

# Earth Observation for Monitoring and Observing Environmental and Societal Impacts of Mineral Resources Exploration and Exploitation

Project no: 244242, call 2009, Theme 6, Topic ENV.2009.4.1.3.2

## Corporate Policies in a Mineral Extraction Context

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Public document

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Final Report (updated)  
08 March, 2012

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**Deliverable reference number and title**

EO-MINERS D1.1-1

**Corporate Policies in a Mineral Extraction Context**

<b>Due date of Deliverable</b>	<b>07.2010</b>
<b>Actual Submission Date</b>	<b>28.04.2011 (updated 08.03.12)</b>
<b>Start Date of Project</b>	<b>01.02.2010</b>
<b>Duration</b>	<b>36 months</b>
<b>Deliverable Lead Contractor</b>	<b>UVSQ</b>
Revision	Version 6
Last Modifications	08.03.2012
<b>Nature</b>	<b>Report</b>
<b>Dissemination level</b>	<b>General</b>
<b>Public Summary enclosed</b>	<b>YES</b>
Reference / Workpackage	DoW WP1
Digital File Name	

<b>Keywords:</b>	Mining, mineral extraction, stakeholders, corporate social responsibility, earth observation, environmental impacts, social impacts
<b>In bibliography, this report should be cited as follows:</b>	FALCK, W. E., REICHEL, V., ZELENKOVÁ, K., HANISE, B., KYLYCHBAEV, E. (2011): Corporate Policies in a Mineral Extraction Context.- Earth Observation for Monitoring and Observing Environmental and Societal Impacts of Mineral Resources Exploration and Exploitation, CEC FP7 Project EO-MINERS, Deliverable D1.1-1, 57 p.

## Summary

This report reviews the driving forces behind societal and environmental issues associated with mining projects. Mining companies facing such issues will develop policies to deal with such issues and for relating to stakeholders. Depending on the prevalent governance paradigm that is being followed, these relationships can range from confrontational to collaborative. The way how mining companies address environmental issues are not only determined by the local situation or the regulatory framework at the various levels, but also by the way how mining companies place themselves into the world-wide context. Mining companies increasingly adopt corporate responsibility in both, the societal and environmental realm, as a guidance for their actions.

Based on this overview the corporate environmental and societal policies are analysed at the three study sites of the EO-MINERS project in the Czech Republic, Kyrgyzstan and South Africa. It was noted that corporate policies strongly reflect the corporate setting, i.e. whether the corporation operates more locally or globally. Corporate policies also reflect local traditions. In the Czech case the mining company is locally owned and operates on a regional level, resulting in strong ties with the local communities. In the Kyrgyz case the headquarters are in the country's capital, while in the South African case the headquarters are located in Europe and there appears to be a more detached relationship between corporation and other local or regional stakeholders.

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**Appendix:** List of relevant corporate stakeholders



# 1. Task Description

EO-MINERS (<http://www.eo-miners.eu/>) project Work Package (WP) 1 proposes to identify, evaluate and select different types of indicators that support analyses of environmental and social impacts related to mineral extraction. For the selection of applicable Earth Observation techniques, WP1 will identify and analyse policies related to the footprint of mining industries, at corporate, regulatory authority and civil society level (Task 1). Information requirements will be derived and appropriate indicators assessed and selected for all three levels, covering both social and environmental indicators of corporate sustainability reporting and macro-economic indicators for governmental policy-making (Task 2). The results of the analyses in Task 1 and 2 will define the demand for the development and application of Earth Observation services by the European Technology Platform on Sustainable Mineral Resources and thus frame the work in WP 2, 3 and 4. In a final iteration loop, the response to the tested Earth Observation services will be analysed in Task 3.

Concerning sustainable mineral resource use, a variety of stakeholders at different governance levels (from local to global level) can be identified. Their policies (or strategies) have different objectives that potentially can be supported by EO services. Hence, in a first step such policies and strategies related to mining activities at three different levels will be reviewed in order to identify core concerns.

The present report is concerned with the policies of mining companies and associations, for instance in the context of Corporate Social Responsibility (CSR). The analysis will be limited to aspects of exploration, exploitation and processing of raw materials. The industry codes and their external verification tackling the issues of credibility and accountability will be evaluated.

In order to address these issues a set of tasks was developed, comprising

1. Draw up a catalogue of the more important topical areas for formal corporate policies;
2. Identify the driver behind these topical areas;
3. Identify the typical mechanism for developing corporate policies, including the involvement of stakeholders;
4. Analysis of corporations' size, nationality, ore exploited vs. the type of policies adopted;
5. Analyse whether mining/milling operators take a cradle-to-grave approach (life-cycle management concept) to their operations and how this is reflected in the corporate policies
6. In particular, corporate policies with respect to the long-term management (stewardship) of mining sites, if needed, will be analysed.
7. Identification of the relevant stakeholders for the case study sites.

It should be noted that while the project is primarily concerned with 'mining', the mining activities are typically so closely intertwined with the subsequent processing activities, both from a spatial and a process point of view, that a separation of these activities would be missing important aspects. For instance, mining and milling wastes and residues are often managed at the same disposal sites, or fly-ash from power generation is backfilled into the mine from where the coal came. From a methodological point of view the system considered should be delimited by the marketable product that is shipped off site.

## 2. Introduction

### 2.1. WHAT ARE CORPORATE POLICIES ?

This introductory section tries to capture the term *Corporate Policy* in general. The definition of *Corporate Policy* in application to the mining sector will be based on the main industry codes, that will be discussed in the following, and the corporate social responsibility (CSR) reports for the companies selected as case studies, i.e. for the relevant parts of Anglo American, South Africa, Sokolovská uhelná, Czech Republic, Kyrgyzaltyn, Kyrgyz Republic.

Corporate policies existed since corporations or companies existed. They traditionally pertain to the company objectives, try to contain or avert business and other types of risks that may threaten the fulfillment of these objectives and also reflect ethical convictions or personal whims or the owners/shareholders of the company in question. The coverage may range from trivia, such as that at one time all IBM employees were permitted to wear white shirts only, to statements on corporate social responsibility (environment, employees well being etc.), to statements on admissible financial risks. Corporate policies may be stated explicitly, being formal, or may be tacit, informal. Within the applicable legal framework of a country, there may be various means to enforce corporate policies by varying levels of sanctions. Corporate policies in general are an instrument to ensure the coherent action of all internal stakeholders, i.e. all management levels as well as employees. Corporate policies, on the other hand and when published, are also a tool for communication with external stakeholders. When message and action are coherent, corporate policies are a powerful means to built trust between different groups of stakeholders, both internal and external. This implies that action and message should be coherent, or otherwise trust will be lost rapidly.

The mining sector is a particular interesting field with respect to corporate policies. Mines have a long tradition of setting specific corporate policies, namely with respect to health and safety issues, but also with respect to business protection and social aspects. Some mines are early examples of CSR, the mine owners having created a comprehensive set of infrastructure. Conversely, there are also numerous examples, where CSR has been completely perverted, resulting practically in bondage or serfdom of the miners by forcing them into debt e.g. by exaggerated prices for daily necessities in company stores etc.

In the first part, we explore the economic, social, environmental and supply chain stakes of the mining industry in a narrative form. These stakes provide a frame for the understanding of the development of CSR policies in the mining sector because they have driven their formalisation.

### 2.2. BETWEEN GIFT AND CURSE: MINERAL RESOURCE EXPLOITATION AND THE ECONOMY

Natural resources are goods not producible by men (FAUCHEUX & NOËL, 1995). Two factors distinguish natural resources. First, they can either be renewable (water, wood, air etc.), or non-renewable (the majority of mineral resources) on a human time-scale. Second, one can differentiate resources freely accessible (e.g. air) from resources that have restricted access and defined ownership, hence are marketable. The following discussion is related to marketable resources only, but some of the relevant corporate policies also respond to legislation addressing the degradation of free resources, namely air emission legislation.

The role of marketable resources for the development of a country has produced hot disputes in the scientific community for more than half a century (PEDRO, 2004; Final report

STEVENS, 2003; WORLD BANK & INTERNATIONAL FINANCE CORPORATION, 2002). Although economists in the 1950s and 1960s considered that abundance in natural resources generally facilitates the fast development of a country, in the past two decades others came to the conclusion that resources appeared to hinder 'good' development. In the current literature on the subject the argument continues between, on the one hand, the partisans of the idea, that countries that are rich in natural resources have less chances to economically develop, than those that have none (SACHS & WARNER, 2001; AUTY, 2001; MIKESSELL, 1997) and, on the other hand, the defenders of the theory saying that natural resources are a gift with a potential to stimulate growth (DAVIS & TILTON, 2002; STINJS, 2005; GOODLAND, 2002). However, these observations have to be seen in the context of the historical development as well as the current governance and other situations of socio-political relevance. It may be noted that historically, the particularly well-developed European and North American countries had economies that were based on the exploitation of natural mineral resources. When these resources became exhausted or when labour in these countries became too expensive, mining focused onto less developed countries or colonies. This report is not the place to discuss the historical and socio-political reasons why in the post-colonial era these countries did not develop in the same way as the 'developed' countries. It can be observed, however, that some of the major producers of mineral commodities and countries for which minerals make up the majority of the export value remain among the poorest countries (Table 2.1).

**Table 2.1:** Mineral dependence and poverty rates, selected countries in 1990s (SAMPAT, 2003).

Country	Share of non-fuel minerals in value of total export [%]	Population below poverty line [%]
Guinea	71	40
Niger	67	63
Zambia	66	86
Jamaica	53	34
Chile	43	21
Peru	40	49
Dem. Rep. of Congo	40	n.a.
Mauritania	40	57
Papua New Guinea	35	n.a.
Togo	30	32

### 2.3. AN ACTIVITY LINKED TO SIGNIFICANT ENVIRONMENTAL STAKES AND RISKS

Mining activities are associated with a high number of environmental stakes that can be classified into five categories: the consumption of products and resources, the generation of wastes, pressures on the environment, the risks of pollution and the risk of industrial accidents. Table 2.2 lists a few examples of mining activities and associated environmental impacts.

**Table 2.2:** Selected examples of mining-related environmental impacts and pollution risks (SAMPAT, 2003).

Impact	Example	Details
<b>Biodiversity loss</b>	Okapi Reserve and Kahuzi-Biega National Park (DR of Kongo)	Coltan mining (used to make capacitors for electronics equipment) has resulted in an 80-90% decline in the population of the eastern lowland gorilla of which only 3000 remain.
<b>Water pollution</b>	Ok Tedi river (Papua New Guinea)	On average, 200 t of contaminated tailings and waste rock are dumped each day into the river that feeds into the Fly River. This has silted up the two rivers to levels four or five times above normal, flooding nearby villages and killing off plant life in a 2000 km <sup>2</sup> area near the river basin.
<b>Air pollution</b>	Norilsk nickel smelter (Russian Federation)	The smelter is the country's largest source of sulphur dioxide and other air pollutants that have destroyed an estimated 3500 km <sup>2</sup> of forest and harmed the health of local residents.
<b>Water use</b>	Gold mines (NE Nevada, USA)	Mines in the Nevadan desert pumped out more than 2.2x10 <sup>9</sup> m <sup>3</sup> of groundwater between 1986 and 2000 – as much as New York City uses each year.

**Consumption of products and resources.** Beneath the intrinsic characteristic that is to extract non-renewable resources from underground, mining operations are also consuming other types of resources and products. They may demand notable quantities of water and energy, either during the primary extraction step or during subsequent milling and other refining steps. Some studies estimate that the mining sector consumes between 4 and 7 % of the world's energy production (RABAGO *et al.*, 2001). Milling process may also require large quantities of process chemicals, the production of which can have environmental impacts, that themselves can be harmful to the environment or to mine/mill workers and to the local population and livestock when accidentally released, or that result in harmful process residues that need to be adequately managed to prevent environmental impacts.

**Generation of wastes.** In their different phases of exploitation mining activities produce waste in the form of barren rock (overburden, excavated material), below-grade ores/coal (including high-sulfur coal or lignite), milling residues such as tailings, smelting slag, neutralisation slurries, or fly-ashes, and possibly large quantities of drainage waters that need to be adequately managed to prevent environmental impacts and geotechnical hazards. The ratio between mining wastes generated and actual product (e.g. metal, coal) produced varies considerably. As Table 2.3 indicates this ratio is particularly high for rare and precious metals, but lower for many base metals and other commodities, such as coal. It should be noted that the quantity of waste is not the only criterion, but also its composition and manageability – and how well they are managed in reality.

**Table 2.3:** Wastes generated by mining for selected metals in 2000 (SAMPAT, 2003).

Metal	Waste generated [10 <sup>6</sup> t]	Metal produced [10 <sup>6</sup> t]	% of metal vs. total material extracted
<b>Iron</b>	2 113	845	40
<b>Copper</b>	1 648	15	0.91
<b>Aluminium</b>	104	24	19
<b>Gold</b>	745	0.0025	0.00033
<b>Lead</b>	260	7	2.5

**Pressures on the environment.** The most obvious pressure on environmental goods and services caused by mining activities is the footprint of its sites, which includes the mine infrastructure, haulage roads, open-cast mines, sites for stocking ore/coal and overburden and, most notably, disposal of wastes and process residues. Depending on the mining method, in many cases excavated material is not backfilled into the mine again. The reasons can range from purely economical to safety related, as it may be hazardous to re-enter into old tunnels or shafts. Hence, sites for the disposal of overburden/barren rock, below-grade material, wastes and process residues remain permanent features of the landscape. During the operational phase of a mine's life-cycle adequate engineering designs and their proper implementation limit environmental impacts other than the consumption of space. However, measures have to be put into place to ensure this beyond the active phase of a mine or mill (see Section 2.5).

Among the environmental pressures potentially caused by mining activities are also indirect impacts on the biodiversity in the surrounding areas. Mine waste disposal sites and open-cast mining possibly turn natural habitats into sterile zones. Underground mines still consume large quantities of wood e.g. as mine props. If this demand is not supplied from adequately managed renewable forestry resources it can threaten primary forests (SAMPAT, 2003).

