. It has been established that erionite and modernite cause diseases of internal organs (cancerous growth).

Oil companies established in the 1990s in Georgia still mainly extract oil from old wells. For example, Frontera, operating on the Mtsare Khevi (Sagarejo Municipality) discharges oil produced from cleaning activities into pits and this pollutes surface waters, soils and vegetation. Some companies have their wells on the Iori River floodplain 50 m away from the riverbed risking pollution of river water. According to Georgian legislation, oil wells should be located at least 2 km away from rivers.

As for flora and fauna, it can be definitively stated that adequate botanical and zoological study of mining sites has never been carried out. Natural vegetation of open-pit mining sites and adjacent areas are destroyed from the moment mining operations begin. The existence of protected species of different categories (including species from the Red Book and Red List), as well as the problem of disturbance of different species by noise generated by machinery or blasting operations at open-pit mining sites have been neglected.

The problem of air pollution at mining and processing sites has still not been addressed. Usually, ore extracted from deposits was and is still being transported with open trucks. Under such conditions ore dusting occurs resulting in pollution of lower layers of the

atmosphere. Dust dispersions generated by blasting activities carried out on deposits cause occasional but acute pollution of air on open-pit mining sites and adjacent areas.

According to the regulations of the Ministry of Environment and Natural Resources Protection on the Rules of inventory of stationary sources of pollution of ambient air, the analysis of qualitative and quantitative characteristics of dust emissions in ambient air shall be carried through instrumental measurements or calculation methods. As far as is known, these activities have never been properly implemented at Georgian mines and associated facilities.

6.3 IMPACT ON CULTURAL ENVIRONMENT

Mining poses risks not only to the environment and human health, but also to cultural heritage. Mining operations threaten the oldest archaeological sites associated with mining operations as well as other objects of cultural heritage located within or near the area of mining operations. The risk of damage and destruction of cultural heritage sites has increased after mining companies started mineral extraction through open-pit mining and drilling-and-blasting operations due to economic considerations.

Georgian legislation requires an applicant of a mine operating permit to submit a conclusion from the Ministry of Culture and Monument Protection or its authorized body – the Agency of Cultural Heritage of Georgia to be issued on the basis of a preliminary archaeological survey (The Law of Georgia on Cultural Heritage, Article 14), however, according to our information, no cases of application to the Ministry have been recorded by 2012. Therefore, most activities associated with mining operations in Georgia violate the relevant legislation.

Quarrying operations started some years ago on a plateau near the Mukhatgverdi Lake are being carried out without relevant archaeological survey or a positive conclusion from the ministry. In 1970s, the Tbilisi Archaeological Expedition of the Academy of Sciences excavated a burial mound dating back to the 3rd millennium B.C. at this location. There is evidence of the existence of other undiscovered mounds.

Presumably, other quarries, such as a sand-gravel quarry in the Village Changilari in Kaspi Municipality, a limestone quarry in the Village Kavtiskhevi (Kaspi Municipality), a clay quarry in Gardabani and a limestone quarry in Dedoplistskaro (HeidelbergCement), etc. operate without relevant conclusions.

Extraction of manganese in Chiatura takes place without a preliminary archaeological survey and relevant conclusion. This region is especially rich in unique monuments of the Old Stone Age. Scientists consider that this is the place where modern humans coexisted with Neanderthals. One of the caves where the archaeological layers of the Old Stone Age have been discovered is currently is covered with rock mass generated as a result of blasting operations carried out for the purpose of manganese extraction. Although archaeologists sent a relevant written notification to the National Agency of Cultural Heritage, no legal measures have been taken so far.

6.3.1 BRIEF OVERVIEW OF CULTURAL HERITAGE FOUND WITHIN AREAS OF MINING OPERATIONS IN GEORGIA

Kvemo Kartli region – Bolnisi municipality (Sakdrisi gold and Madneuli copper deposits)

Kvemo Kartli is a notable region of Georgia in terms of the quantity and importance of Georgian's cultural heritage. Archaeological monuments of national and international importance are found across Kvemo Kartli region.

The most notable is Dmanisi, where a hominid site was discovered under the remnants of a medieval town. This hominid (Homo erectus, Homo habilis) site is the earliest of its kind outside of Africa, dating back to 1.8 Ma.

A number of stone tools dating back to the Lower Paleolithic (Acheulean, Mousterian) have been found in the region. Around 100 petroglyphs the oldest of which belongs to the Mesolithic Ara are found in the Patara Khrami River Gorge.

The Neolithic settlement Arukhlo (VI-V millennium B.C.) – one of the oldest farm settlements in the Caucasus - is located near the village Nakhiduri of the Bolnisi Municipality. A megalithic fortress of I millennium B.C. is found in this village too.

Near the Village Sakdrisi in the same municipality, on the area of the currently licensed gold mine, an archaeological site containing a prehistoric mine is located. Scientists suggest that Sakdrisi might be one of the world's oldest known gold mines (IV-III millennium B.C.).

At a distance of about 2 km from this mine, the remains of the settlement Dzedzvebi of the Mrkvari-Araks culture is located. Dzedzvebi considered to be the settlement of ancient Sakdrisi miners.

Ancient artefacts of the Mtkvari-Araks culture have been unearthed in the Grma Khevistavi of the Mashavera River Gorge.

Many archaeological sites from the Bronze Age to the Middle Ages have been discovered in the region. These include sites associated with iron production: remains of antique ironworks in the village Kvemo Bolnisi, remains of medieval ironworks in the Tsugrugasheni River Gorge, remains of ironworks of XVII-XVIII centuries at the village of Bolnisi, etc.

There are also many monuments of Georgian Christian architecture in the region. The most notable is the Bolnisi Sioni – a cathedral of the fifth century with the two oldest Georgian inscriptions on its walls. One of them indicates the date of the construction of the cathedral (478–493).

Imereti – Tkibuli municipality (Tkibuli coal deposit), Chiatura Municipality (manganese deposit)

The Imereti Region is especially rich in Paleolithic (Old Stone Age) archaeological monuments. Most monuments (from 200) of the Middle and Upper Paleolithic Era found in the South Caucasus have been discovered in Imereti region, including Tkibuli and Chiatura municipalities. Upper Imereti is rich in natural and semi-artificial carst caves that have been used for human habitation since the Paleolithic Era and later.

Paleolithic caves in Tkibuli Municipality include: Tsutskvati cave, Jason's case, Sabelaseri habitation-workshop, etc. The following caves are found in Chiatura Municipality: Bneli Klde, Gvarjilas Klde, Mgvimevi, Dzudzuana cave, Samertskhle Klde, etc. A number of new caves have been discovered in recent years. These include the Undo cave with Middle and Upper Paleolithic layers. Scientists hope that future study of this site will show how modern humans replaced Neanderthals in the Caucasus (N. Tushabramishvili, N. Bakhtadze – 2012).

Remains of almost all archaeological periods along with Paleolithic monuments are found in Tkibuli and Chiatura municipalities.

Shida Kartli region – Kaspi municipality (cement limestone deposit)

Kaspi Municipality is rich in archaeological sites, including Tsikhiagora located near the Village of Kavtiskhevi. Tsikhiagora is a complex of multi-layer habitation, ancient settlement and cemetery. The settlement consists of clay coated webbed buildings of the Mtkvari-Araks culture dating back to IV-III millennium B.C., houses of II millennium B.C. built of cobble, a "darbazi" type structure built in VI-V B.C. and a temple complex and different residential and auxiliary structures of IV-III B.C.

Khovlegora located in the village Khovle is one of the most important archaeological sites of Kaspi Municipality. 8 stratigraphic horizons have been discovered at this site where life started in XV-XIV B.C. and lasted till IV B.C. A settlement of potters dated back to IX-IV B.C. is 500 meters away from Khovlegora.

A multi-layered archaeological monument called Graklianis Gora was discovered on the territory of the villages of Igoeti and Samtavisi of Kaspi Municipality. Stone tools of the Paleolithic and Eneolithic periods, burials of the Early Bronze Age, a settlement and cemetery of the Late Stone-Early Bronze Age, spiritual and residential buildings and burials of the Iron Age, a temple and other structures of V-IV centuries B.C., a number of burials of IV-III centuries B.C., etc. have been unearthed at this site. The life of Grakliani Gora ended in I century B.C.

There are other important monuments in Kaspi Municipality, including Uplistsikhe, a rock-hewn town, the majority part of which was made in the Early Antique Period – in VI-IV centuries B.C., one of the prominent monuments of the Georgian architecture – Samtavisi Temple of XI century, Kvatakhevi monastic complex of XII-XIII centuries, etc.

Kakheti region – Sagarejo municipality (oil and gas extraction)

The Gareji Desert is the richest part of Sagarejo Municipality in terms of archaeological and cultural monuments. Remnants of human habitation of almost all historic periods – from Lower Paleolithic till Late Medieval – are found in Gareji. However, much older remnants have also been also discovered in this area. Specifically, in 1939, an anthropogenic expedition discovered remnants of a so-called udabnopithec – a type of anthropoid primate – at the village Udabno near the David Gareji Monastery.

Several open human habitation sites of the Lower Paleolithic Era have been discovered in the Gareji desert.

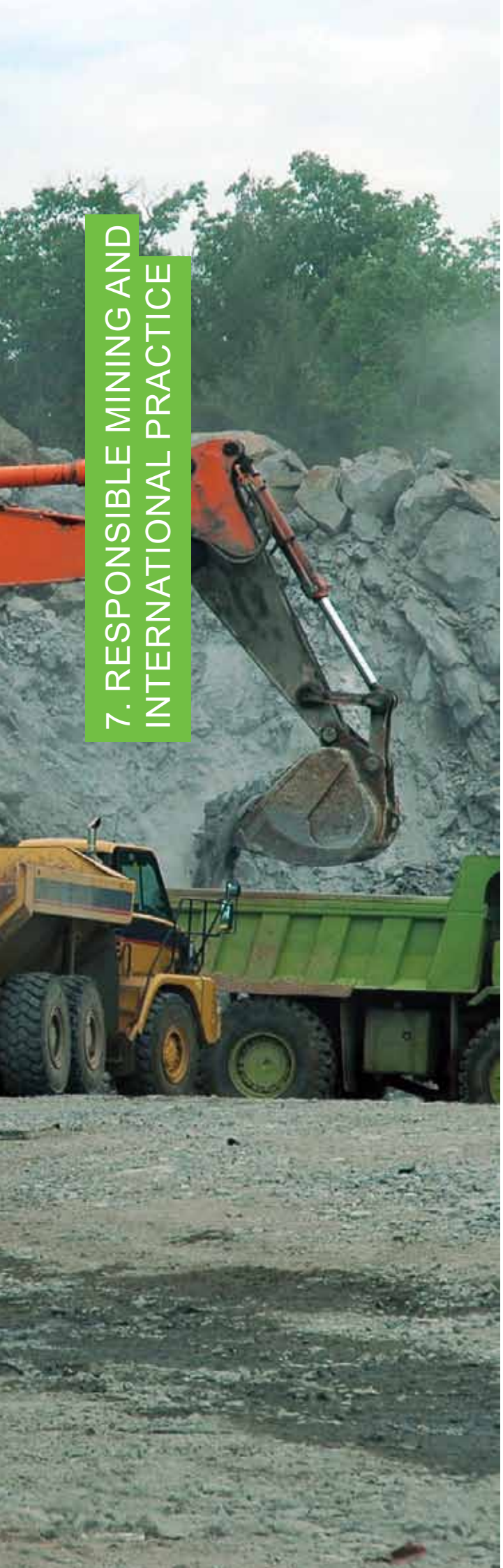
The Gareji desert is known to be abundant in Bronze Age monuments. Up to 200 burial mounds of the Middle and Late Bronze Age, some of which belong to the Trialeti culture (the first half of II millennium B.C.) are found in Gareji.

There are also several remnants of large settlements of the Early Iron Age (the second

half of II millennium B.C. – the first half of I millennium B.C.). One of them (Naomari Gora) is located on the 800 m long artificially flattened mountain ridge. The settlement is protected by a stone fence and canals.

No evidences of human habitation after the middle of I millennium B.C. are found in Gareji. Life in this area resumed in the early Medieval Era – the first half of VI century – , when one of the Assyrian father David came to Gareji together with his follower, Lukiane, settled in one of the caves and founded the David Gareji monastery.

There are also other important historical-architectural monuments of national importance in Sagarejo Municipality, including Ujarma Fortress Town, Ninotsminda Nunnery, Khashmi Trinitry, Katsareti Monastery and Manavi, Khashmi and Patardzeuli fortresses.



7. RESPONSIBLE MINING AND INTERNATIONAL PRACTICE

7.1 RESPONSIBLE MINING

Responsible mining is generally defined as “a kind of prevailing global or regional consensus (or compromise) among representatives of government, industry and internal development finance institutions as to what constitutes appropriate ground rules and protections for the achievement of private objectives of industry and the public goals of government”. The International Atomic Energy Agency (IAEA) describes best practices related to mining as “the active search, documentation and implementation of those practices and principles that are most effective in improving the social, environmental and economic performance of an operation.”

Generally “responsible mining” are: “mining activities that, while maintaining the economic viability of their operations, both comply with the laws and regulations of the host country, and go further to supplement the required laws and regulations that are incomplete or deficient, to ensure respect for the human rights and aspirations of affected communities; the provision of safe, healthy and respectful workplaces; avoidance or minimization of harm to the environment; and the leaving of positive legacies”.

7.2 NATIONAL LAWS RELATED TO MINING

While historical mining legislation was exclusively related to mineral ownership and tithes, it was not until the 1800s that mining laws related to social and environmental responsibility started to appear, with, among others, the British Mines Act dictating labour rules for mines and common law clarifying regulations on waste, chemical emissions, water pollution and air pollution. Legislation on these areas began to occur ad hoc in response to large scale social and public health issues caused by issues such as the pollution of water bodies, unregulated cesspits, increasing number of mine-related deaths, and exploitative working conditions.

The introduction of mining legislation in developed economies in the 20th century was been predominantly driven by themes central to environmental law, including: sustainable development – described as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" – , this is a guiding principle of environmental legislation covering the"… protection, enhancement, restoration, rehabilitation and management" of natural resources, habitats, areas and biological diversity.

The polluter pays principle – a method of ensuring that the costs of environmental pollution are not passed on to the state. This principle is intended to incentivize lower pollution from polluters or face clean-up costs. This principle manifests itself in the form of environmental fines and costs, and is contained in, amongst others, the French Environmental Code.

Prevention – as prevention of environmental and social damage is considered to be cheaper than responses to damage, it should be prioritized whenever practicable.

Public participation/transparency – this theme informs the environmental and social impact assessment (ESIA) process by accepting that local involvement in the planning stages of large scale industrial actions is essential for public ownership of projects.

7.3 SOCIAL CORPORATE RESPONSIBILITY (CSR)

In addition to the national laws and international treaties that have developed to enforce responsible mining practices, businesses have also been active in shaping international best practices related to responsible mining. Traditionally, mining companies have implemented the fewest possible safeguards against environmental and social damage to maximize profits and minimize costs, "operating in areas without social legitimacy, causing major devastation, and then leaving when an area has been exhausted of all economically valuable resources". However, since the 1990s mining companies have started to realize the advantages of responsible mining practices, generally referred to as corporate social responsibility (CSR) (corporate social responsibility is a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders). There are a number of reasons for this switch:

Responsible mining practices can improve a company's image – this increases the chances of doing business in countries that are concerned about the impacts of mining; improves their access to the best candidates in the labour force; and can improve their access to socially responsible investment funds.

Responsible mining practices can improve the industry's image – this reduces pressure on national governments to increase mining legislation; and reduces targeting of the industry by nongovernmental and grassroots campaigns.

Responsible mining practices can reduce tensions with local communities – this reduces the chance of project delays and closures due to local opposition.

Responsible mining practices can reduce the company's exposure to lawsuits and costly disasters – this reduces the chance of unbudgeted payments to governments or local communities affected by industrial disasters, environmental pollution or social disruption.

7.4 INTERNATIONAL LAWS

Although no international law specifically related to mining exist, a range of environmental treaties and conventions related to mining process have been covered since the creation of the United Nations. These treaties and conventions form one aspect of the literature that informs current international best practices.

These include:

- *International Court of Justice Statute 1945.*
- *Treaty of Rome 1957 (EEC Treaty).*
- *Convention on the Continental Shelf 1958.*
- *Antarctic Treaty 1959 and Antarctic Treaty Protocol on Environmental Protection 1991.*

- *Vienna Convention on the Law of Treaties 1969.*
- *Stockholm Declaration on the Human Environment 1972.*
- *Law of the Sea Convention 1982 and the 1994 Agreement (Deep Sea Bed).*
- *Rio Declaration on Environment and Development 1992.*
- *Framework Convention on Climate Change 1992.*
- *Convention on Biological Diversity 1992.*
- *North American Agreement on Environmental Cooperation 1994.*
- *Convention on the Settlement of Investment Disputes between States and Nationals of Other States 1996 (ICSID Convention).*
- *Conference of the Parties to the Framework Convention on Climate Change (Kyoto Protocol) 1998.*
- *World Summit on Sustainable Development, Johannesburg 2002.*

JOINT REPORTS

Since the development of international treaties and conventions, national laws in economically developed countries, and corporate social responsibility in the mining sector, a number of collaborative efforts have developed documents aiming to clarify international best practices for responsible mining. These papers generally involve collaboration between members of the business sector, national governments, academia and international organizations.