Mining, whether underground or open-cast, usually takes place below the water table and hence the mine workings need to be drained. Such, possibly large-scale, drainage operations have a profound effect on the surrounding aquifers, resulting in a significant draw-down. This in turn affects the accessibility of water resources e.g. for drinking water or irrigation, but also changes the hydrology of the surrounding environment. Thus, certain plant species may be unable to reach the groundwater table. The drained waters need to be discharged into surface water courses, but for some groundwaters this cannot be done without prior treatment owing to high mineral content or low pH-values (due to acid mine drainage). An additional problem arises for large-scale open-cast mines, such as the lignite mines in Germany or in the Czech Republic: the flooding of the residual hole in the ground requires decades so as not to further disturb the hydrological situation.

**Pollution risks.** For various types of mining and milling activities, particularly those in arid or semi-arid areas, a major concern is air-borne pollution. Dust generated by open pit mining, ore and overburden haulage, ore dressing and milling can affect plant staff and the surrounding community. Dust-borne contaminants, after settling on vegetation and soils, can become a source of secondary pollution, when they are washed into the groundwater, surface water courses or are taken up by plants. Mining and milling activities also lead to the emission of greenhouse gases: carbon dioxide due to the combustion of (fossil) fuels in plant and machinery, or methane that is contained in some deposits and that can be released through mining operations. Other types of pollutants may be also released during mining or milling. Some estimations claim the milling of non-ferrous mineral (e.g. copper) to be responsible for a yearly emission of 6 million tons of sulfur dioxide, which represents 8% of global emissions (UNEP, 2000).

Reduced sulfur minerals, i.e. sulfidic minerals, are ubiquitous and many economically important mineral resources are associated with them. Examples are copper, silver, nickel, and iron ores, as well as the different types of coal, such as hard-coal and lignite. When exposed to air or oxygenated waters due to the mining activities, these minerals will oxidise. The oxidation results in the production of acid. The resulting drainage waters are generally referred to Acid Mine Drainage (AMD) and are a major environmental concern (see INTERNATIONAL MINE WATER ASSOCIATION, <http://www.imwa.info/>). The very low pH-values can be a problem in themselves when drainage waters are to be discharged into surface water courses, but AMD often also contains elevated concentrations of heavy and other metals, or other compounds that have been dissolved from the surrounding rocks.

**Risks of industrial accidents.** Mining operations expose workers, surrounding populations and the environment in general to risks from industrial accidents, for example the collapse of underground mine workings, or the failure of (tailings) dams and other retaining structures with the resulting spillage of possibly contaminated materials.

#### **2.4. FROM EMPLOYMENT OPPORTUNITIES TO RISKS OF CONFLICT: SOCIAL STAKES ASSOCIATED WITH MINING**

Being an industrial activity closely linked to the area where it is undertaken, mining can be associated with major social stakes, both internal (employment opportunities, health and safety of workers) and external (modification/perturbation of traditional life styles and social structures, displacement of local population).

**Employment opportunities.** Even though the sector generates only few employment (phenomenon even reinforced by the progressive mechanisation of the operations), the opening of a mine creates some direct and indirect (subcontractors, suppliers etc.) job opportunities that may be filled locally. The scope and durability of these jobs obviously depend from the size and the life span of the mine. The jobs themselves often are well remunerated in comparison to the national average wage in industrial sectors.

**Health & safety of employees.** The advantages of relatively well remunerated mine jobs are justified by the miners' working conditions that are difficult (noise, dust, absence of natural light, geographical isolation of the sites, etc.) and dangerous due to accidents or professional diseases. Human resources are considered valuable assets due to the importance of experience of miners and their direct influence on productivity. The difficult and dangerous work conditions are the reason why health & safety are the oldest concern of mining associations.

**Infrastructure construction.** Dependent on its location and size, a mining site can involve the creation of new infrastructure to answer to the needs for industrial (construction of roads or railways for the transport of the mineral, access to energy etc.) and social infrastructures (schools, hospitals, housing etc.). Even though such infrastructure is initially designed for the mining activity and its employees, they can in some cases, benefit the whole local population.

**Perturbation of traditional life styles and social structures.** The presence of a mine can introduce new life styles and consumption patterns amongst the local population that disturb community life and cause the disappearance of traditional life styles. The attraction of the city and money are often the cause for a massive rural exodus that may lead to the creation of mining villages without adapted structures (encouraging shanty towns, unemployment, poor health conditions etc.)

**Displacement of population.** In some cases, dislocation of the local population is required in order to provide access to the mineral resource, for instance in the case of shallow coal seams that are exploited in open cast mines. As a result, the dislocated population can lose material and immaterial goods, such as dwellings, farmland, social structures, revenue sources, as well as access to traditional land, cultural resources and sites. These people risk unemployment and homelessness, to become marginalised and without food autonomy. Finally, they are confronted with the loss of cultural and traditional reference points (LAPALME, 2003).

## 2.5. LONG-TERM STEWARDSHIP ISSUES

Most mining activities result in permanent features, such as spoil heaps, below-grade ore piles, tailings ponds, or repositories for fly-ash and flue-gas desulfurization residues. As these structures are foreign to their surrounding landscape, they are likely to require some form of long-term care and maintenance to ensure, for instance, the stability of slopes or retaining dams and to prevent the dispersal of potential contaminants. The collection of processes and activities to this end are usually summarised in the term *Long-term Stewardship*. The notion of stewardship arises from the concept of life-cycle management that is increasingly seen as the paradigm for responsible mining and other industrial activities (Figure 2.1).

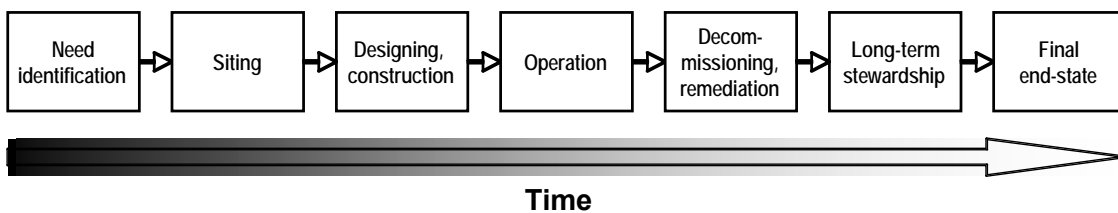


Figure 2.1: Generic life-cycle of an industrial facility (IAEA, 2006).

Figure 4 shows the generic life cycle of an industrial facility, such as a mine and associated milling plant. The early stages of the life-cycle consist of identifying the need for an activity site and selecting the site as well as designing, constructing and operating the nuclear facility. At the end of the operational phase, the site undergoes decommissioning and active remediation. Decommissioning involves actions such as decontamination, demolition and dismantling of buildings and equipment, and waste conditioning. During active remediation, engineered, physical and chemical measures (e.g. caps, liners, reactive barriers) are put into place to protect human health and the environment. In some countries, decommissioning and active remediation are considered as an integrated process. In these countries, the boundary between decommissioning and the onset of site remediation is blurred, and there might be different cycles of decommissioning and site remediation (IAEA, 2006).

Corporate policy may need to address the following questions:

- Is there an explicit policy to deal with any long-term legacy that may arise from the mining/milling operation ?
- What is planned concerning the long-term safety of mining and milling residues ?
- How can the affected areas be returned to other uses after mining and milling has ceased and the operation is decommissioned ?
- Who will be responsible for the long-term care and maintenance after the mining or milling operator has pulled out and how will these activities be financed ?
- How will long-term regulatory aspects be addressed, particularly vis-à-vis possible changes in the regulatory regime ?

It may be noted that for new mining and milling operations in Europe and North America most of the above questions will be addressed at the licensing stage and permission granted only when adequate securities, such as bonds, are provided. These securities are intended to ensure that even after failure of the mining or milling company adequate remediation and, if needed, long-term stewardship measures can be undertaken. However, a problem can be operations for which continuing operating licenses are granted, but that have not been forced previously to provide such securities. As legislation cannot be enforced in retrospective, often such measures had to be undertaken with public money and will continue so.

## 2.6. OTHER ISSUES SPECIFIC TO THE MINING SECTOR

There are a number of issues that are very specific to the mining and other type of extractive industries that are not so pronounced in other industrial sectors. These issues are closely linked to the particularities of the mining activity, where the existence of a natural resource determines the site and extent of a project (CHAMARET, 2007).

***Dependence on resources.*** The construction of a mine is linked to the existence of an exploitable mineral deposit. The presence of a deposit that is economically profitable to exploit is a non-negotiable asset that only depends on market situations. Investments to identify and exploit the deposit are so prohibitive that many mining companies are often able to exploit only one deposit at time (EPPS and BRETT, 2000). The importance of the local scale is therefore a typical specificity of the mining sector that requires an appropriate response on behalf of the companies.

***Remote locations.*** The dependency on a specific natural resource still drives mining companies to move to remote regions of the globe where infrastructure is absent and access to labour, water and energy may be difficult. In this case, the company may need to create, sometimes in partnership with public authorities, the infrastructures necessary to support the activity and its workforce including perhaps even miners' families. This type of situation is likely to lead to confusion between the role of the government authorities and the corporation from the beginning of the settlement.

Mining, sometimes being the only significant commercial activity in an isolated region, and its operator is likely to become the principal target for expectations and critics. Wrong expectations may arise within the community, for example along the lines of "If the company built a school in the beginning, why shouldn't it build another one for the children of the new settlers?", or "Why can't everybody use the services of the corporate hospital?". When unsatisfied, these expectations may make the company encounter (sometimes violent) opposition on behalf of the population. Criticism can arise because isolated activities have a higher visibility than when smothered in a dense industrial network. Impacts on the environment, for example contaminant discharges to the air or soil, do not stay undiscovered for a long time. The company must find an appropriate approach for addressing the challenges that the proximity with the local population produces. Transparency, communication and a responsible attitude are therefore necessary items of corporate policy.

***Multinational corporations in developing countries.*** More and more companies belonging to European, North American, Australian and increasingly also to Chinese corporations extend their activities to developing countries, where mineral resources are abundant and financial or regulatory constraints/pressures (in terms of environmental and social protection) appear to be less stringent (EPPS and BRETT, 2000). The confusion there between the role of the government and the corporation results from the fact that a transfer of resources by these governments to local communities is insufficient. This is aggravated by the current tendency to decentralise governmental function and responsibilities. Local and regional authorities may be rather inclined to share their responsibilities with mining corporations (GONZALES GUERRA, 2002). As a consequence, the companies often face a dilemma: Either they substitute for public responsibilities too extensively, thus risking excessive costs, or they do not do enough and consequently risk claims and dissatisfactions from the local population or stakeholders on the international level (NGOs and financing bodies).

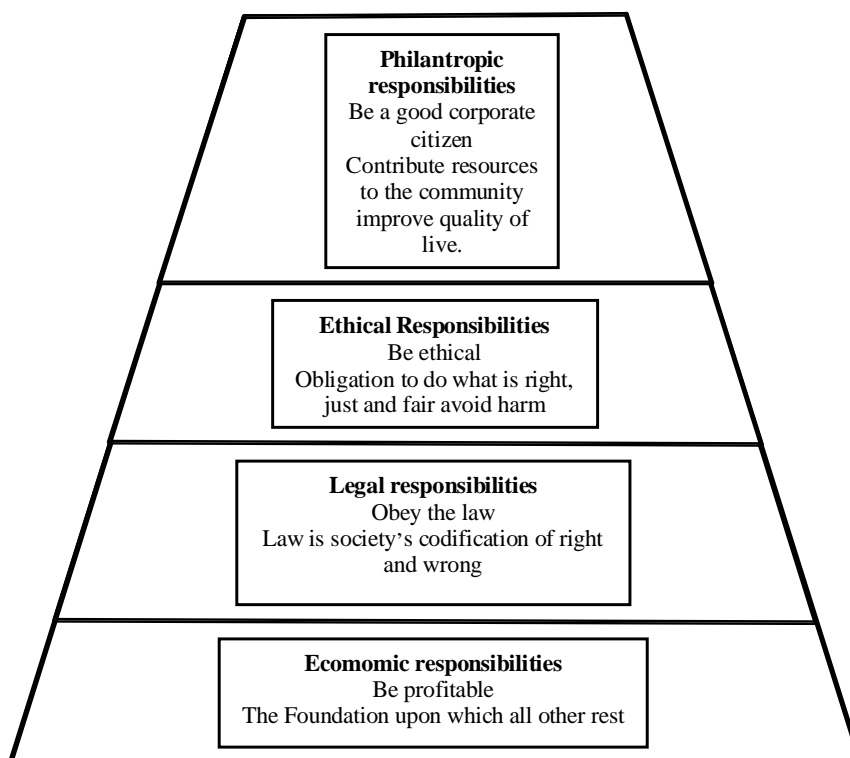


### 3. Driving forces behind corporate policies

#### 3.1. SUSTAINABILITY AND STAKEHOLDERS

This section discusses how and on what levels corporate policies are being developed. This question directly leads to the question of who are the formal and informal stakeholders in the mining sector. In order to better understand the role of these different stakeholders, they will be classified according to their role inside or outside of the mining company. With respect to the objectives of the EO-MINERS project, it is also interesting to know in what aspect of the mining operation the stakeholders may be interested in and what information needs, if any, they may have.

For its environmental sustainability performance, mining continues to draw the attention from a broad range of stakeholders, including shareholders, employees, non-governmental organisations (NGOs), financial institutions, and both, local and international communities. These stakeholders influence the performance of mining companies by impacting on licenses to operate, productivity, reputation, capital and operational expenditure, and access to capital. Mining companies, therefore, increasingly view environmental sustainability as a real and pressing business issue. (KPMG, 2006).