One of the first attempts occurred in 2002, when the Mining and Minerals Sustainable Development (MMSD) project completed their report – Breaking New Ground. Since then the number and scope of these reports has grown significantly.

7.5 INTERNATIONAL GUIDELINES FOR RESPONSIBLE BUSINESS PRACTICE

There are numerous frameworks, guidelines, principles, policies, declarations and appeals related to responsible business practices, many of which make specific reference to the mining industry. This section will not attempt

to address all of them, but will focus on the ones that are most relevant to the definition of responsible mining. These documents include:

- *The European Commission – Improving Framework Conditions for Extracting Minerals for the European Union (EU) – Developed by the Ad Hoc Working Group on Exchanging Best Practice on Land Use Planning, Permitting and Geological Knowledge Sharing, this document sets out to research and identify examples of best practice covering minerals policy, application and authorization processes, land use planning, and codes and technical guidance.*

- *The International Council on Mining and Metals (ICMM) – Various – The ICMM was founded in 2001 to improve sustainable development performance in the mining and metals industry, as such it regularly releases reports and guiding documents relevant to responsible mining practices.*

- *The Organization for Economic Cooperation and Development (OECD) – Guidelines for Multinational Enterprises – The OECD guidelines cover a wide range of topics, outlined by the 15 General policies. The first of which is that companies should contribute to economic, environmental and social progress with a view to achieving sustainable development.*

- *Mining, Minerals and Sustainable Development (MMSD) – Breaking New Ground – The MMSD was set up by the International Institute for Sustainable Development (IIED) in 2002, and produced one of the first comprehensive reports on the implementation of sustainable development principles in the mining sector.*

- *International Finance Corporation (IFC) – Performance Standards on Environmental and Social Sustainability – This document is developed by the International Finance Corporation, a partner of the World Bank group. These Performance Standards are designed to ensure that World Bank projects comply with international best practices.*

- *European Bank for Reconstruction and Development (EBRD) – Mining Operations Policy – This document outlines the mining operations policy of the EBRD and provides a good overview of finance corporations' policies on international best practice in mining operations*

In addition to these documents, which outline general best practices on the regulation and execution of mining operations, technical documents were used to identify best practice on specific issues, these include:

- *European Union – Best Available Techniques (BATs) on Management of Tailings and Waste Rock – This report, developed in 2009, builds on the European Commission's (EC's) Communication COM (2000) 664 on the 'Safe Operation of Mining Activities'. It details the management practices for tailings and waste-rock management of ores that have potential for significant environmental impact.*

- *International Network for Acid Prevention – The Global Acid Rock Drainage Guide, 2010 – The GARD guide deals with the prediction, prevention, and management of drainage produced from sulphide mineral oxidation, often termed "acid rock drainage" (ARD).*

7.6 LICENSING AND ENFORCEMENT

7.6.1 LAND USE PLANNING AND NATIONAL MINERALS POLICY

The European Commission's (EC) Improving Frameworks Conditions for Extracting Minerals for the EU indicates that states should develop both a land use planning policy and a national minerals policy – a statement or statements of agreed objectives for the management of mineral resources which aim to ensure their supply to meet the needs for those minerals. National mineral policies may also set out the spatially-orientated processes that will be used to achieve those objectives. This land use planning policy should be "distinct from, but related to, national minerals policy".

7.6.2 LICENSING PROCESS

The awarding of licenses for mining operations is a process for which best practice changes depending on the specific nature of the country in which it is being implemented. This is due to a range of factors including the country's politics, the strength and integrity of its institutions, level of economic development, level of governmental understanding about its natural resources, level of knowledge of best management practices (BMP) for mining, and the independence of the agency that awards licenses.

The World Bank's Sector Licensing Study on Mining describes some best practices relating to the licensing process that are centered on three issues:

- *Firstly, the process should be informed by a detailed, accurate and up-to-date GIS-based mapping & claim registration system. This clarifies claims and reduces the scope for land based conflicts.*

- *Secondly, the licensing process, environmental laws and planning regulations should be clear, simple and highly transparent (including public availability). This significantly reduces the incentives for corruption, making the process both more equitable and more attractive to investors.*

- *Thirdly, licensing claims should be secured by the provision of exclusivity and a transferable property right. This allows mining companies to pledge collateral against their mining operations and reduces conflicts between mining companies.*

These best practices in the development of licensing process are echoed by the EC, which indicates that the two most important issues, with regards to permitting and licensing processes, are clarity and understanding and certainty of what needs to be provided in order to get authorization for minerals exploration or extraction.

7.7 MINING PLANNING

The best mining planning practices consist of the following stages:

Environmental and Social Impact Assessment

Prior to the implementation of mining activities it is best practice to complete an environmental and social impact assessment (ESIA). ESIA's are essential if properly implemented because they allow governments and local communities to make informed decisions about the suitability of mining processes, the requirements which need to be applied to mining, and the standards to which mined lands will be restored in specific areas.

Best practice ESIAs should explicitly consider potential impacts in relation to the following topics: water quantity and quality issues; mine waste management; air quality and noise; greenhouse gas emissions; protected areas; biodiversity outside officially protected areas; cyanide and mercury management; socioeconomic effects; human rights due diligence, compliance and security, human health and safety; wildlife and fisheries; cultural and archaeological resources; and resettlement.

Therefore, ESIAs should include an assessment of:

- *impacts during all stages of the project lifecycle, from pre-construction through post closure;*
- *direct, indirect, induced and cumulative impacts;*
- *other short– and long-duration impacts within the project's zone(s) of influence;*
- *the potential impacts of extreme events;*
- *the adequacy of baseline information obtained by the mining company and whether it provides sufficient information to assess potential effects to the environment;*
- *the adequacy of the proposed mine design and testing standards and whether these follow international BMP's;*
- *whether the proposed reclamation, mitigation, and monitoring plans are adequate to ensure compliance with BMP standards;*
- *whether there is sufficient financial assurance to manage and reclaim the disturbed area if the company should go bankrupt or refuse to comply with reclamation requirements.*

A best practice ESIA process should include stakeholder participation and input; if necessary the company should provide capacity building to relevant stakeholders to ensure meaningful participation.

7.8 CULTURAL HERITAGE

The protection of cultural heritage is an essential part of any industrial activity that complies with best practices, particularly mining activities. Best practice mining operations are required by the International Finance Corporation (IFC) Performance Standard eight to "identify and protect cultural

heritage by ensuring that internationally recognized practices for the protection, field based study, and documentation of cultural heritage are implemented." Specifically, if potential impacts to cultural heritage are foreseen the operating company should employ competent professionals to identify and develop protection mechanisms for cultural heritage.

Best practice on cultural heritage also dictates that the operating company should have a 'chance find' procedure. This should ensure that if initial or additional cultural heritage finds are made the operating company will not disturb it until it has been reviewed by a competent professional.

IFC standards highlight 3 forms of cultural heritage: replicable, non-replicable and critical. In all cases the strategy of avoidance should be prioritized.

Replicable cultural heritage (RCH) is cultural heritage that can be moved or that can be replaced.

Historical sites may be considered replicable if their specific era or cultural value is well represented at other sites.

Where avoidance of Replicable cultural heritage is not possible the operating company should either:

- *ensure maintenance and functionality of the Replicable cultural heritage;*
- *relocate the replicable cultural heritage;*
- *permanently remove replicable cultural heritage artefacts; or*
- *compensate local communities that are using the replicable cultural heritage for the loss.*

Non-replicable cultural heritage (NRCH) is cultural heritage that cannot be moved due to its unique nature (in the case of historical sites) or its specific social and environmental state (in the case of indigenous communities).

Non-replicable cultural heritage should not be removed unless the following conditions are met:

– *There are no feasible alternatives to removal.*

– *The benefits of the project conclusively outweigh the loss of NRCH.*

– *Removal is conducted using the best available technique.*

Critical Cultural Heritage (CCH) is cultural heritage that is either internationally recognized or legally protected by national laws. CCH should not be removed, damaged or altered. In exceptional circumstances CCH may be removed though a process of consultation with all affected communities and stakeholders, overseen by an external expert. In such cases the operating company should also implement additional programs to promote conservation in the surrounding area.

7.9 BEST MINING PRACTICES

7.9.1 SOCIOECONOMIC AND LABOUR CONDITIONS

Since increased employment and higher wages are some of the main advantages provided by mining operations to local communities, socioeconomic and labour conditions of workers are an essential tenet of best practices. In addition to this, labour conditions can also influence the quantity of expatriate or migrant workers in the local communities, as well as their relations with local communities.

Best practice for socioeconomics and labour conditions covers the following: collective bargaining rights, conditions of employment and benefits, and occupational health and safety. The following best practices represent a summary of requirements outlined in the OECD's Guidelines for multinational Enterprises, Social Accountability International's SA8000 Standard (2008), The International Labour Organisation (ILO) Declaration on fundamental Principles and rights at work (1998), and the IFC Performance Standard 2: Labour and Working Conditions (2012).