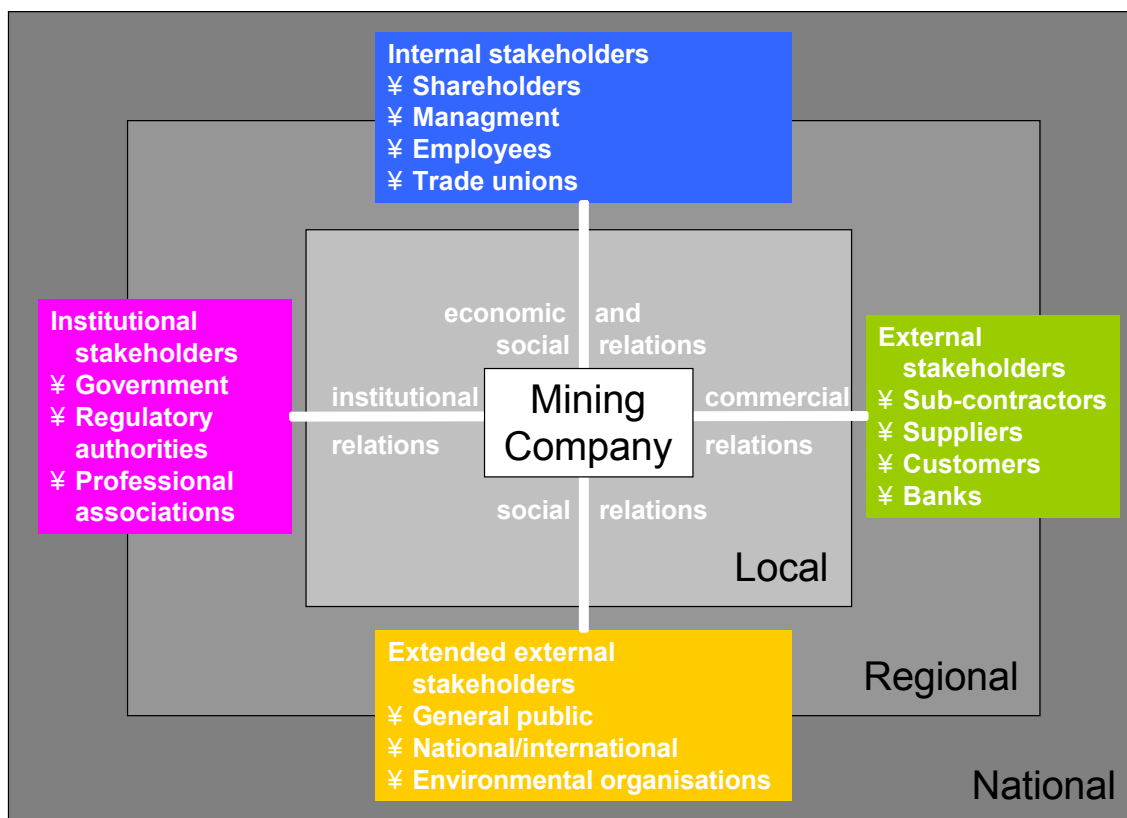


**Figure 3.1:** The definition of Corporate Social Responsibility (CARROLL, 1991)

Environmental sustainability thus is not only an ethical issue within a framework of Corporate Social Responsibility (CSR), but at the same time a legal and economic issue that needs to be considered by the corporation management. CARROLL (1991) distinguishes four kinds of social responsibility that contribute to the global definition of CSR: economic, legal ethical and philanthropic. This model is represented by a four level pyramid (Figure 3.1). Each of the levels has its foundations on the previous one, with a 'basic building block' notion. The first level of the pyramid is the economic

responsibility of the company that is “its principal role [i]s to produce goods and services ... to make an acceptable profit in the process”. Economic development and profit are seen as necessary conditions for CSR. The economic responsibility is directly in line with the economical perspective. The main issue might be to define what an ‘acceptable’ profit is and how it might be used within the company; different stakeholders may have differing views on this. The second responsibility is a legal one, namely the “business is expected to comply with the laws and regulations” as part of the ‘social contract’. While the drivers for CSR actions on the first two levels are quite obvious, this is less clear for ethical and philanthropic ‘responsibilities’. The ethical framework within which a company operates very much depends on the local circumstances, though international corporations at least in theory usually subscribe to the Western world ethical paradigms. The motifs for this may be genuine, but the presentation of a particular company image vis-à-vis a wide variety of internal and external stakeholders in order to facilitate business can be an important driver. The same would apply to philanthropic actions. Apart from being a genuine altruistic and ‘patriarchal’ stance, philanthropic actions may also arise from a (sub)conscious sense of guilt e.g. for making large profits, over detrimental impact to the environment, etc. However, this is not the space to enter into a deeper discussion of the related socio-psychological reasons for altruism. Again, it may be also noted that seemingly altruistic actions may be indeed calculated to portray a certain corporate image.

The differentiation and definition of stakeholders is a much debated subject, as every single person can be a member of various stakeholder groups with sometimes diverging interests. Some authors (e.g., AZAPAGIC, 2004, RÉCOCHÉ, 2004) distinguish four main categories: internal stakeholders, institutional stakeholders, (traditional) external and extended external stakeholders. A graphical summary of these groups of stakeholders and their respective realms of interest is given in Figure 3.2.



**Figure 3.2:** The mining company and its stakeholders (FAUCHEUX *et al.* in CHAMARET, 2007).

### 3.2. INTERNAL STAKEHOLDERS

Internal stakeholders are those who represent a direct interest in the company: employees, trade unions/miners' associations, and shareholders.

**Employees.** The basic interest of the employees are their remuneration and favourable working conditions that allow in addition training and career development opportunities. More and more employees (generally the more qualified) are attentive to other aspects of their company's sustainability, and notably its environmental, social and ethical performance. As they typically live close to the mine, they often also share the concerns of the local population (if there is any), i.e. they also have a role as 'extended external' stakeholders. When they are not a 'migrant' workforce, that may stay at the mine only for certain (repeated) periods, but raise their family in the neighbourhood, their expectations are likely to relate to living conditions, for example sanitary conditions, educational opportunities and other development perspectives for their children. Senior staff, who may strongly depend on business performance related boni, may have an interest that is located somewhere between a 'common' employee and a shareholder.

**Trade unions/Miners' associations.** Depending on their purpose and form of organisation they can also have a dual rôle as internal and external stakeholders. Due to their long tradition that reaches well beyond the formation of trade unions in the late 19th century, in Europe at least the function of mine workers' association as trade union on one side and professional association on the other side tends to be somewhat blurred. Traditionally, miners' (and mining) associations have played an important rôle as self-regulating bodies concerned with safe working practices and workplace hygiene. As they may be organised on a national or even global level their interests may be determined by political agendas outside the mining company, but they may equally represent internal social stakes in the company, notably the equal treatment of employees, or hygiene and safety issues.

**Shareholders.** Naturally, shareholders' dividends have always been the most stimulating drivers of economic activity. Many mining companies, amongst them Anglo American, Rio Tinto and BHP Billiton, are listed at international stock markets. Some monetary funds have specialised in mining, for example the Merrill Lynch World Mining Trust, which reflects investors' concerns over the sometime high risks involved in developing new mines. Even though historically shareholders above all were interested in the financial return of their investment, some shareholders have become increasingly interested in sustainability issues related to their investments, though their weight is still quite minor.

### 3.3. TRADITIONAL EXTERNAL STAKEHOLDERS

This category of stakeholders can be identified as those partners of the company, who have a direct commercial importance for the firm: (sub-)contractors, suppliers, customers, financial institutions and insurers.

**(Sub-)contractors.** The modern mining industry strongly relies on (sub-)contractors and consultants for different aspects of its activity. The underlying reason is the business philosophy that companies should be less extensively horizontally integrated in order to increase operating leverage and to gain flexibility as supply contracts can be terminated more easily than company departments disbanded or re-organised in case of changing requirements or for reasons of economic performance. Outsourcing also displaces some of the commercial risks to contractors and consultants. Thus, concerned about the persistence of their involvement, the majority of (sub-)contractors

are interested in the economic performance and perspectives of the company they work for. In many cases one mining company can be the sole customer for a contractor or consultant so that their economic well-being is closely tied to that of the mining company. These one supplier-one customer relationships and their complex business/economic aspect cannot be analysed in detail here, but they may not necessarily follow the usual demand-supply patterns. For a relatively steady mine operation, as would be the case for coal/lignite mining operations of the study sites, the respective business volumes would be quite predictable and there would be little scope for growth on the side of contractors or consultants for instance.

Certain consultants can also be interested in extra-financial performances, whenever this forms part of their mission, for instance when they perform consultancy services in environmental matters, or in health and safety.

It may be noted in the context of the project EO-MINERS that the provision and management of earth observation data and other related services would be a typical domain of contractors or consultants.

**Suppliers.** The mining industry depends on a large number of suppliers for energy, tools and equipment, process material and other goods and services. Just as the (sub-) contractors, they are usually interested in the economic viability of the mining company and want to see their services paid and supply contracts maintained and, if possible extended. The amount of goods and services needed is more or less directly linked to the production volumes. For this reason and according to the demand-supply philosophy suppliers should have an interest in having this volume increased. This would be certainly true for larger and specialised investment goods, such as plant and machinery, that would be obtained on an international and competitive market. Various other goods and services, however, would be obtained on a limited local or regional market. Suppliers under such circumstances probably would orient their capacities by traditional demands with little scope for flexibility. As above for the contractors, a detailed analysis of the market mechanisms and their respective driving forces is beyond the scope of this report.

**Customers.** The direct buyers of mining products are usually producing or service companies and only to a smaller extent public bodies or private persons (e.g. for aggregate). From a general perspective, the main interest of customers is to acquire mining products at the lowest price possible in line with general business interest. Customer behaviour is usually not much influenced by concerns about the production circumstances, e.g. environmental impacts, workplace health and safety, social equity etc., although philosophies, such as 'fair' or 'clean' production take root at all levels of supply chains. One reason is that the supply chain of mineral products is long and end-consumers are little aware of the various production or conversion steps and their environmental or societal implications. Hence, the mining sector in general has been less exposed to collective actions by its end-consumers than other producing sectors. For instance, a person buying a gold ring is not normally thinking of the way the gold was mined. Nevertheless, extractive industries have a bad image in the public, though there may be a dichotomy in the behaviour of individuals as members of the public on one side and as consumers of products based on mining products. Some NGO initiatives (see report on WP 1.1-3) try to resolve this dichotomy, to raise the awareness of members of the public as consumers of mining-derived products of the related production process and in this way to influence consumer behaviour; examples are the 'No Dirty Gold' or the 'Kimberley Process' initiatives.

**Financial institutions.** Large-scale mining projects demand massive investments, on average between 700 million and 1 billion US\$ (GRIEG-GRAN, 2002). As a result, the sector is to a large extent dependent on financial institutions, public (such as the World

Bank, regional development banks or national government agencies providing export securities), as well as private ones (commercial banks and insurance companies). While again these institutions follow the paradigm of commercial viability, pressure by NGOs regarding not-integrated environmental and social costs has brought some institutions to re-thinking about their attitudes. An example is the Friends of the Earth campaign at the World Bank for an disinvestment mining projects that are seen as irresponsible. Another example is the development of guidelines and norms with the objective to minimise the negative social and environmental impact of the projects they finance, for instance the 'Equator Principles' for commercial banks. Notable developments in this sense can be observed in such institutions as:

- World Bank and its regional institutions
- International finance institutions
  - African Development Bank (ADB/BAD)
  - European Bank for Reconstruction and Development (EBRD/BERD)
  - International Bank for Reconstruction and Development (IBRD/BIRD)
  - International Finance Corporation (IFC/SFI)
  - Multi-lateral Investment Guarantee Agency (MIGA/AMGI)
  - Inter-American Development Bank (IADB/BID)
  - etc.
- National export credit agencies
- Commercial banks

### **3.4. EXTENDED EXTERNAL STAKEHOLDERS**

This category comprises civil society in general, e.g. the local community, as well as groups of organised members of civil society, namely Non-Governmental Organisations (NGOs). Extended external stakeholders can have influence on corporate policies in a wide variety of ways. Thus much of the reporting under the paradigm of CSR is done in response to local or even global pressure by extended external stakeholders. An important issue that to date has not satisfactorily been resolved is that of the legitimacy of organised stakeholders vis-à-vis claims of representation. It is natural and inherent that certain NGOs claim to represent the interest of civil society in general. However, the interests of local communities with respect to a mine site may be quite different from those of members of the civil society living far removed from the mine site and whose only (economic) connection with the site may be that they are (indirectly) customers. Globally operating NGOs are more likely to represent the interests of the latter groups and perhaps not so much these of the local civil society. Notwithstanding doubts of legitimacy of representation, many companies choose to respond to issues raised by the more removed extended external stakeholders, as this is seen to facilitate operations, e.g. by showing a 'green' image. Conversely, the report on Task 1.1-3 will analyse, how civil society and its organised forms, namely the NGOs, may shape their stance towards mining in general and mine sites in particular.

### **3.5. REGULATING BODIES**

Perhaps one of the most decisive drivers for corporate policies is the need to comply with regulations that may have been imposed at local, regional, national or international level. These regulations appear in various forms with resulting varying urgency for compliance. Typically, national legislation has an absolutely binding character and can be enforced by legal sanctions. Depending on a country's constitutional structure, regional legislation (e.g. provincial law) may attract the same level of sanctioning. At

lower levels of government, by-laws or similar legal instruments may regulate day-to-day practices in a mine operation. It will be normally company policy to obey the respective legislation, although how this is done in practice may be often a matter of negotiation between a company and the regulatory authorities. This scope for negotiation that is also present (and necessary) in most European countries and in North America, can be a point of temptation in areas with less resilient governance structures; negotiation can easily transgress into the realms of bribery and blackmail. This can be outright bribery in which members of the regulatory bodies are induced to not follow their legal duties in favour of personal gains. Personal gain does not necessarily be involved, but operators may offer some form of (environmental) compensation at some other place for (environmental) damages caused at a particular case because it is more convenient and less costly; member of a regulatory body may accept this route as less troublesome, although it may not be compatible with applicable legislation. Many more such scenarios could be envisaged.