7.9.2 COLLECTIVE BARGAINING RIGHTS

Collective bargaining rights usually take the form of trade unions, which provide a channel for employee-employer negotiations. These negotiations have long been accepted as essential for the maintenance of equitable working conditions and payment.

Best practices outlined by the abovementioned documents indicates that operating companies should both respect the rights of workers to join trade unions and elect representatives, and provide facilities and information necessary for the development of collective agreements and meaningful negotiations on employment wages and conditions.

7.9.3 CONDITIONS OF EMPLOYMENT

Conditions of employment that do not conform to international best practice can have significant negative social consequences for local communities, including social, political or religious tensions. In addition to this, local people employed in mining activities can be vulnerable to short notice redundancies, low wages, unsafe working conditions and

forced/child labour. It is for these reasons that the following best practices, outlined in the abovementioned documents, should be adhered to:

- *Provide the best possible wages within the framework of government policies, such as a minimum wage adequate to satisfy the basic needs of the workers and their families.*
- *Where possible employ local workers and provide training with a view to improving skill levels.*
- *Provide reasonable notice of collective lay-offs or dismissals.*
- *Provide a grievance mechanism for workers*
- *Make publicly available policies that have a material impact on the wellbeing of employees*
- *Take actions to abolish forced labour*
- *Take actions to abolish child labour; the minimum age for child labour for non-hazardous work shall be 15, or the minimum age as outlined in national law, whichever is higher. For hazardous work, the minimum age shall be 18.*
- *Refrain from discrimination on grounds such as race, colour, sex, religion, political opinion, national extraction or social origin.*

7.9.4 OCCUPATIONAL HEALTH AND SAFETY

Due to the dangerous nature of mine work, occupational health and safety best practice is essential in ensuring the safety of those employed by the operating companies. Although health and safety best practices are extensive, they generally revolve around three issues:

- *Workers have the right to be informed of occupational hazards and adequately trained to carry out their tasks safely.*
- *Workers have the right to refuse unsafe work.*
- *Workers have a right to information, training, genuine consultation and participation in the preparation and implementation of occupational health.*

7.10 MINERAL EXTRACTION AND PROCESSING

7.10.1 WATER USE AND POLLUTION

To mitigate loss and/or pollution of other users' water resources operating companies should implement best practices in the management and use of water resources. The primary goal of these best practices is to ensure that the quality and quantity of local surface and ground waters is not significantly polluted or depleted below baseline levels. Mine discharge waters should at minimum comply with the European Communities Council Directive 98/83/EC (3 November, 1998) which sets standards on the quality of water intended for human consumption.

The European Bank for Reconstruction and Development (EBRD) mining operations policy lists 5 water policy requirements for operating companies engaging in extractive processes:

- *Perform adequate baseline studies to identify the quantity and quality of water resources in the area, and how they are being used*

– *Design facilities such that extraction of water for site needs or the generation of produced water via mining activity does not adversely affect the environment, any other water body (surficial or groundwater) or the supply of water to any other user or potential user.*

– *Design facilities such that there is no adverse effect to water quality of any body of surface water or groundwater.*

– *Minimize water use to the extent possible, and then maximize options for recycling and reuse of water.*

– *Do not release or otherwise discharge any effluent that exceeds permitted standards or pertinent EU standards.*

To successfully achieve the abovementioned requirements, the ICMM recommends a 4 stage approach to best practice water management in mining operations:

1) *Operations should be transparent and accountable. This required the public reporting of materials on water risks, management activities and performance;*

2) *The operating company should engage proactively and inclusively with stakeholders. This allows the operating company to highlight their priorities to stakeholders, share plans with them and collaborate on solutions;*

3) *A catchment based approach should be adopted, this involves focusing on the entire downstream area of the watershed in which the mine in located, allowing the mine to review its impacts on all affected areas of the watershed. This ensures that the operating company understands the social, cultural, economic and environmental value of water in the catchment area, to identify material water stewardship risks, and to provide context for corporate and operational water management;*

4) *The operating company should ensure effective water resource management. Management of operational water (quantity and quality) inputs, use and outputs allows for the maximizing of resource sustainability, operational flexibility and economic benefits.*

This approach should be underpinned by the development of relevant studies and documents, including: a water quality monitoring programme, establishment of baseline water quality and quantity, and a hydrological modelling program. As part of the approved operating permit, the operating company should develop plans for management of water quality issues that may result from spills, liner leaks, tailings line breaks, tailings dam or waste dump geotechnical instability, etc. There should also be plans to manage water quantity issues such as storm water discharges and depletion of base flows in streams due to water diversions or dewatering of groundwater. In line with the first stage of the ICMM approach (listed above) these documents should be made publicly available.

7.10.2 WASTE

The management of mining waste, much like water pollution, is a key aspect in determining a mine's environmental damage in its surrounding areas. Both the ESIA and agency review of the mining proposal should consider whether there are reasonable alternative and accepted mining and processing methods that could reduce the quantity and impacts of mining waste. Such methods could include backfilling mine excavations with mine waste and use of paste and dewatered tailings disposal techniques. In addition to state -of-the-art design practices to minimize and manage environmental effects, management of the mine waste should include comprehensive monitoring of: 1. the chemical and geotechnical stability of the waste; 2. potential effects on human health, air, water, wildlife, and fisheries; 3. reclamation and revegetation; and 4. environmental audits and compliance inspections to ensure all required standards and permit conditions are being met. An effective compliance program includes a responsible enforcement agency with trained personnel and the legal standing and tools to enforce requirements and ensure prompt compliance.

Essential documents for complying with best practice in waste management include the Mining Waste Directive (2006/21/EC) and the Amendment to the Seveso II Directive (2003/105/EC) of the European Parliament,

the Global Acid Rock Draining Guide (GARD), and the European Commission Reference Document on Best Available Techniques for Management of Tailings and Waste Rock in Mining Activities (January 2009).

The design of waste management facilities is one of the most important issues related to waste management. They should include, but are not limited to, the following characteristics:

- *Tailings dams shall be designed to withstand potentially long-term catastrophic events. The goal shall be, to the extent practicable, to design and construct a facility that will be environmentally stable with low risk of failure over the very long term, requires the least maintenance, and after reclamation is compatible with local land uses.*

- *Tailings impoundments designs shall incorporate leakage collection underdrains/ systems as well as liners when deemed necessary to manage effects on water quality, and monitoring wells and systems to detect leaks and other water quality issues.*

- *Heap Leach facilities shall incorporate synthetic liner and leak collection recovery systems as well as monitoring wells and systems to detect leaks. These wells may also work as a pump-back system to aid in containing spills.*

- *Waste rock facilities that contain potentially acid generating or metals leaching (PAG/ML) rock shall be designed and constructed to insulate the PAG/ML waste rock from the environment with NAG waste or a liner before a reclamation soil cover is applied. They should also include monitoring wells and systems to detect problems.*

- *Storm water and process water holding ponds should be designed to withstand 100-year/24-hour maximum precipitation events.*

Reporting/Monitoring: A report disclosing the amount of toxic constituents generated and/or released from mining and processing operations, and following the rules of the USEPA Toxics Release Inventory (TRI) Program for mining, should be published at least annually on the mine or company website.

7.10.3 NOISE AND AIR POLLUTION

Aside from water and waste pollution mines also generate both air pollution, primarily in the form of particulate matter (dust), and noise pollution. While these issues are not as likely to cause long term damage to the environment or human safety as water and waste pollution, they can have significant negative effects on human and ecosystem health in the surrounding areas.