International forms of regulation tend to have a less binding character and at best can only attract political or economic sanctions. The supranational European Commission Directives are a notable exception in this respect. They are to be transposed into national law and, therefore, also attract legal sanctions.

The list of relevant international conventions and supranational directives, most notably in the EU context, but also going beyond, may include:

- The EU Strategic Environmental Assessment (SEA) Directive (CEU, 2001)
- The EU Environmental Impact Assessment (EIA) Directive (CEU, 1997)
- The Aarhus Convention (UNECE, 1998)
- The The Espoo-Convention (UNECE, 2006)

An overview over the scope of these international conventions can be found for instance in ANDERSSON *et al.* (2008). Though being European in nature, these legal instruments reach beyond, as internationally companies incorporated within the European Union have to comply with these even for their operations outside the European Union.

A comprehensive treatment of public policies will be found in EO-MINERS Deliverable D1.2 (USUBIAGA *et al.*, in prep.). Briefly the rôle of different actors is described below.

**International Organisations.** They typically provide the secretariat for conventions and international agreements that fall within their technical or scientific scope. They may also provide guidelines for good practice or standards. Examples include the United Nations Economic Council for Europe (UNECE), the United Nations Environment Programme (UNEP), the International Atomic Energy Agency (IAEA), or the International Standards Organisation (ISO).

**Supra-national Organisations.** The most relevant organisation here is the European Commission that has binding legislative powers.

**National Governments.** These, above all, define the legal space in which mining companies have to operate on their respective territories. In addition to planning and building codes, (workplace/mining) health & safety standards, environmental and emission standards, many countries have specific mining codes, the roots of which may date back several centuries. National governments also shape the (economic) operating frameworks for the industry by political decisions that manifest themselves through imposing taxes or distributing subsidies.

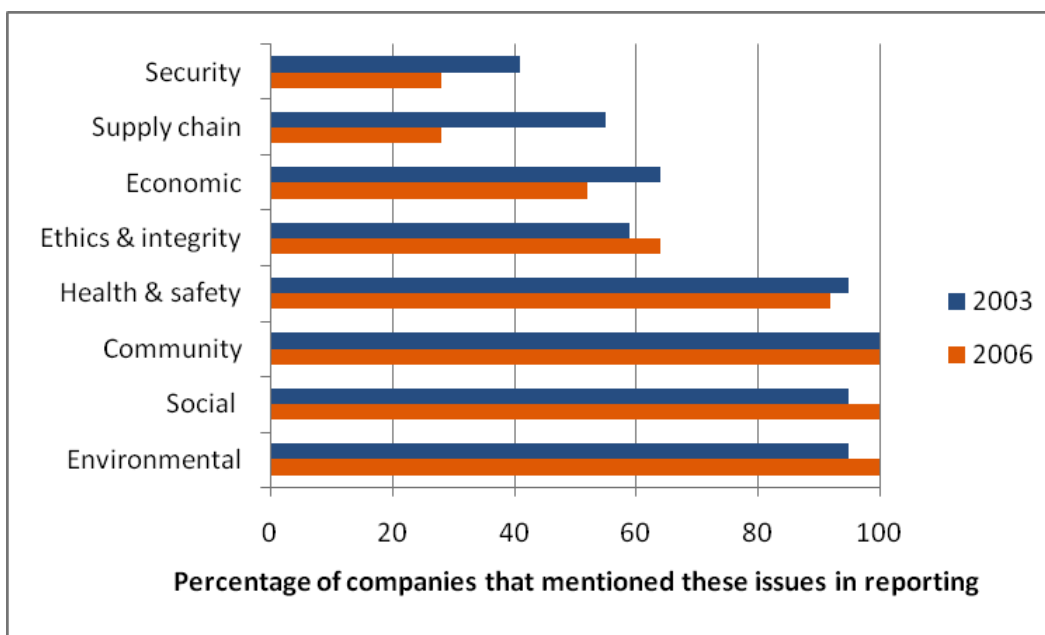
**Local/regional authorities.** They are usually the regulatory bodies most intimately involved with specific mine operations, as they usually monitor and enforce compliance with applicable legislation. Local authorities also have a direct regulatory rôle through planning permission processes that control land use. In addition local governments have a vested political interest in mining activities on their territories throughout their entire the life-cycle, as they provide the social back-stopping. They are interested in creating and maintaining employment, avoiding unemployment and social tensions, but also in protecting the local environment. Therefore, they usually have a vital interested in sustained and sustainable mining operations.

## 4. Response by the mining companies

### 4.1. CORPORATE SOCIAL RESPONSIBILITY REPORTING

The number of stakes presented in Section 2, define the key sustainability issues specifically affecting mining companies. Mining companies respond to these stakes through their corporate policies and the reporting on these policies. This section summarises the topical areas for CSR reporting by mining companies in general and also discusses the respective reporting by the mining companies selected for the case studies of the EO-MINERS project.

Surveys carried out by KPMG in 2003 and 2006 (KPMG, 2003 and 2006) illustrates the variety in focus of non-financial reports produced by mining companies. The graph below depicts the percentage of companies disclosing information on sustainability issues. The prevalence of certain topics covered by the reports appears to reflect the regulatory pressures to which mining companies have been subjected. The increase in reporting frequency is an indication of increased efforts made by companies to satisfy stakeholder requests for accountability and reporting on sustainable mining practices.



**Figure 4.1:** Focus of mining company reports on sustainability related issues (KPMG, 2003 and 2006).

#### 4.2. CORPORATION SIZE AND NATIONALITY VS. TYPE OF POLICY ADOPTED

The scale of operation, namely whether a company operates only on a local/regional scale, or on an international scale appears to have an influence on the type and quality of company policies adopted. International corporations appear to more likely make statements on their policies with respect to the environment, sustainability issues and corporate social responsibility in general than companies operating only locally. The location where a company is incorporated also makes a difference (Table 4.1). Factors influencing corporate policy and CSR reporting:

**Nationality:** There are considerable differences in corporate policy between companies registered in ‘developed’ countries, e.g. the European Union or OECD member states, and those registered in ‘developing’ countries or those with ‘emergent’ economies.

The credibility of sustainability reporting by a company is enhanced, if senior management shows a commitment to the company’s sustainability efforts. One of the most effective ways to demonstrate this is to ensure that the CEO statement, or equivalent, mentions the importance of sustainability issues. Of the companies surveyed (KPMG, 2006), 73% (2003: 38 percent) included sustainability content in the CEO’s statement, suggesting an increased focus by top-level management on the importance of sustainability for their companies. The following table shows a geographical analysis of companies that included a reference to sustainability in the CEO’s statement.

**Table 4.1:** Percentage of company CEO statements making reference to sustainability issues (KPMG, 2006)

Year	South Africa	Canada	United Kingdom	Australia	United States	BRIC*
2006	100	58	86	100	57	57
2003	71	23	49	83	43	8

\* Brazil, Russia, India, and China.

**Scope of operations (local versus international operator).** Mining companies may have local or international markets. In this context, a comparison between AngloAmerican, an international operating corporation, and Sokolovska Uhelná, a local company with regional (Karlovy Vary) and transborder (for some products, such as briquets) markets reveals some differences. First, whereas both have to deal with the local context of the mining activities, an internationally operating corporation is much more exposed to global drivers (green image, reputation, etc.). e.g. to the pressure of international stakeholders (international mining campaigns will rather address to big corporations). As a result, the access to information about AngloAmerican is easier than for that on the Czech company that mainly addresses a local market (for example only some limited information is available in a foreign, i.e. the English language).

Each mining site will have distinct features that are likely to shape the company’s corporate policy. Such features include (e.g. CHAMARET *et al.*, 2007):

**Geographical context.** The issues of a mining site located in a desert area (e.g. access to water) will differ from those of a mine in a forest area (deforestation); a mine close to a city will generate impacts different from those in an unpopulated area; issues of a mine in Africa will obviously differ from those of a European or Australian mine due to e.g. cultural differences.



**Infrastructure.** A mining town will generate major perturbations in the traditional ways of living, building and commerce; a fly-in fly-out system (for mine staff) generates more diffuse impacts, but less local economic benefits.

**Mining and milling technique.** An open-pit mine involves questions linked to landscape preservation and remediation, while underground mining will raise issues related to the future safety of the site in terms of e.g. subsidence. Mining and milling techniques determine the volume and properties of the residues that need to be disposed of in a way that ensures their long-term safety.

**Extracted materials.** Some extracted materials are essentially inert, while metal ore and coal/lignite mining and their waste dumps can cause problems with acid mine drainage (AMD) long after mining has ceased. In some instances and in particular at uranium mines radon releases from the mine or mine waste dumps can be of concern for the surrounding environment.

**Mine life-cycle phase.** The construction phase will not have the same socio-economic impacts (influx of staff, families and other people) as production (raise of the standard of living, etc.), or the post-mining phase (unemployment, staff conversion, out-migration).

#### 4.3. MINING STANDARDS AND REFERENCE FRAMEWORKS

The mining industry is probably among those industries with the longest history of corporate policies, particularly pertaining to health and safety issue, but also to environment related issues, particularly pertaining to water. Employing mainly a specialist workforce, mining companies operating underground mines since the Middle Ages tended to have strong corporate culture. This also reflected the need for responsible behaviour of the individual as well as the company as a whole to ensure safe operation on which its profitability strongly depended. In Europe company governance models tended to be strongly embedded in overall societal governance models, reflecting the fact that mining companies were strongly rooted within the surrounding societies. There are on the other hand many historic and current examples, where the workforce (and, of course, the environment) appears to be considered somewhat expendable.

National mining laws and codes of conducts that are mainly concerned with technical mine safety and workplace health and safety issues. In addition, a multitude of direct and indirect pressures from markets and a variety of stakeholders have led to mining companies voluntarily subscribing to codes of conduct and to seeking certification for compliance with various standards. External codes, no specifically pertaining to the mining industry, include the ISO 14000 family of standards (ISO, 2009) on environmental performance. There are also several voluntary reporting schemes to which companies or corporations subscribe and which are assessing companies' performance in various fields that pertain to 'sustainability' or social conduct. Other reporting and rating schemes focus on the business performance only. However, today a close link is seen between the two and the aim is to reduce business risk, by reducing all kinds of other risks.

The importance of this link is demonstrated by such information being increasingly included in company reporting. In 2006 information on companies' business principles, or codes of conduct, was included in 84% of the sustainability reports, while in 2003 only 59% did so (KPMG, 2006). Of these, 96% (2003: 50%) of companies referred to external codes, examples of which include the then versions of ISO 14001 (ISO, 2009), the International Council on Mining and Metals (ICMM) and the Global Reporting Initiative (GRI) joint Sustainability Reporting Guidelines (ICMM/GRI, 2010), the

Johannesburg Stock Exchange Socially Responsible Investment index (JSE, n.y.). The significant increase in references to external codes among those companies surveyed is a strong indication of the willingness of mining companies to apply a recognised framework to their sustainability assessment approach. (KPMG, 2006).

On the international level, national mining associations are grouped into the ICMM (<http://www.icmm.com/>) that also represents worldwide operating mining companies. The ICMM was established in 2001 to provide leadership towards an improved sustainable development performance in the mining, minerals and metals industry. As of March 2010, they bring together 19 of the largest mining and metal companies and 30 national and regional mining associations and global commodity associations. Central to improved performance is ICMM's sustainable development framework that consists of ten principles and was approved by its Council in May 2003 (ICMM, 2003). The principles identify the values and the policy directions that will help ensure that signatories continually improve the sustainability of their operations.

Further to the adoption of the ten principles, in 2004 ICMM developed public reporting indicators that were devised in partnership with the GRI for reporting performance against the ten principles. The outcome of this was the Mining and Metals Sector Supplement to the GRI, which was released in February 2005 and comprises relevant indicators that allow companies to track performance against the principles and GRI guidelines. An updated version was published this year (ICMM/GRI, 2010). In addition, during 2006, the Council approved ICMM's Assurance Procedure, which provides guidance on third party assurance over implementation of the ten principles and of the commitment to report 'in accordance with' the GRI reporting framework (ICMM, 2008).

The project Mining, Minerals and Sustainable Development (MMSD, 2002a), carried out by the International Institute for Environment and Development (IIED) and the World Business Council for Sustainable Development (WBCSD) was the most ambitious study yet undertaken on the role of minerals in sustainable development. Drawing on the project's two-year process of consultation and research, this report describes the minerals sector and its relationship with concepts of sustainable development, and offers an agenda for change for immediate and future actions. This global report is supplemented by several regional reports (MMSD, 2002b-e).

#### **4.4. THE MINING AND METALS SECTOR SUPPLEMENT TO THE GRI FRAMEWORK**

Due to the significance of the document in the mining sector, the topical areas of the third generation (3G) of the reporting framework Mining and Metals Sector Supplement to the GRI (ICMM/GRI, 2010) deserve closer examination. The five topical areas are economical, human, social, environmental and supply chain/product responsibility. Each topic is subdivided into issues and indicators.

A significant step in the evolution of sustainability reporting occurred in October 2006, with the publication of the third edition of the GRI's Sustainability Reporting Guidelines, referred to as the GRI G3. The GRI G3 builds on previous versions of the guidelines and is the outcome of three years of collaboration, research and development with stakeholders to create an improved framework (GRI, 2006). Table 4.2 details the criteria used in sustainability reporting.

One could argue, however, whether some of the criteria in GRI (2006/2010) belong to the realm of 'sustainability' or rather '(social-)politics'. The point here is that the companies' responses reflect tacit or explicit policies with respect to the issues addressed by these points.