7.10.4 NOISE

Mining operations can generate significant levels of noise, through both blasting and a range of other industrial activities. High noise levels have been associated with significant effects on human health. The IFC Environmental Health and Safety standards indicate that noise levels in residential locations should not exceed 55dBA at any time, and not be above 45 dBA between 22:00 and 07:00. To ensure that these levels are maintained in residential areas surrounding mining operations, the IFC recommends that the following activities be implemented:

- *Enclosure and cladding of processing plants.*
- *Installation of proper sound barriers and / or noise containments, with enclosures and curtains at or near the source equipment (e.g. crushers, grinders, and screens).*
- *Installation of natural barriers at facility boundaries, such as vegetation curtains or soil berms.*
- *Optimization of internal– traffic routing, particularly to minimize vehicle reversing needs (reducing noise from reversing alarm) and to maximize distances to the closest sensitive receptors.*

7.10.5 AIR

Dust (PM10 and PM2.5) is the main source of air pollution from mining operations, due to a range of processes including blasting, tailing facilities, waste rock dumps, crushing and grinding, loading and transportation. While dust emissions are considered the most significant air quality problem posed by mining operations, they can also be associated with SO2 emissions. The IFC Environmental Health and Safety standards indicate that, with regards to air, the following guidelines should be followed:

Pollutant	Averaging period	value - ug/m3[3]
SO^2	24 Hours	20
PM_{10}	1 Hours	20
$PM^{2.5}$	1 Hours	10

The following measures are recommended for the mitigation of dust emissions:

- *Dust suppression techniques (e.g. wetting down, use of all-weather surfaces, use of agglomeration additives) for roads and work areas, optimization of traffic patterns, and reduction of travel speeds.*
- *Exposed soils and other erodible materials should be revegetated or covered promptly.*
- *New areas should be cleared and opened-up only when absolutely necessary.*
- *Surfaces should be revegetated or otherwise rendered non-dust forming when inactive.*
- *Storage for dusty materials should be enclosed or operated with efficient dust suppressing measures.*
- *Loading, transfer, and discharge of materials should take place with a minimum height of fall, and be shielded against the wind, and consider use of dust suppression spray systems.*
- *Conveyor systems for dusty materials should be covered and equipped with measures for cleaning return belts.*

7.11 CLOSURE AND RECLAMATION

7.11.1 CLOSURE

Due to the nature of mining operations, extracting finite resources, it is inevitable that mines will both close and leave behind a changed terrain in their area of operations. Therefore, it is necessary to ensure that an effective closure and reclamation plan is developed. The purpose of a closure and reclamation plan is to mitigate the negative effects of mining operations on human health and the environment, and to maximize and maintain the positive economic and infrastructural benefits after closure.

The ICMM's toolkit for mine closure recommends that a mine closure plan should be developed in two distinct stages, firstly as a conceptual closure plan, and secondly as a detailed closure plan. A conceptual closure plan should be developed in the early stages of mine design, so that it may inform the physical design and operation of the mine. The conceptual closure plan should be developed into a detailed closure plan as and when data on the operation of the mine and its effects on stakeholders and the environment become evident. The detailed closure plan should closely follow the conceptual closure plan, but have more specific goals and timeframes. Below are outlined the basic contents of a closure plan:

1. *Definition of key issues and closure objectives (including post-closure land use)*
2. *Profiles of the project and area*
3. *Layoff plan*
4. *Communications plan*
5. *External and internal stakeholder engagement and consultation plans*
6. *Mechanism for the submission of complaints and grievances*
7. *Social and environmental programs*
8. *Decommissioning program*
9. *Risk assessment*
10. *Assessment of closure outcomes (setting criteria for closure)*
11. *Post-closure management*
12. *Closure costs and fund provision*
13. *Physical and financial schedule*
14. *Relinquishment*
15. *Contingency plan*
16. *Monitoring and maintenance plan*

7.11.2 FINANCIAL SURETY

As the nature of ore extraction is finite, it is necessary to plan for both closure and cleanup operations as part of the ESIA and mine permitting process. While the logistical aspects of closure are dealt with above, it is also necessary to ensure that financial assurance is provided to carry out the closure plans, especially as mines become less profitable towards the end of their life cycle and there may be less access to finance. The purpose of financial assurance in the form of an instrument such as a surety or bond is to protect the public and government against the financial loss caused by the default, actions, or inactions of a mine operator. Financial assurance should be obtained prior to the start of mining to ensure performance of the reclamation and environmental protection requirements stipulated in the mine permitting. The financial assurance amount should be recalculated and adjusted on a regular schedule as the proposed mining disturbances increase or decrease.

The International Council on Minerals and Metals' (ICMM) document on financial assurance lists 5 specific recommendations that should guide the development of financial assurance policies, these include:

– *Providing adequate financial assurance for the reclamation and closure plan.*
– *Providing flexibility in financial assurance.*
– *Considering existing operations and changes to the closure and reclamation plan.*

– *Allowing for an exit strategy that relieves operating companies of responsibility after an independent environmental audit has been conducted that confirms compliance with all legal requirements and that environmental risks have been managed to an acceptable level.*

– *Taking into account national/regional taxation laws and requirements.*

There are a range of methods for providing financial surety, each with specific advantages and disadvantages the most reliable forms include: unconditional third party guarantees, cash deposit, trust funds and insurance policies.

7.12 STAKEHOLDER RIGHTS/ ENGAGEMENT

7.12.1 ENGAGEMENT WITH STAKEHOLDERS

Stakeholder engagement is essential primarily because it provides mining companies with a social license to operate, which confers a number of benefits to the operating company, local community, and central and local governments. Important sources detailing best practice in stakeholder engagement include the Aarhus Convention (See 6.1.2) and the European Bank for Reconstruction and Development's Mining Operations Policy.

7.12.2 PREPARATION FOR ENGAGEMENT WITH STAKEHOLDERS

Before engaging with stakeholders it is best practice to develop a stakeholder engagement plan that will ensure productive and mutually beneficial dialogue. This plan should identify the range of stakeholders and consult with them to design an accessible, culturally and gender-appropriate engagement processes. It should also identify barriers to meaningful participation with experts/stakeholders and propose solutions to these. Ad hoc or unplanned stakeholder engagement processes can result in inequitable, ineffective or socially inappropriate engagement, and can be the source of significant problems for the local communities, operating company and local and central governments.

7.12.3 ENGAGEMENT, CONSULTATION AND ACCESS TO INFORMATION

Stakeholder engagement should occur prior to exploration and be ongoing throughout the lifecycle of the mining project. This guarantees that: all active stakeholders have open channels of communication with the operating company at all times, issues and problems are known to all actors as soon as they emerge, and stakeholders have sufficient access to information related to the mining operations. To ensure this, operating companies should use the Aarhus convention to inform their policies.

AARHUS CONVENTION

The Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Aarhus Convention) was adopted on 25 June 1998 by the United Nations Economic Commission for Europe (UNECE). The Convention has three basic tenets, the right of everyone to receive environmental information that is held by public authorities, the right to participate in environmental decision-making, and the right to review procedures to challenge public decisions.

7.12.4 STRENGTHENING CAPACITY

Meaningful collaboration is essential for stakeholder engagement, for this reason it is important for the operating company to ensure that stakeholders have the legal, technical and logistical capacity to collaborate. If they do not it may be necessary to provide funding, access to experts, trainings, etc. to build their capacity to necessary levels.

7.12.5 COMPLAINTS AND GRIEVANCES

A mechanism that provides the opportunity to bring up complaints, suggestions, information and grievances with the operating company should be designed with the cooperation of all stakeholders. This should open further channels of communication between the operating company and stakeholders, reducing the scope for misunderstanding and reducing the opportunities for the operating company to ignore local concerns.

7.12.6 TRANSPARENCY AND REPORTING

The extractive industry can be a lucrative and much needed source of income for governments, especially in developing countries. Due to this, the process is open to corruption at many levels and, as such, best practice entails significant ant-corruption strategies, in particular transparency.

In most cases operating companies should comply with the EU Transparency Directive.

7.12.7 FINANCIAL REPORTING

Best practice for transparency in the extractive industry is currently being led by the Extractive Industries Transparency Initiative (EITI), “a global coalition of governments, companies and civil society working together to improve openness and accountable management of revenues from natural resources.” The EITI standard lays out a clear set of requirements that governments should adhere to if they want to implement best practices in transparency, these include:

1. *Effective oversight by the multi-stakeholder group.*
2. *Timely publication of EITI Reports.*
3. *EITI Reports that include contextual information about the extractive industries.*
4. *The production of comprehensive EITI Reports that include full government disclosure of extractive industry revenues, and disclosure of all material payments to government by oil, gas and mining companies.*
5. *A credible assurance process applying international standards.*
6. *EITI Reports that are comprehensible, actively promoted, publicly accessible, and contribute to public debate.*
7. *The multi-stakeholder group to take steps to act on lessons learned and review the outcomes and impact of EITI implementation.*

COMPLIANCE

It is essential that operating companies comply with all operating company principles, as well as national laws and regulations, including court decisions and permits and permit conditions. This should include ensuring that subcontractors and contractors also comply with national laws and regulations. Documents detailing compliance issues and standards should be maintained and made publicly available, wherever possible. The most effective methods of ensuring this compliance is through external and independent auditing or assurance processes.

7.13 AUDITING/ASSURANCE

'Assurance' is an evaluation method that uses a specific set of principles and standards to assess the quality of a reporting organization's subject matter, such as reports, and the organization's underlying systems, processes and competencies that underpin its performance. Assurance includes the communication of the results of this evaluation to provide credibility to the subject matter for its users (AA1000 AS).