**Table 4.2:** Criteria for sustainability reporting (GRI, 2006/2010).

1) ECONOMICAL
<p><b>Economic Performance</b></p> <ul style="list-style-type: none"> <li>• Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments. Commentary added on land use payments, and on the Extractive Industries Transparency Initiative (EITI).</li> <li>• Financial implications and other risks and opportunities for the organisation’s activities due to climate change.</li> <li>• Coverage of the organisation’s defined benefit plan obligations.</li> <li>• Significant financial assistance received from government.</li> </ul>
<p><b>Market Presence</b></p> <ul style="list-style-type: none"> <li>• Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation.</li> <li>• Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.</li> <li>• Procedures for local hiring and proportion of senior management and workforce hired from the local community at locations of significant operation. Commentary added to include proportion of local workforce as well as local management.</li> </ul>
<p><b>Indirect Economic Impacts</b></p> <ul style="list-style-type: none"> <li>• Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.</li> <li>• Understanding and describing significant indirect economic impacts, including the extent of impacts.</li> </ul>
2) ENVIRONMENTAL
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>• Materials used by weight or volume.</li> <li>• Percentage of materials used that are recycled input materials. Commentary added to clarify the scope of ‘scrap’ definitions.</li> </ul>
<p><b>Energy</b></p> <ul style="list-style-type: none"> <li>• Direct energy consumption by primary energy source.</li> <li>• Indirect energy consumption by primary source.</li> <li>• Energy saved due to conservation and efficiency improvements.</li> <li>• Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.</li> <li>• Initiatives to reduce indirect energy consumption and reductions achieved.</li> </ul>
<p><b>Water</b></p> <ul style="list-style-type: none"> <li>• Total water withdrawal by source.</li> <li>• Water sources significantly affected by withdrawal of water.</li> <li>• Percentage and total volume of water recycled and reused.</li> </ul>
<p><b>Biodiversity</b></p> <ul style="list-style-type: none"> <li>• Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.</li> <li>• Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.</li> <li>• Amount of land (owned or leased, and managed for production activities or extractive use) disturbed or remediated.</li> <li>• Habitats protected or restored.</li> <li>• Strategies, current actions, and future plans for managing impacts on biodiversity. Commentary added to describe the relevance of ecosystems services. Commentary added to compilation to invite reporting on ecosystems services and approaches. Definition added for ‘ecosystems services’.</li> </ul>

<ul style="list-style-type: none"> <li>• The number and percentage of total sites identified as requiring biodiversity management plans according to stated criteria and the number (percentage) of sites with plans in place.</li> <li>• Number of IUCN Red List species (IUCN, 2010) and national conservation list species with habitats in areas affected by operations, by level of extinction risk.</li> </ul>
<p><b>Emissions, Effluents, and Waste</b></p> <ul style="list-style-type: none"> <li>• Total direct and indirect greenhouse gas emissions by weight.</li> <li>• Other relevant indirect greenhouse gas emissions by weight.</li> <li>• Initiatives to reduce greenhouse gas emissions and reductions achieved.</li> <li>• Emissions of ozone-depleting substances by weight.</li> <li>• NO<sub>x</sub>, SO<sub>2</sub>, and other significant air emissions by type and weight.</li> <li>• Total water discharge by quality and destination.</li> <li>• Total weight of waste by type and disposal method.</li> <li>• Total amounts of overburden, rock, tailings, and sludges and their associated risks.</li> <li>• Total number and volume of significant spills.</li> <li>• Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.</li> <li>• Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organisation's discharges of water and runoff.</li> </ul>
<p><b>Products and Services</b></p> <ul style="list-style-type: none"> <li>• Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.</li> <li>• Percentage of products sold and their packaging materials that are reclaimed by category.</li> </ul>
<p><b>Compliance with laws and regulations</b></p> <ul style="list-style-type: none"> <li>• Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.</li> </ul>
<p><b>Transport</b></p> <ul style="list-style-type: none"> <li>• Significant environmental impacts of transporting products and other goods and materials used for the organisation's operations, and transporting members of the workforce.</li> </ul>
<p><b>Overall</b></p> <ul style="list-style-type: none"> <li>• Total environmental protection expenditures and investments by type.</li> </ul>
<p>3) SOCIAL</p>
<p><b>LABOUR PRACTICES &amp; DECENT WORK</b></p>
<p><b>Employment</b></p> <ul style="list-style-type: none"> <li>• Total workforce by employment type, employment contract, and region.</li> <li>• Total number and rate of employee turnover by age group, gender, and region.</li> <li>• Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations.</li> </ul>
<p><b>Labour/management relations</b></p> <ul style="list-style-type: none"> <li>• Percentage of employees covered by collective bargaining agreements.</li> <li>• Minimum notice period(s) regarding operational changes, including whether it is specified in collective agreements.</li> <li>• Number of strikes and lock-outs exceeding one week's duration, by country.</li> </ul>
<p><b>Occupational health and safety</b></p> <ul style="list-style-type: none"> <li>• Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs.</li> <li>• Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region. Commentary added under compilation to include a description of fatal accidents.</li> <li>• Education, training, counselling, prevention, and risk-control programmes in place to assist workforce members, their families, or community members regarding serious diseases.</li> </ul>

<ul style="list-style-type: none"> <li>• Health and safety topics covered in formal agreements with trade unions.</li> </ul>
<p><b>Training and education</b></p> <ul style="list-style-type: none"> <li>• Average hours of training per year per employee by employee category.</li> <li>• Programmes for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.</li> <li>• Percentage of employees receiving regular performance and career development reviews.</li> </ul>
<p><b>Diversity and equal opportunity</b></p> <ul style="list-style-type: none"> <li>• Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity.</li> <li>• Ratio of basic salary of men to women by employee category.</li> </ul>
<p><b>HUMAN RIGHTS</b></p>
<p><b>Investment and Procurement Practices</b></p> <ul style="list-style-type: none"> <li>• Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening.</li> <li>• Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken.</li> <li>• Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.</li> </ul>
<p><b>Non-discrimination</b></p> <ul style="list-style-type: none"> <li>• Total number of incidents of discrimination and actions taken.</li> </ul>
<p><b>Freedom of Association and Collective Bargaining</b></p> <ul style="list-style-type: none"> <li>• Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights. Commentary added under compilation to report how freedom of association policy is implemented.</li> </ul>
<p><b>Child Labour</b></p> <ul style="list-style-type: none"> <li>• Operations identified as having significant risk for incidents of child labour, and measures taken to contribute to the elimination of child labour.</li> </ul>
<p><b>Prevention of Forced and Compulsory Labour</b></p> <ul style="list-style-type: none"> <li>• Operations identified as having significant risk for incidents of forced or compulsory labour, and measures to contribute to the elimination of forced or compulsory labour.</li> </ul>
<p><b>Security Practices</b></p> <ul style="list-style-type: none"> <li>• Percentage of security personnel trained in the organisation’s policies or procedures concerning aspects of human rights that are relevant to operations.</li> </ul>
<p><b>Indigenous Rights</b></p> <ul style="list-style-type: none"> <li>• Total number of operations taking place in or adjacent to Indigenous Peoples’ territories, and number and percentage of operations or sites where there are formal agreements with Indigenous Peoples’ communities.</li> <li>• Total number of incidents of violations involving rights of indigenous people and actions taken.</li> </ul>
<p><b>SOCIETY</b></p>
<p><b>Community</b></p> <ul style="list-style-type: none"> <li>• Nature, scope, and effectiveness of any programmes and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting. Commentary added to describe the relevance of community engagement processes. Commentary to add further compilation considerations. Compilation added for reporting on social inclusion. Definition of ‘social inclusion’ added. Reference added.</li> <li>• Number and description of significant disputes relating to land use, customary rights of local communities and Indigenous Peoples.</li> <li>• The extent to which grievance mechanisms were used to resolve disputes relating to land use, customary rights of local communities and Indigenous Peoples, and the outcomes.</li> </ul>

<p><b>Artisanal and Small-Scale Mining</b></p> <ul style="list-style-type: none"> <li>• Number (and percentage) of company operating sites where artisanal and small-scale mining (ASM) takes place on, or adjacent to, the site; the associated risks and the actions taken to manage and mitigate these risks.</li> </ul>
<p><b>Resettlement</b></p> <ul style="list-style-type: none"> <li>• Sites where resettlements took place, the number of households resettled in each, and how their livelihoods were affected in the process.</li> </ul>
<p><b>Closure Planning</b></p> <ul style="list-style-type: none"> <li>• Number and percentage of operations with closure plans.</li> </ul>
<p><b>Corruption</b></p> <ul style="list-style-type: none"> <li>• Percentage and total number of business units analyzed for risks related to corruption.</li> <li>• Percentage of employees trained in organisation's anti-corruption policies and procedures</li> </ul>
<p><b>Public Policy</b></p> <ul style="list-style-type: none"> <li>• Public policy positions and participation in public policy development and lobbying.</li> <li>• Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country.</li> </ul>
<p><b>Anti-Competitive Behaviour</b></p> <ul style="list-style-type: none"> <li>• Total number of legal actions for anti-competitive Behaviour, anti-trust, and monopoly practices and their outcomes.</li> </ul>
<p><b>Compliance</b></p> <ul style="list-style-type: none"> <li>• Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.</li> <li>• Commentary added on judgments related to health, safety and labour laws.</li> </ul>
<p><b>PRODUCT RESPONSIBILITY</b></p>
<p><b>Materials Stewardship</b></p> <ul style="list-style-type: none"> <li>• Programmes and progress relating to materials stewardship.</li> </ul>
<p><b>Customer Health and Safety</b></p> <ul style="list-style-type: none"> <li>• Life-cycle stages in which health and safety impacts of products and services are assessed and percentage of products and services categories subject to such procedures.</li> <li>• Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes.</li> </ul>
<p><b>Product and Service Labeling</b></p> <ul style="list-style-type: none"> <li>• Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements.</li> <li>• Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.</li> <li>• Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.</li> </ul>
<p><b>Marketing Communication</b></p> <ul style="list-style-type: none"> <li>• Programmes for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.</li> <li>• Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes.</li> </ul>
<p><b>Customer Privacy</b></p> <ul style="list-style-type: none"> <li>• Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.</li> </ul>
<p><b>Compliance</b></p> <ul style="list-style-type: none"> <li>• Monetary value of significant fines for non-compliance with laws and regulations concerning</li> </ul>

the provision and use of products and services.

## 5. Corporate Policies at the Witbank Coalfields, Mpumalanga Province, South Africa

### 5.1. COPORATE SETTING

Anglo American plc is one of the global leading companies in the mining and natural resources sectors in the world. Anglo American has significant interests in gold (51% in Anglo Gold), platinum (71% Anglo Platinum), diamonds (through a 45% interest in De Beers), coal, base and ferrous metals, industrial minerals and forest products. This is operated through active subsidiaries, joint ventures and associates with operations in Africa, Europe, South and North America and Australia (ANGLO AMERICAN, 2010).

South Africa has the seventh-largest resource of recoverable coal reserves on the globe and is the world's fifth-largest producer of coal. In the South African coal mining industry Anglo American has a subsidiary ANGLO COAL and operates 10 mines. Seven of these mines are wholly owned by ANGLO AMERICAN plc. (ANGLO COAL) and in others such as Mafube colliery the shareholding is 50% and a 73% shareholding in ANGLO INYOSI COAL's Kriel and Zibulo mines (ANGLO AMERICAN, 2010). Table 5.1 gives an overview over the reserves in the mines of the Mpumalanga Province.

**Table 5.1:** Coal reserves in 2009 (ANGLO AMERICAN, 2010)

Product	Classification	ROM <sup>(1)</sup> tonnage [t]	CV/CSN <sup>(2)</sup> [kcal / kg]
<b><i>New Denmark</i></b>			
Domestic Power Coal	Proved	37.0	5090
	Probable	106.7	4940
	Total	143.7	4980
<b><i>Kriel</i></b>			
Domestic Power Coal	Proved	67.0	4790
	Probable	64.3	4500
	Total	131.3	4650
<b><i>Isibonelo</i></b>			
Domestic Power Synfuel	Proved	84.6	4560
	Probable		
	Total	84.6	4560
<b><i>Mafube</i></b>			
Export Thermal Coal	Proved	18.4	6300
	Probable	25.1	6280
	Total	43.5	6290
Domestic Power Coal	Proved	8.2	5450
	Probable	21.2	5081
	Total	29.4	5081
<b><i>New Vaal</i></b>			
Domestic Power Coal	Proved	404.0	3487
	Probable		
	Total	404.0	3487

(1) Coal Reserves are quoted on a Run Of Mine (ROM) reserve tonnage basis which represents the tonnes delivered to the plant.

(2) The coal quality for the Coal Reserves is quoted as either Calorific Value (CV) or Crucible Swell Number (CSN).

ANGLO COAL produces thermal, pulverised coal injection (PCI) and metallurgical coal for international export markets as well as domestic customers in the countries in which they operate. Thermal coal is supplied to electricity utilities for power generation, while PCI and metallurgical coal are provided to customers in the steel-making industry. ANGLO COAL also supply coal for the generation of synthetic fuels and its production in 2008 amounted to 99.5 million tonnes of coal, representing approximately 2% of global coal production. In early 2008, the government granted new order mining rights for all Anglo American South Africa operations. This was achieved as a result of the Group's progress in respect of black economic empowerment (ANGLO COAL, 2008).

Five of the ten active collieries are situated in the Witbank coalfields and supply 22 million tonnes of coal to both export and local markets per annum. Coal is exported through the Richards Bay Coal Terminal (the largest coal export port in the world) in which ANGLO COAL has a 27% interest (ANGLO AMERICAN, 2010).

For the local market, the New Vaal, New Denmark and Kriel (open cut and underground mine located near Bethal in East of Mpumalanga) mines are dedicated to supplying an annual 33 million tonnes of thermal coal to Eskom, which is the largest electricity provider in Africa. The Isibonelo colliery provides coal for Sasol with five million tonnes per annum for conversion into synthetic fuel (ANGLO AMERICAN, 2010).

The workforce comprises approximately 21,380 permanent employees and contractors (ANGLO COAL, 2008).

## 5.2. CORPORATE ENVIRONMENTAL POLICIES

Anglo American published in 2009 a document that outlines their corporate vision on the environment and for the policies that should lead towards this vision (ANGLO AMERICAN, 2009a,b). In this document, their CEO stated:

### ***Our vision***

The Anglo American Environmental Vision is to minimise harm to the environment by designing, operating and closing all of our operations in an environmentally responsible manner.

We believe that robust management of environmental issues is a fundamental element of good overall operational management, and a source of competitive advantage. Poor management of environmental issues is inconsistent with Anglo American's values and long-term business interests.

### ***Our principles***

Underpinning this Vision are three fundamental principles:

- Zero mindset: we shall apply the mitigation hierarchy of avoiding, minimising and mitigating environmental impacts arising from our activities, products and services;
- No repeats: all necessary steps will be taken to learn from environmental impacts, incidents, audit findings and other non-conformances, to prevent their recurrence; and
- Non-negotiable standards and rules: common, non-negotiable Environmental Performance Standards and Procedures shall be applied throughout the Group as a minimum requirement.

### ***Our policy***

We hold our leaders accountable for the environmental management of our activities.

We expect our line managers and supervisors to provide effective leadership in environmental management whilst recognising that environmental management is the responsibility of all who work for us.

Managers of every business or operation are responsible for the full implementation of the Anglo Environmental Management Framework and participation in the Anglo Assurance Programme. This requires:



- the allocation of appropriate resources and the provision of training, education, consultation and auditing to ensure compliance;
- the development, implementation and maintenance of environmental policies, programmes and procedures; and
- effective environmental impact identification, assessment and control, designed to achieve proactive management of our activities, products and services.

We shall conserve and protect environmental resources through, amongst others, the efficient use of energy and water, minimising waste and reducing pollution.

We shall demonstrate active stewardship of land, freshwater systems and biodiversity with which we interact.

We respect people’s culture and heritage.

We shall comply with environmental legislation and other requirements to which we subscribe, and develop a culture of continual improvement.

We commit to open communication with our employees, local communities, contractors, suppliers, investors, business partners and other interested third parties to encourage an environmentally responsible culture that reflects the intent of this policy.

Anglo American have documented their comprehensive set of policies, standards and commitments on their Web-site from which individual documents can be downloaded:

<http://www.angloamerican.com/aal/development/approach-and-policies/policies-standards-commitments/sustainable-development/>.

**Table 5.2:** Requirements relating to management topics as set by the Anglo American’s environmental Standards (ANGLO AMERICAN, 2009a)

Planning	Policy, leadership and commitment
	Administrative/ Project management
	Stakeholder engagement
	Environmental aspects
	Identification and selection of alternatives
	Environmental characterisation/ Description
	Legal and other requirements
	Scope
	Objectives and targets
	Risk/ Impact assessment
Implementation	Plan/ Design environmental programme(s) and operational controls
	Resources, roles, responsibility and authority
	Competence, training and awareness
	Communication and stakeholder engagement
	Implement environmental programme(s) and operational controls
Checking	Maintenance and inspections
	Emergency preparedness and response
	Monitoring and performance measurement
	Non-conformity, corrective action and prevention
	Records
	Reports
	Audits
	Reviews

### **Corporate environmental standards**

Anglo American has developed Principles and Policy, an Environmental Management System (EMS) Standard, a Social and Environmental Impact Assessment (S&EIA) Standard, and a number of Environmental Performance Standards that cover key management areas (e.g. water, air, biodiversity, etc.). These Standards are mandatory,

high-level requirements set at corporate level. They support the company's Environmental Vision, Principles and Policy, and outline the required approach to avoiding or minimising the potential adverse environmental impacts associated with its activities. The Standards are supported by detailed procedures and guidelines (ANGLO AMERICAN, 2009a).

Anglo American committed itself to managing its environmental aspects, impacts and risks through adherence to the internationally recognised ISO 14001:2004 EMS Standard (<http://www.iso.org/>). The Anglo EMS Standard contains some additional requirements that are designed to complement those contained in ISO 14001. The ISO 14001 clauses, to which the complementary requirements link, have been quoted in the EMS Standard so as to provide the context. ISO 14001 together with the Anglo EMS Standard provide the basis for the development, enhancement and application of comprehensive, integrated EMSs throughout the operations. The S&EIA Standard aims to ensure that all Anglo American projects proactively consider social and environmental matters in their planning and decision-making (Table 5.2; ANGLO AMERICAN, 2009a). Key environmental performance data are also reported on an annual basis (Table 5.3) and detailed below.

**Table 5.3:** Sustainable Development Data for selected collieries (ANGLO AMERICAN, 2010)

Attributes	2008	2009	Unit
<b><i>New Denmark</i></b>			
Total Energy Used	0.3	0.3	PJ
Land used by operations	3151	34308	ha
Water used for primary activities	809	715	1000 m <sup>3</sup>
<b><i>Kriel</i></b>			
Total Energy Used	0.3	0.7	PJ
Land used by operations	2480	16251	ha
Water used for primary activities	511	556	1000 m <sup>3</sup>
<b><i>Isibonelo</i></b>			
Total Energy Used	0.4	0.3	PJ
Land used by operations	764	2358	ha
Water used for primary activities	151	178	1000 m <sup>3</sup>
<b><i>Mafube</i></b>			
Total Energy Used	1.2	1.3	PJ
Land used by operations	2535	4694	ha
Water used for primary activities	1052	1282	1000 m <sup>3</sup>
<b><i>New Vaal</i></b>			
Total Energy Used	1.2	1.3	PJ
Land used by operations	2535	4694	ha
Water used for primary activities	1052	1282	1000 m <sup>3</sup>

*Note:* The total energy used is calculated from the electricity purchased, the energy generated from biomass and fossil fuels consumed. 1 petajoule (PJ) = 10<sup>15</sup> J.

### **Energy**

AngloCoal's total energy consumption for 2008 was 17.8 million gigajoules (GJ) or 186 mega joules (MJ) per saleable tonnes and is an increase of 27% on the energy consumption in 2007.

In South Africa, energy consumption was 98.9 MJ per saleable tonne against a target of 90.6 MJ per saleable tonne. This was due to an increase in energy usage, which was in the form of a national power crisis which affected production output added to that was a heavy rainfall in early 2007 which resulted in the switching of energy source from electricity to diesel.

ANGLO COAL initiated energy saving awareness campaigns which focused on energy efficiency technologies which was through the following activities, namely, the replacement of traditional lighting with more energy-efficient alternatives, occupancy sensors, day/night switches on dragline booms and the installation of variable speed drives and soft starters on conveyors.

Extensive monitoring on diesel use and compressed air management was undertaken. The monitoring was aimed at reducing energy consumption on the mining operations through the reduction of the AngloCoal's operation's Total Energy Used (TEU). The TEU is calculated from the electricity purchased, biomass, charcoal and fossil fuel consumed during the mining activities which included draglines, conveyor belt systems, ventilation fans, pumps and screens (ANGLO AMERICAN, 2010).

### **Water**

Security of water supply is of vital importance to ANGLO COAL and the local communities and countries in which it operates. In 2009, Anglo American consumed 125.3 million m<sup>3</sup> of water for primary activities. While this represents a relatively small year-on-year increase (cf. Table 5.2) it reflects the increase in business. On a like-for-like basis, Anglo American achieved six percent water saving between 2008 and 2009 through the continued implementation of its WaterWays programme, The WaterWays programme has provided the Group with a water vision and framework that outlines Anglo American's approach to managing water that practically involves the recycling and re-use of mining waste water for other mining and process-related activities, including dust suppression. The water saving initiatives are enhanced by a water performance standard that was formally launched in 2009 as part of the global Anglo Environment Way roll-out (ANGLO AMERICAN, 2010).

A common set of water reporting definitions has been implemented, and models for determining the true value of water, and understanding water balances, have been developed (ANGLO AMERICAN, 2010).

### **Land management, mine closure and remediation**

During the financial year 2007/08 ANGLO COAL had a total of 38,980 ha of land utilised for mining operations and all open-cast mine sites have in place remediation plans that are reviewed on an annual basis.

The remediation activities are planned and carried out by the ANGLO COAL Rehabilitation Improvement Group (ACRIG) and continues drafting an ANGLO COAL best practice guide for remediation. The ACRIG uses empirical research methods to design standards for, among others, remediation planning, equipment, soil handling, fertility and the re-establishment of vegetation. Research and development projects include studies on the optimisation of fertiliser applications, the planting of indigenous grass species on remediated areas, irrigation and soil compaction alleviation (ANGLO AMERICAN, 2010).

ANGLO COAL designed an internationally recognised tool to assist operations with strategic long-term mine-closure planning called the *Mine-Closure Toolbox*. The holistic nature of mine closure management is aimed at expanding the focus from financial provisioning for physical closure and remediation to planning for long-term sustainability by addressing complex socio-economic, physical and bio-physical challenges. The *Mine-Closure Toolbox* follows a structured approach to closure planning and covers three main themes namely, strategic planning, assessment of current status; and scheduling, resource allocation and budgeting to address identified gaps (ANGLO AMERICAN, 2010).

**Impacts on biodiversity.**

ANGLO COAL SOUTH AFRICA recognises that mining poses a potential to harm biodiversity, either by disturbing habitats or having a negative impact on air quality, land and local water sources in a country rich in biodiversity. The responsibility to minimise these negative impacts has been high on the company's agenda by the development and implementation of biodiversity action plan (BAP). The BAPs are created in line with local conservation and socio-economic priorities. These are identified through social and environmental impact assessments and address *inter alia* concerns such as the relationship between communities and natural systems and the potential impacts of resettlements (ANGLO AMERICAN, 2010).

At the New Vaal Colliery a biodiversity park has been created and is continually growing, and will soon be taking up an area of more than 1000 ha with an increasing amount of wildlife. Species already present include impala, springbok, zebra, red hartebeest, blue and black wildebeest, eland and duiker. The birdlife is prolific, and includes darters, cormorants, greater and lesser flamingo, red kestrels and there has been a recent sighting of a giant kingfisher. ANGLO COAL believes that conservation is the ideal building block for the creation of sustainability, as it attracts tourism, aids job creation, promotes environmental awareness, facilitates outreach programmes and conserves the South African natural heritage. The mine's vision for the future is that as the park grows in size it will be used to promote educational and recreational activities. There are plans to introduce game drives, establish a hiking trail and 4x4 routes (ANGLO AMERICAN, 2010).

**5.3. CORPORATE SOCIAL POLICIES****Social policy**

Anglo American plc's Socio-Economic Assessment Toolbox (SEAT) forms the centrepiece of the Group's management of social and community issues at existing operations (ANGLO AMERICAN, 2003). The SEAT process was developed by Anglo American, with support from the consultants. It was launched in 2003 and has subsequently been implemented at more than 55 operations (including forest plantations, paper mills, a sugar estate, smelters, mines, quarries and steelworks) in 16 countries worldwide. To date Anglo American has trained more than 350 personnel in the SEAT method and its application. The implementation of SEAT at Anglo operations has led to support for a range of social management initiatives, including education, training, community health, infrastructure and local enterprise development projects. SEAT has also led to improved management of social issues such as housing, transport, HIV/AIDS and recruitment (BSR, 2007).

Specifically, ANGLO COAL social policy seeks to ensure a workforce that is truly representative of South Africa's diverse population and by the end of 2009 46% of management positions were held by historically disadvantaged South Africans.

The representation of women at management level rose to 19% in December 2009, while overall proportion across South Africa of females in such positions is 13%. Considerable effort has been put into attracting, retaining and advancing women in all disciplines and at all levels of the company workforce. To this effect company has ensured that its operations are conducive to female employees and their needs in terms of physical and health aspects. Also included is a working culture that ensures women are treated with respect and consideration and the provision of a suitable workplace environment and facilities. The company has even opened a crèche on the mine property for the children of employees on a 24/7 basis to accommodate shift working mothers and is situated on mine property (ANGLO AMERICAN, 2010).

The company invests a considerable amount of resources into developing the skills of its employees through a set of standardised set of development programmes to complement business unit-specific initiatives. The learning and development

programmes are about ensuring competency, which is critical to the objective of working safely (ANGLO AMERICAN, 2010).

### ***Human Resource, learning and development***

Members of the workforce are able to improve their education at mine-based adult education and training facilities and computer centres. Employees and their dependants have the opportunity to broaden their future opportunities for employment at skills development centres that offer training on, among other things, sewing, beadwork, baking, welding and boiler-making.

ANGLO COAL also offers employees, contractors and members of local communities the opportunity to acquire literacy and numeracy skills through an adult-based education and training (ABET) programmes. Almost 6000 people are enrolled at the ABET centres across the country and about US\$1 million was allocated to education-related initiatives through ANGLO COAL corporate social investment expenditure.

There is also a programme on nurturing high school pupils in the eMalahleni (Witbank) community with the introduction of a supplementary school programme aimed at improving their competency levels in mathematics, physical science and the English language (ANGLO AMERICAN, 2010).