External auditing is an essential component of mining projects, in that it provides a unique opportunity to verify the financial, environmental and social requirements of the mining operations, as well as permit requirements and national laws. The ICMM lists 5 aspects that need to be addressed by an external auditor:

1. *The alignment of the member company's sustainability policies to ICMM's 10 Sustainable Development (SD) Principles and any mandatory requirements set out in ICMM Position Statements.*

2. *The company's material SD risks and opportunities based on its own review of the business and the views and expectations of its stakeholders.*

3. *The existence and status of implementation of systems and approaches that the company is using to manage the identified material SD risks and opportunities.*

4. *The company's reported performance during the given period for a selection of identified material SD risks and opportunities.*

5. *The company's self-declared application level of the Global Reporting Initiative's G3 Sustainability Reporting Guidelines.*

Environmental audits of a mining company's compliance with an operating permit and environmental laws and regulations can be valuable to the mine operator, stakeholders, and the responsible government regulatory agency when the audits are conducted by a qualified independent third party engineering firm (see for example various environmental audits conducted in the US State of Alaska for the US Forest Service and State of Alaska Department of Environmental Conservation). The intent of such an audit would be for the auditor to conduct suitable site inspections, document review, data analyses, and other work necessary to determine whether the mine operator has taken, or proposes to take, appropriate actions sufficient to protect the environment and to be in compliance with applicable regulations or requirements. The auditor could also determine the adequacy of agency oversight of the facility.

8. COST-BENEFIT ANALYSIS OF RESPONSIBLE MINING

As it has been mentioned above mining can contribute to economic growth of the country on the one hand, and also pose a risk of negative long-term effects to both the local natural and cultural environment and people employed in this hazardous sector on the other. The introduction of the principles of "responsible" mining in developed countries has made it possible to minimize and manage these negative effects. The introduction of such responsible practices in the mining sector of Georgia will require substantial investments, however, the experience of western countries shows that resources spent for this purpose "today" will bring positive economic effects "tomorrow". The next sections contain the cost-benefit analysis of responsible mining and the description of the positive effects of specific measures that can be implemented in the mining sector. The following directions have been discussed:

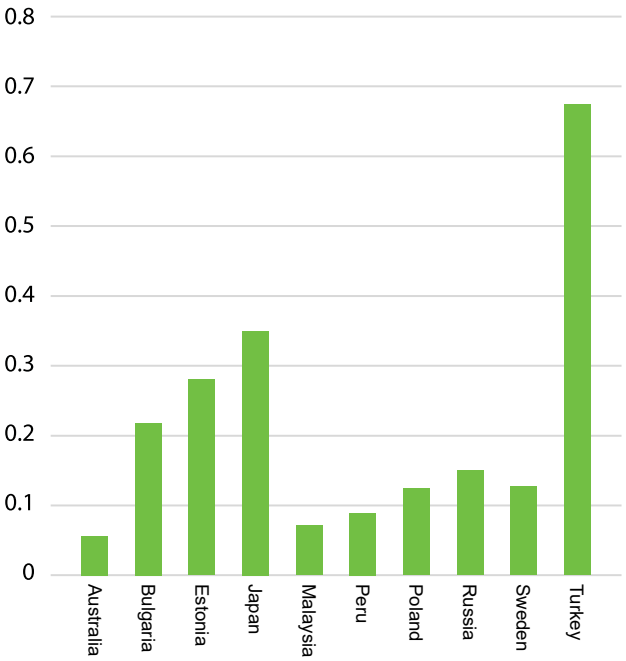
- *occupational health and safety;*
- *transparency (public participation);*
- *waste rock dumps, tailings and dust dispersion monitoring (environmental protection).*

8.1 OCCUPATIONAL HEALTH AND SAFETY

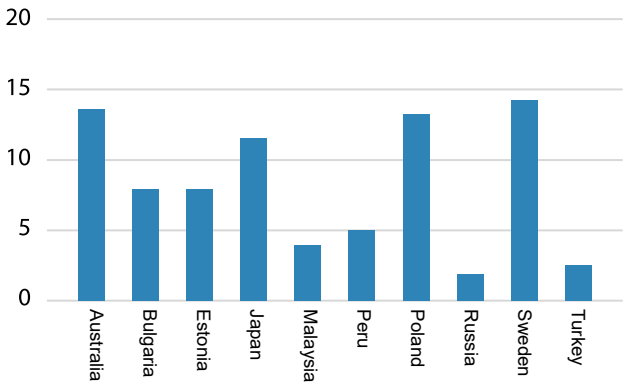
Extraction, processing and transportation of minerals pose a serious risks to the health and safety of workers directly involved in these activities. The introduction of wise standards of health and safety in the industry reduces risks and increases the effectiveness of operations.

FREQUENCY OF INJURIES IN SELECTED COUNTRIES

FREQUENCY OF FATAL INJURIES



FREQUENCY OF NON-FATAL INJURIES



To prove the relevance of this issue, specific data shall be compared by the number of practices, technologies (motivation) and injuries (reaction). This type of data is not available in Georgia.

Below the economic efficiency of improved health care and safety ensured by responsible mining is described.

8.1.2 BENEFITS OF IMPROVED HEALTH CARE AND SAFETY

ILO Convention on Safety and Health in Mines (C176) specifies standards to be implemented by companies irrespective of the status of the ratification of the convention by a country. Armenia is the only country of the South Caucasus that has signed the convention. Since detailed information on safety issues in Armenian mines was not available it can hardly be judged whether the situation has improved after the ratification. However, according to ILO data, this correlation is important for countries with similar income rates.

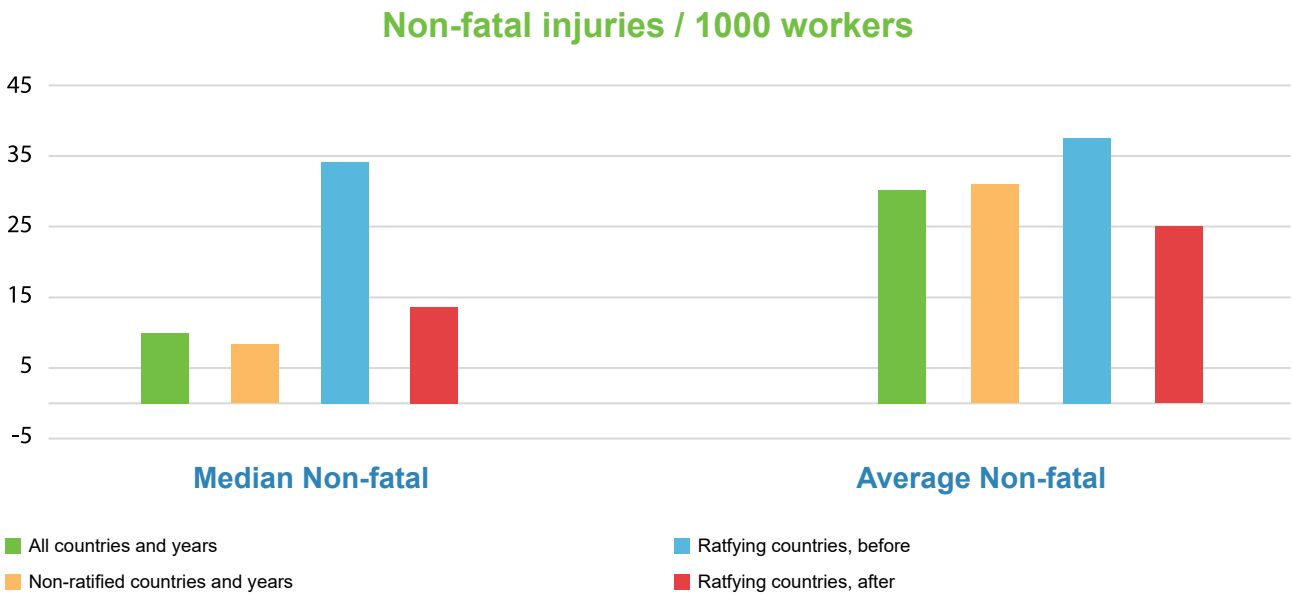
In the ILO data each unit represents the annual number of injuries for specific countries.

It is known (Wilson et al., 2007) that there is an important interrelation between the ratification of the ILO Convention on Safety and Health in Mines (C176) and fatal accidents.

The incidence of fatal injuries in the countries of upper-middle-income group by the annual index of GNI per capita ($3'000-$9'000) is two time less than in the countries that have ratified ILO C176. This data is very important in terms of statistics.

It shall be noted that the incidence of fatal and non-fatal injuries in the countries that have

MEDIAN AND AVERAGE FOR NON-FATAL INJURIES (HIGH-INCOME COUNTRIES ARE EXCLUDED). ILO DATA.