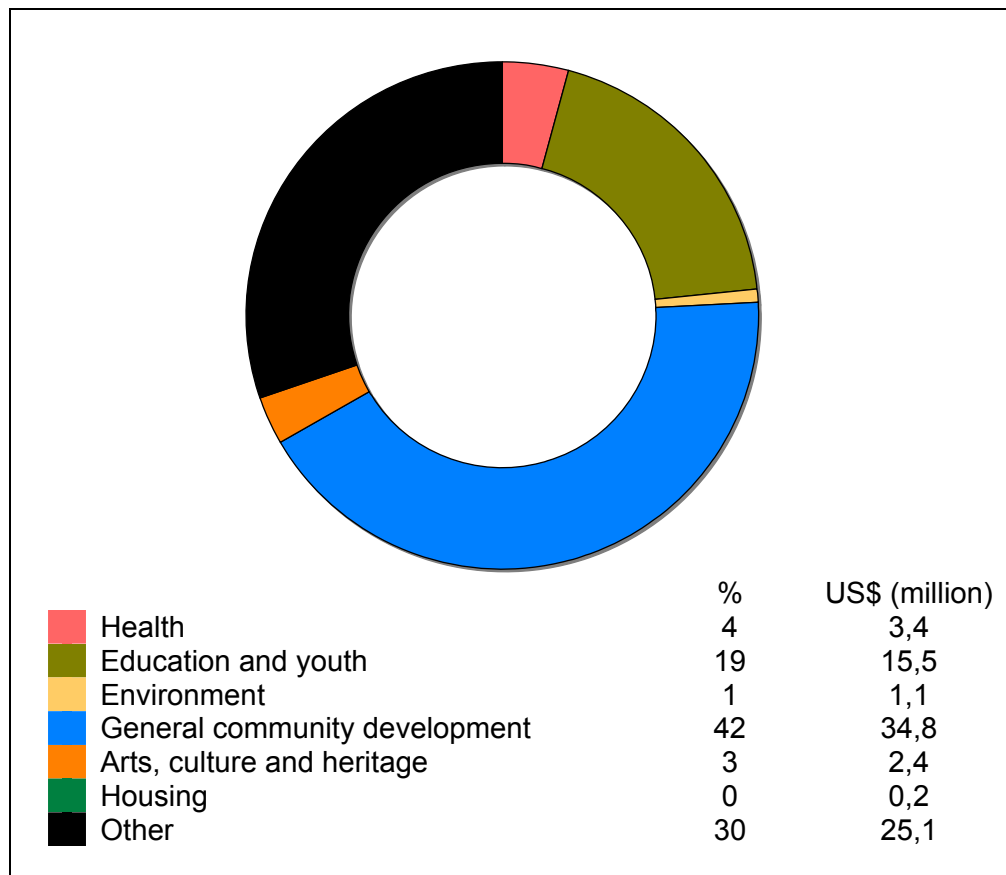
### ***Support to small businesses***

ANGLO COAL SOUTH AFRICA has launched four small business hubs that are aiding employment creation, poverty alleviation and black economic empowerment by stimulating the development of small enterprises in the communities that surround its operations. This programme is aimed at creating sustainable businesses outside ANGLO COAL's operation through an initiative by Anglo Zimele, ANGLO AMERICAN's 19-year-old empowerment and enterprise development arm. The aim was to ensure that, when mining operations in an area cease, local economies not only survive but thrive and be self sustainable. The small business hubs opened their doors to the communities of eMalahleni (Witbank), the Vaal area, Middelburg and Secunda in 2008 and have already contributed meaningfully to economic growth in these regions. The business hubs are staffed by personnel with extensive experience in business development and the Anglo Zimele Small Business program provides Small Business Start-up Funding in the form of loans. This is aimed at fledgling entrepreneurs with free hands-on advice on the day-to-day running of their businesses (ANGLO AMERICAN, 2008).

### ***Corporate Social Investment***

ANGLO COAL's CSI priorities include poverty alleviation, job creation, infrastructure development, education, healthcare and small enterprise development (Figure 5.1). These involve the construction of a clinic in the Steve Tshwete municipal area in Middelburg and established a community trust for Anglo Inyosi Coal. In South Africa, ANGLO COAL's CSI expenditure increased from US\$3.5 million in 2007 to US\$5 million in 2008 and the CSI programs are aligned with the Integrated Development Programmes (IDP) and Local Economic Development (LED) plans of the relevant municipalities. ANGLO COAL's community development staff members participate in IDP and LED fora and seminars when plans are formulated and they attend meetings when community needs are identified at provincial and local government level. About US\$4.8 million has been pledged by ANGLO COAL to the Emalahleni Local Municipality for the provision of bulk services that will be used for the relocation of people from shack dwellings to formal housing (ANGLO AMERICAN, 2008).

ANGLO COAL has an engagement social policy underpinned by the Universal Declaration for Human Rights (UNITED NATIONS, 1948) ascribing to the voluntary principles on Security and Human Rights and these reflect in their spheres of influence (ANGLO AMERICAN, 2008).



**Figure 5.1:** Corporate Social Investment in 2009 by cause supported (ANGLO AMERICAN, 2010).

The company’s commitment to enhancing positive impacts on its presence is evident by the generation of tools such as Socio-Economic Assessment Toolbox (SEAT; ANGLO AMERICAN, 2003) and the Exploration Safety, Health, Environment and Community (SHEC). Through these tools the company is able to ensure effectiveness in its stakeholder engagement processes and health and safety of its workforce and those around the mining activity (ANGLO AMERICAN, 2008).

Perception audits among key stakeholders are often conducted to evaluate and fine tune the company’s ways of community engagement. Through effective engagement programmes within the local communities and municipalities it is thus possible to direct focus towards:

- Supporting social development and educational projects;
- Providing job opportunities for local community members;
- Maintaining the high standard of professionalism; and
- Maintaining the ethics and honesty.

**Housing**

The South African Mining Charter requires mining companies to provide accommodation for its employees and to move about 50% of its employees from hostel accommodation to self-contained married and family units. A total of 93% of ANGLO COAL employees reside in self-contained housing with only 7% in hostel accommodation.

ANGLO COAL SOUTH AFRICA has established a housing committee comprising of employees, unions, local and regional municipalities, the Chamber of Mines, developers and management. These stakeholders meet frequently to discuss measures to improve the standard of company-provided housing. The company's housing department carries out all maintenance and upgrades and makes use of a tenant request system to expedite efficient attention to this work.

ANGLO COAL promotes home ownership with the long-term goal of meeting the Mining Charter's requirement that all employees live in sustainable human settlements by 2012. A housing project promotes home ownership by providing economical packages to employees on a willing-buyer-willing-seller basis. ANGLO COAL SOUTH AFRICA is also investing in infrastructure so that serviced stands can be released for residential development purposes. In urban areas such as Witbank and Middleburg in the Mpumalanga province new homes are being built for employees based at Mafube colliery and are for sale. In addition, plans are under way to make serviced stands owned by ANGLO COAL in the Clewer suburb of Witbank available for sale to employees (ANGLO AMERICAN, 2008).

### ***Migrant Labour***

ANGLO COAL's commitment is to uplifting the lives of the people who reside around the company's operations and far distant areas where labour is sourced. The number of migrant workers declined marginally from 6% in 2007 to 5.6%. These employees originate from Lesotho as well as South Africa's northern KwaZulu-Natal, Eastern Cape, eastern Mpumalanga and Limpopo provinces. ANGLO COAL has identified community development projects for implementation in these areas and provides migrant labourers with the necessary skills for survival after retirement (ANGLO AMERICAN, 2008).

### ***Resettlement and rural development***

Open-cast mine development may destroy farmland and may require the resettlement of rural populations. ANGLO COAL engages regularly with local people through quarterly community engagement fora, where socio-economic challenges are being addresses. During 2008 about US\$5.7 million was spent on projects that benefit local people.

Situation and needs analysis are being conducted using the SEAT processes for effective project implementation. The Kriel, New Denmark and Mafube, Goedehoop, New Vaal and Isibonelo collieries will complete the SEAT programme in 2010. These community engagements processes are revised every three years for implementation and are revised and updated annually (ANGLO AMERICAN, 2008).

For instance, in 2008 the Mafube colliery donated in more than 200 hectares of land to the Steve Tshwete local municipality (Mpumalanga province) for the establishment of a rural village for the resettlement of 450 families, who currently reside on commercial farms and land earmarked for future mining activities. A cornerstone of the project is that residents will become land and home owners for the first time and will be given registered title deeds. Houses will be provided with running water and the option for electricity. Great care has been taken to ensure that the resettled community is able to continue its traditional lifestyle in a suitable environment. Subsistence farmers, for example, will have access to land for the raising of livestock and the production of vegetables. Engagement with community members has been an integral part of the relocation process and the mine is ensuring that family living space is apportioned to maintain the traditional location of grandparents, parents and children within each family's domain. The homes are situated on an area of farmland that will allow for housing to be built not only by Mafube but by other mining companies that need to resettle communities. The mine has already given priority to the rural community when sourcing labour. The program is also aligned with the municipality's LED plan and in conjunction with the other businesses, the local authority and the relevant government

departments. Mafube colliery has committed to contributing to the building of a clinic and a multipurpose centre in the area (ANGLO AMERICAN, 2008).

## 6. Relevant Corporate Policies at the Sokolov Mine, Czech Republic

### 6.1. CORPORATE SETTING

SOKOLOVSKÁ UHELNÁ ([www.suas.cz](http://www.suas.cz)) operates in the Sokolov (<http://www.sokolov.cz>) area that is situated in the far West of the Czech Republic, in the Karlovy Vary Region (CZ041, NUTS 3, <http://en.wikipedia.org/wiki/NUTS:CZ>, Figure 6.1).

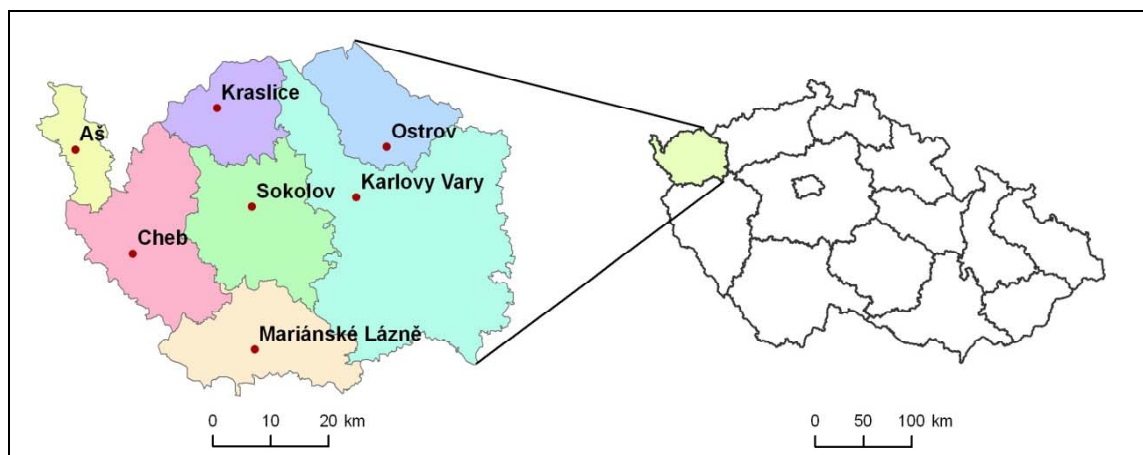
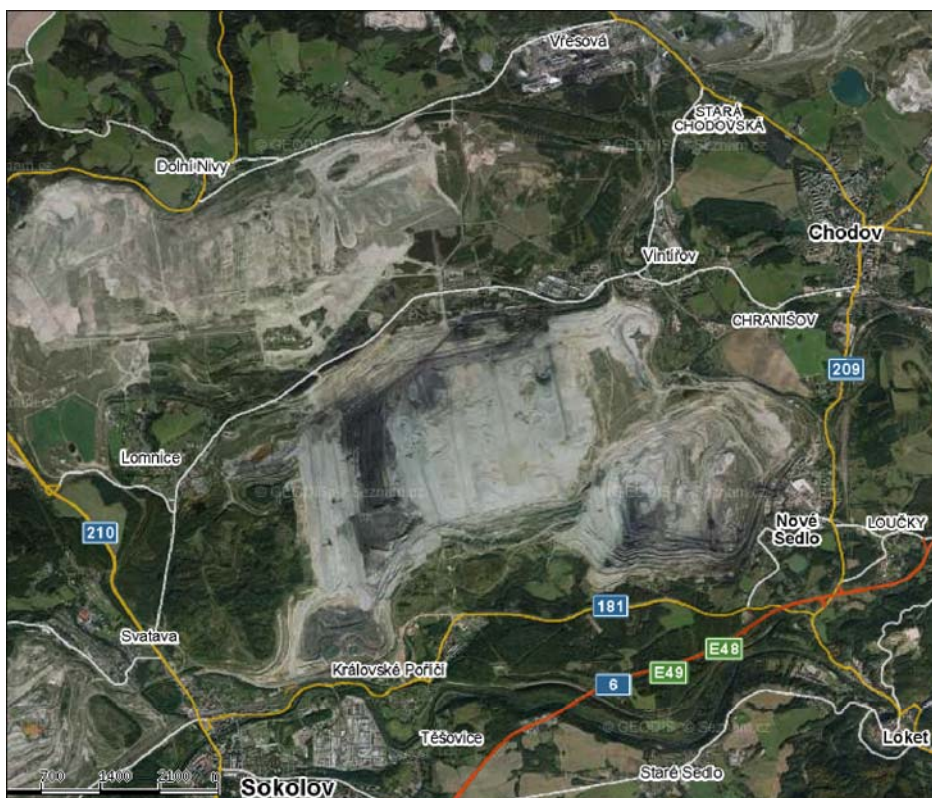


Figure 6.1: Location of the Karlovy Vary Region and Sokolov in the Czech Republic.





**Figure 6.2:** The Sokolov mining area (from <http://www.mapy.cz>).

Though the largest business entity in the Karlovy Vary Region, *SOKOLOVSKÁ UHELNÁ* is the smallest lignite mining company in the Czech Republic and also at a European level a rather small company. It is a fully private (joint-stock) company with three majority shareholders, who are also company directors. *SOKOLOVSKÁ UHELNÁ* is an example of a locally operating corporation with significant market position.

*SOKOLOVSKÁ UHELNÁ* mines and processes lignite from deposits in the western portion of the Podkrušnohorská area that is located along the border with Germany.

The company produces around 9 million tons of lignite per year, of which approximately 60% are sold to domestic and foreign customers, the remainder is used by *SOKOLOVSKÁ UHELNÁ* itself. Currently two mines are being exploited, namely the Jiří mine in the Vintířov municipality and the Družba mine in the Nové Sedlo municipality (Figure 6.2).

About 80% of the total production comes from Jiří and the remainder from Družba. *SOKOLOVSKÁ UHELNÁ* is the largest independent producer of electricity in the country and sells yearly about 3.5 TWh (*SOKOLOVSKÁ UHELNÁ*, 2008). The company is also the only one producer of briquets in the Czech Republic of which are sold 150,000 t annually. In addition it also distributes district heating (about 2300 TJ) to the nearby agglomeration including the city of Karlovy Vary. The key production, sales and other financial figures are listed in Table 6.1 (following page).