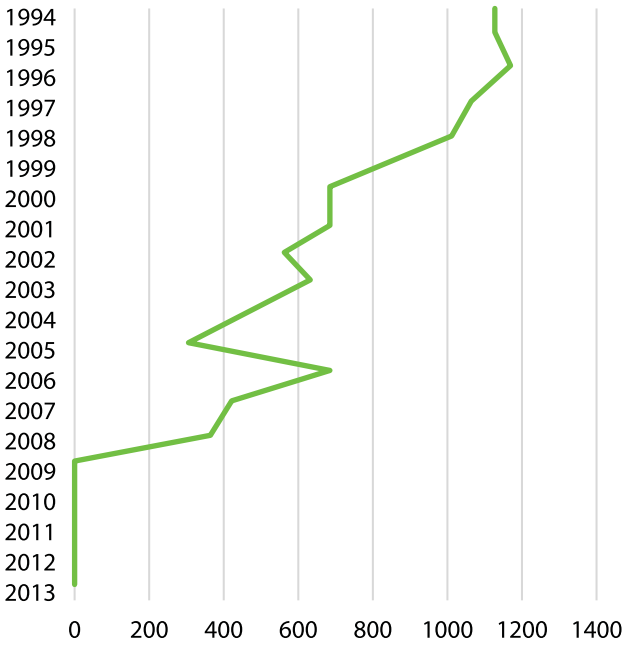
ratified ILO C176 is lower. The correlation is especially interesting in the case of low-income and lower-middle-income countries. Such results are logical since the high-income countries were already implementing most of the standards established by the convention. Therefore, as a result of ratification of the convention and implementation of its requirements in countries similar to Georgia major improvements in health care and safety in the mining industry can be expected.
The ILO data shows that in low-income and lower-middle-income countries, the annual incidence of injuries per 1000 full-time staff workers is less by about 0.34 fatal and 22.6 non-fatal injuries in ratifying countries. Along with saving lives and livelihoods, the reduction of injuries bring considerable economic benefits, such as continuity of experienced personnel, time and money saved on the training of new personnel, adequate operation (less product failures and costs), etc.

SLOVAKIA AND ILO C176

Although Slovakia was never been a Soviet Republic within the USSR, the country had a planned economy and close economic ties with the Soviet Union. After joining the EU Slovakia has ratified ILO C176. More than 1000 occupational injuries a year were recorded in the mining sector of Slovakia before the date of ratification. As the diagram shows, cases of injuries gradually decreased after ratification of the convention. The relevant index sharply decreased after adoption of the new Law on Occupational Safety (laws 24 & 25 -2006) in 2006. The implementation of these measures resulted in a considerable reduction of injuries (2 injuries in 2012) in the sector, which provided employment for 12, 000 people.

Note: ILO data. However, more comprehensive study will be required to identify the causes of such reduction in the incidence of injuries.

OCCUPATION INJURIES, MINING SECTOR



8.1.3 POTENTIAL PERSPECTIVES OF REDUCTION OF OCCUPATIONAL INJURIES

To assess how the incidence of occupational injuries in the mining industry can be reduced after application of ILO C176 standards, a statistical analysis method was used. The assessments made below are based on a dichotomic perception of health care and safety standards, i.e. an assumption that a country/industry either completely meets C176, or completely ignores them (in fact, the risks are different in each specific case, however more detailed calculations could not be done due to unavailability of data).

ASSESSMENT OF POTENTIAL REDUCTION OF OCCUPATIONAL INJURIES

Parameter	Georgia
Number of people employed in mining sector (2013)	6,353
Potential reduction of fatal injuries (per year)	2
Potential reduction of non-fatal injuries (per year)	144

THE COST OF FATAL INJURIES IN GEORGIA

Parameter	Georgia
Average monthly salary in mining sector in 2009	450
Total cost of a fatal injury in the mining sector	151 000
Expected reduction of injuries per year	2 injuries
Discounted net profit due to the reduction of fatal injuries during a 30 year period	8 024 000

8.1.4 PROFIT GAINED FROM THE EXPECTED REDUCTION OF OCCUPATIONAL FATAL INJURIES

The value of preventive measures would be extremely high for those who have escaped death due to these measures. However, it is difficult to measure the sorrow of family members and friends of a deceased person in economic units. There are many international studies related to the value of a statistical life (VSL). This is a monetary value of a saved statistical life, or the total value of avoided hypothetical premature death.

The Table below contains the total cost of fatal injuries in Georgia. Calculations are based on the assumption that the total cost of fatal occupational injuries in a country is directly proportional to an average monthly salary (according to the NIOSH study).

8.1.5 PROFIT GAINED FROM THE EXPECTED REDUCTION OF OCCUPATIONAL NON-FATAL INJURIES

To determine the average value of occupational injuries in the mining sector of the South Caucasus countries a study carried out by the Dr. J. Paul Leigh from the University of California in the USA in 2000 was used. According to this study the loss of production due to the injury of a worker accounts for about 50% of the total cost of the injury. Other costs include, for example, health care costs. There is no data on costs associated with occupational injuries for countries similar to Georgia, however, if we assume that the relationship between different costs is the same (e.g., lost salary makes up about 50% of the cost of injury), some predictions can be made.

The Table below contains the costs of non-fatal injuries. The calculation of costs is based on the assumption that the relationship between the different costs associated with occupational injuries are similar to those in the USA (i.e. lost salary makes up half of total costs). It is also assumed that each injury results in 31 days absence (analysis of ILO data).

It shall be noted that the assessment cover only non-fatal and non-permanent injuries and measurable results. Psychological traumas are not considered.

THE COST OF NON-FATAL INJURIES

Parameter	Georgia
Average monthly salary in mining sector in 2013	450
Total cost of a non-fatal injury in the mining sector	1065
Expected reduction of injuries per year (see the Table)	144 injuries
Discounted net profit due to the reduction of non-fatal injuries during a 30 year period	3 834 000

8.2 PROFIT GAINED FROM IMPROVED TRANSPARENCY

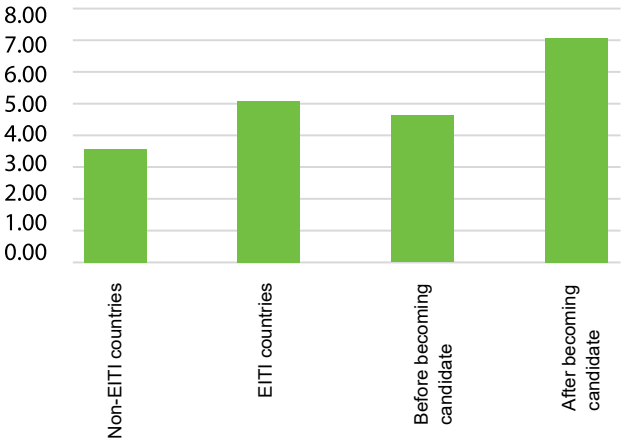
EITI requirements for transparency in the mining industry include (EITI, 2013):

1. *Effective oversight by the multi-stakeholder group.*
2. *Timely publication of EITI Reports.*
3. *EITI Reports that include contextual information about the extractive industries.*
4. *The production of comprehensive EITI Reports that include full government disclosure of extractive industry revenues, and disclosure of all material payments to government by oil, gas and mining companies.*
5. *A credible assurance process applying international standards.*
6. *EITI Reports that are comprehensible, actively promoted, publicly accessible, and contribute to public debate.*

According to EITI, transparency of the mining sector contributes to the improvement of relations between producer countries and international investors, increases the reputation of a company and ensures access to information for the general public and other stakeholders.

Such correlation is conditioned by the fact that becoming an EITI candidate works as a signal showing a willingness to reform. Investors recognize this as a signal of increased trustworthiness, which they reward by investing in the country.

AVERAGE ANNUAL FDI INFLOWS BY EITI STATUS. SOURCE: SCHMALJOHANN (2013)



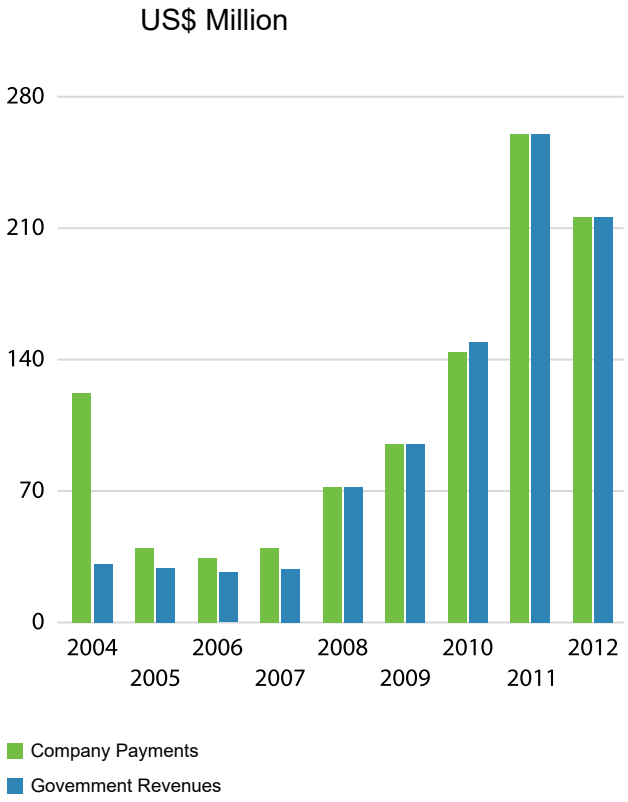
Georgia has an additional motivation of becoming an EITI member that is specified in the revised version of Directive 2004/109/EC and the EU-Georgia Association Agreement.

KYRGYZSTAN AND EITI

Mining industry plays an important role in the economy of Kyrgyzstan. However, the information on the contribution of the mining sector in the country's economy was not public for a long period of time. Kyrgyzstan started submitting report to

EITI in 2004 and became a member in 2011. The reports on payments prepared by companies in the first year strongly differed from the country reports on revenues from the mining sector. However this gap gradually decreased and almost disappeared by 2008. Perhaps, this should not be understood as the elimination of corruption. The initial difference could be caused by other reasons. If the reason was the movement of cash between companies and private persons, this form of corruption might have been changed into another to make it undetectable. Nevertheless, disclosure of revenues gives society and the public sector the opportunity to make the government and corporations accountable.

Note: The Diagram from the country profile on EITI website. URL: eiti.org/Kyrgyz republic.



8.2.1 COSTS OF IMPROVING THE TRANSPARENCY

To ensure the implementation of EITI requirements in practice personnel shall be trained. There are no studies related to the costs of the introduction and implementation of EITI requirements, however existing experience can serve as a guide for any EITI candidate that considers joining the initiative.

8.3. WASTE ROCKS, TAILINGS AND DUST GENERATION CONTROL

Possible negative effects of the mining industry on the environment were discussed in the previous chapters.. Below the positive effects of responsible mining on this problem will be described.

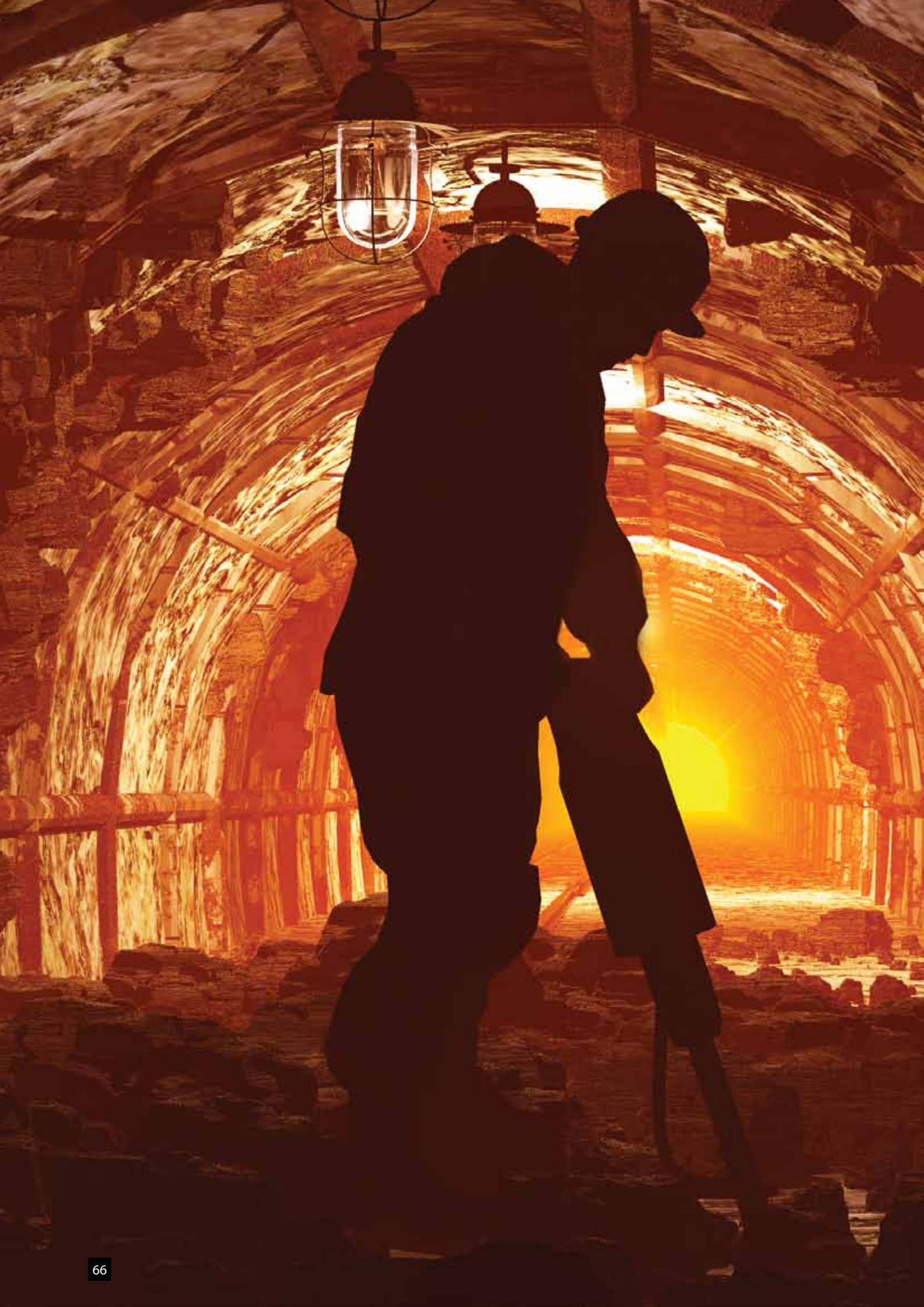
8.3.1 BENEFITS OF IMPROVED MINING WASTE MANAGEMENT

Statistical analysis of incidence rate in the mining regions of Georgia per 1000 inhabitants (2003-2011 years), revealed the following diseases at the local level such as: (Circulatory, respiratory, digestive and / urogenital diseases)

8.3.2 COSTS OF IMPROVING THE MANAGEMENT OF MINING WASTE

The costs of improving the management of waste rocks, tailings and dust generation depend on the standards to be applied and a number of other country specific factors such as the price of equipment and labour. However, approximate values can be obtained from international studies.

In 2001, a report on economic implications for the mining sector of implementing certain additional waste management measures in the EU and their impact on prices was developed for the EC. (Symonds & COWI, 2001). The study shows that a) waste management costs do not cause significant increase in total costs; and b) these costs do not have negative impact on the price of production and economic efficiency of businesses.



9. EXISTING PROBLEMS AND RECOMMENDATIONS

Currently the mining sector in Georgia faces the following problems:

- *Lack of policies, strategies and action plans ensuring sustainable development of the mining industry;*
- *Weak legislative basis and regulations;*
- *Ineffective environmental monitoring system;*
- *Weak interagency coordination/cooperation in environmental, cultural and social issues;*
- *Shortage of mining professionals in state agencies and mining businesses;*
- *Outdated or nonconforming equipment of mining companies.*

Recommendations developed on the basis of identified problems and challenges:

1. *The Government of Georgia to review international conventions related to mining and explore the possibilities of joining these conventions;*

2. *The Ministry of Environment and Natural Resources Protection to develop policy and strategic documents related to mineral resources management in cooperation with relevant sectoral ministries;*

3. *Establish environmental impact assessment system in the mining sector based on legislative changes;*

4. *Establish environmental and social safeguards in mining sector that are harmonized with the EU requirements and consistent with the relevant EU directives;*

5. *Clearly define license revocation conditions associated with environmental pollution and mining in the current regulatory base;*

6. *Develop an environmental (air, water, soil, waste management) monitoring system;*

7. *Ensure the publicity and accessibility of information on mining and its impacts on the natural and social environment through the development of appropriate mechanisms;*

8. *Develop an interagency cooperation mechanism to ensure the reduction of high risks posed by mining to the natural and social environment;*

9. *Introduce thematic courses on mining and mineral processing in curricula of universities and professional education institutions;*

10. *Mining companies to retrofit and upgrade equipment and technologies according to the best international practices.*

10. CONCLUSION

The present study shows that the legislative and executive authorities of Georgia are facing challenges that need to be addressed in a way that balances the EU requirements and standards on the one hand, and facilitates the development of this industry and the growth of state revenues and employment on the other.

Carrying out reforms consistent with the best international mining practices will ensure a safe working environment for miners, the protection of human life and the environment on mining sites and adjacent areas, increased investments and the stable socio-economic growth of the country. All these will have a positive effect on the international image of the country and the prospects for its future dedevelopment.

CENN - Georgia

Head Office
27, Betlemi Str.
0105, Tbilisi
t +995 32 275 19 03/04
f +995 32 275 19 05
info@cenn.org
www.cenn.org

CENN - Armenia

16, Head Office
20025, Yerevan
t +374 10 57 57 79
f +374 10 57 57 79
info.armenia@cenn.org

CENN - Azerbaijan

124/128, Gara Garaev Ave.
AZ1119, Baku
t +994 12 439 41 13
f +994 12 474 30 04
info.azerbaijan@cenn.org