Currently *SOKOLOVSKÁ UHELNÁ* maintains its position in the solid fuels market with market share of approximately 20% of overall extraction of lignite in the Czech Republic. Its single largest customer is ČEZ a.s. (<http://www.cez.cz>), who purchased about 2 million tons of lignite in the year 2008, *inter alia* for its Tisová power station in Sokolov district. ČEZ a.s. has a dominant position in the Czech power generation and distribution market. *Sokolovská uhelná* also exports lignite products to Hungary, Germany, Poland and Slovakia.

**Table 6.1:** Facts and results from the year 2005 to 2008 (*SOKOLOVSKÁ UHELNÁ*, 2008).

Production		2008	2007	2006	2005
Coal extracted	kt	9732.1	10,273.5	10,392.2	10,307.1
Overburden extracted	m <sup>3</sup> thousand	29,433.7	29,572.4	29,230.6	32,684.0
Electricity – heat/power plant	GWh	1642.6	1688.8	1607.3	1698.2
Electricity – combined cycle power plant	GWh	2099.5	1804.4	1821.4	1899.7
Coal gas	m <sup>3</sup> million	1331.0	1164.1	1198.8	1187.9
of which UGLB	m <sup>3</sup> million	62.4	0.0	0.0	0.0
Sales		2008	2007	2006	2005
Coal	kt	5530.6	6120.8	6107.3	6153.2
of which sorted	kt	219.2	204.4	274.1	240.1
Briquettes	kt	147.6	235.6	328.8	286.8
Electricity – heat/power plant	GWh	1027.8	1104.5	1018.8	1007.8
Electricity – combined cycle power plant	GWh	2088.8	1797.2	1838.1	1891.9
Heat	TJ	2045.5	2055.5	2216.5	2251.5
Revenues		2008	2007	2006	2005
Net income	CZK million	2271.1	1558.7	1168.6	533.3
Capital expenditure	CZK million	886	839.3	685.3	555.8
Average number of employees	Persons	4675	4686	4739	4888
Average monthly wage	CZK	28,225	25,513	23,472	21,125

SOKOLOVSKÁ UHELNÁ is divided into four main operating divisions, viz:

- two extraction sections (Division Jiří and Division Družba)
- the processing section (Division Zpracování), and
- the support section (Division Služby)

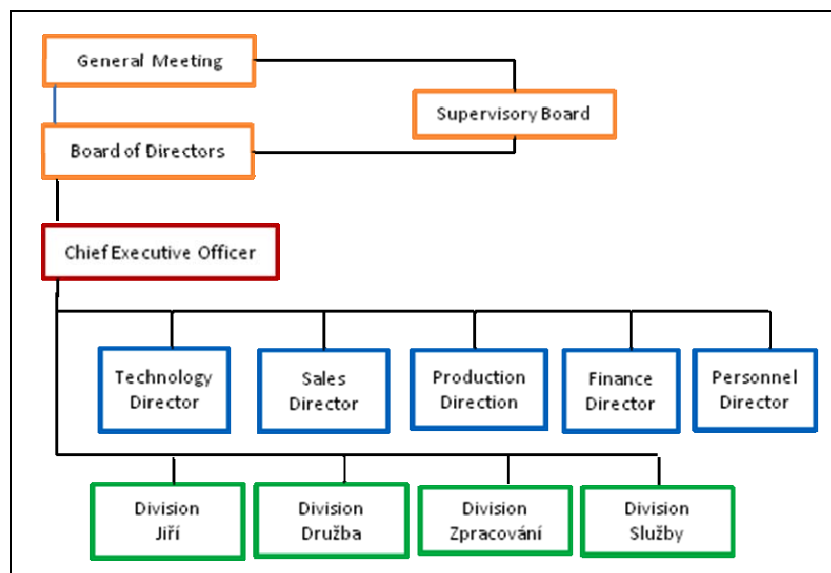


Figure 6.3: Structure of the SOKOLOVSKÁ UHELNÁ company ([www.suas.cz](http://www.suas.cz))

Table 6.2: Subsidiaries (in alphabetical order) of Sokolovská uhelná.

Subsidiary	Main business area	Ownership [%]
<b>EKOSOLARIS a.s.</b>	Manufacturer of solar collectors, sales of installation material.	33
<b>FK Baník Sokolov a.s.</b>	Football club Baník Sokolov	100
<b>Golf Sokolov a.s.</b>	Golf course in Dolní Rychnov; collection, processing and sale of fly ash and desulfurication residues	100
<b>Koupaliště Michal s.r.o.</b>	Water park Michal in Sokolov	90
<b>SUAS - stavební, s.r.o.</b>	Building repairs, joinery	100
<b>REO-SUAS s.r.o.</b>	Seasonal work in forestry, especially in planting and logging trees in reclaimed areas	100
<b>Romania, s.r.o.</b>	Guesthouse in the centre of Karlovy Vary	100
<b>SATER-CHODOV spol. s.r.o.</b>	Operation of a municipal solid waste landfill near the village Vřesová; buying raw materials, including hazardous waste in Chodov	51
<b>Sokorest, s.r.o.</b>	Sokolovská uhelná cafeteria	100
<b>SOKOREST - zařízení školního stravování, s.r.o.</b>	School cafeterias in the Sokolov district (not yet operational)	100
<b>Zahradní a parková spol. sr.o.</b>	Landscaping activities	50

*Sokolovská uhelná* has a several subsidiaries with a wide scope of activities, some of which reflect their corporate responsibility as well as environmental management and remediation activities. The latter include the Sokolov golf course and the Michal Water Park that are the results of revitalisation efforts of residue dumps and mined-out pits.

## 6.2. CORPORATE ENVIRONMENTAL POLICIES

*SOKOLOVSKÁ UHELNÁ* is an example of a company that operates in the vicinity of a town. By this the majority of the inhabitants are affected in one or the other way by the mining operations. Also close to the mining area is the most famous Czech spa town, Karlovy Vary. Therefore, the environmental and the health and safety situation related to the mining activities and the use of the water resources need to be monitored closely.

Since 2005 *SOKOLOVSKÁ UHELNÁ* publish on their website annual performance reports. These reports include sustainability and environmental stewardship issues.

It is recognised that the extensive lignite mining does have significant impacts on the environment of the Sokolov area. To address this, a *Master Plan for Reclamation of Land Affected by Coal Mining in the Sokolov District* was drafted on the basis of the *Resolution of the Government of the Czech Republic No. 490/91 on the Sokolov District Environmental Revitalisation Program* (*SOKOLOVSKÁ UHELNÁ*, 2005, p. 51). The Master Plan focuses on the creation of lakes and water management schemes for the area following the lignite extraction. They have the objective of achieving a maximum of landscape diversity and aesthetic value of the reclaimed lands.

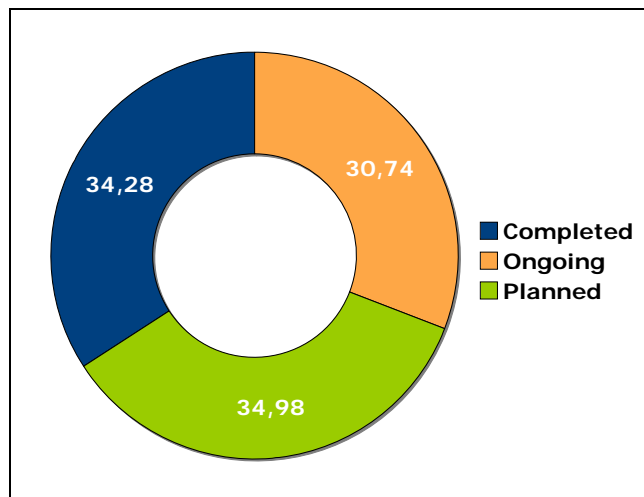
In October 2007, the Karlovy Vary Regional Authority issued an integrated permit for *SOKOLOVSKÁ UHELNÁ*. This permit sets forth binding conditions for the operation of the plant and other installations at the company's processing pection as well as procedures and measures to ensure compliance with this permit (*SOKOLOVSKÁ UHELNÁ*, 2007, p. 43), including:

- emission and discharge limits for pollutants released into the air and water, respectively;
- maximum permitted amount of surface water use;
- maximum permitted amount of wastewater discharge;
- conditions for ensuring human and environmental health in waste management;
- conditions for ensuring human, animal and environmental health, in particular: protection of air, soil, forests, underground and surface water, nature, and landscape;
- other special conditions for protecting human and environmental health that the Authority determined were necessary with regard to the local environmental conditions and technical description of plant and equipment;
- conditions for economical utilisation of raw materials and energy;
- measures to prevent accidents and mitigate their potential consequences;
- operating procedures and/or measures for situations differing from ordinary operating conditions;
- procedures for monitoring emissions and transmissions;
- procedures for evaluating compliance with the integrated permit

Due to the conditions mentioned above *SOKOLOVSKÁ UHELNÁ* has the obligation to monitor potential pollutants and report the results to the Integrated Pollution Register of the Czech Republic every year. The Integrated Pollution Register (<http://www.irz.cz/>)

was established by the Czech Ministry of the Environment within the scope of the European Pollutant Release and Transfer Register (E-PRTR). It is a database of selected releases of pollutants (into the air, water, soil), transfers of pollutants in waste and waste water and of the amount of waste that are reported annually for each facility in accordance with the criteria laid down by appropriate law.

Furthermore *SOKOLOVSKÁ UHELNÁ* undertakes the reclamation of land affected by lignite extraction with a view of use for agriculture, forestry and environmental protection activities, particularly for waste management. Since reclamation work in the Sokolov region began in the 1950s, more than 3,000 hectares of land have been completely reclaimed. Figure 6.4 illustrates the status of ongoing, completed and planned reclamation work. Table 6.3 indicates that finally in total the Company will reclaim 9,250.44 hectares of land affected by lignite mining. In 2008, for instance, reclamation work on 86.64 hectares was completed and paid for out of the clean-up and reclamation provisions, while the reclamation of an additional 278 ha commenced and will be paid for by the Ministry of Finance of the Czech Republic (*SOKOLOVSKÁ UHELNÁ*, 2008). Municipal waste management activities of *Sokolovská uhelná* contribute to the revitalisation and development of the sites.



**Figure 6.4:** Reclamation works as of 31 December 2008 following mining of coal, rock and sand (*SOKOLOVSKÁ UHELNÁ*, 2008, p. 35)

**Table 6.3:** Summary of clean-up and reclamation work from the beginning of mining until the end of 2008 (*SOKOLOVSKÁ UHELNÁ*, 2008, p. 35).

Mine reclamation work	ha	%
1. Completed as	3179	34.4
agricultural land	1095	34.4
forests	1897	59.7
artificial lakes	78	2.5
other	110	3.4
2. Ongoing as	2848	30.8
agricultural land	204	7.2
forests	2052	72.0
artificial lakes	513	18.0
other	80	2.8
3. Planned	3223	34.8



Figure 6.5: Lake Michal Water Park.



Figure 6.6: Signboard describing the Sokolov golf course and club facilities.

Examples for the outcome of such reclamation works are *Golf Sokolov* (Figure 6.6), the Golf course near the municipality Sokolov and Dolní Rychnov and the modern water park *Koupaliště Michal* (Figure 6.5). The golf course on the site of a former surface  
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mine is part of a 200 hectare sports and recreation facility near the Michal reservoir. *Michal* is the former open-cast mine southeast of the city of Sokolov that was flooded in 1995 in accordance with the mine closure plan and subsequently prepared for clean-up and reclamation (SOKOLOVSKÁ UHELNÁ, 2007, p. 46). Now, a 29 hectare lake with an adjoining water park is in operation here during the summer months. It opened in 2004 and serves the entire Sokolov region.

Although there is a successful ongoing plan of the reclamation work, there are still some industrial operations that cause pollution and contamination in areas adjoining to the reclaimed areas. Table 6.3 lists the main culprits in neighbourhood of the future lake Medard that is now under construction.

Each year several million of Euros are being spent to remediate areas impacted by lignite mining in the Sokolov region. These investments typically result in new infrastructure, new lakes and revitalised surface water courses so that the landscape will eventually become functional again.

**Table 6.4:** Companies causing contamination in the neighbourhood of the future Lake Medard (HRAJNOHOVÁ & PECHAROVÁ, 2009).

Company	Contaminant discharged into		Contaminants in production wastes
	air	water	
ČEZ (Tisová powerstation)	CO <sub>2</sub> NO <sub>x</sub> SO <sub>x</sub> PM <sub>10</sub>	As Hg As	asbestos Cd
Sokolovská uhelná	CO <sub>2</sub> NO <sub>x</sub> SO <sub>x</sub> Hg Non-methanic volatile organic compounds (NMVOC)	N phenoles cyanide Ni Hg Zn	benzene toluene xylene Hg
Avirunion Nové Sedlo	NO <sub>x</sub> SO <sub>x</sub>		

### 6.3. SOCIAL CORPORATE POLICIES

SOKOLOVSKÁ UHELNÁ has more than 4,000 employees and thus represents the largest employer in the Karlovy Vary region. Table 6.1 indicates that while the number of employees is decreasing over the years, the average monthly wage is increasing. Overall the productivity in terms of energy sold and revenues earned is on the increase. In terms of employee earnings, SOKOLOVSKÁ UHELNÁ is a drivers of wage growth in the Karlovy Vary region. That said, however, one has to note that the region as a whole is at the bottom of the income ladder among all regions of the Czech Republic (SOKOLOVSKÁ UHELNÁ, 2005).

The company's pool of human resources benefit from a long-term cooperation with secondary schools, especially with the Sokolov Integrated Secondary School. Every year many of the school's graduates are hired, mostly selected earlier during internships they served in SOKOLOVSKÁ UHELNÁ. While this enables the company to successfully recruit young and qualified professionals, it also makes the region very much dependent on this employer.

Providing for employee further job qualification is a long-established policy within the company. Thus a certain number of employees are developing their qualifications by studying at the Industrial School of Mining or by attending specialised training courses. *SOKOLOVSKÁ UHELNÁ* meets its obligation to provide employees with preventive healthcare in compliance with relevant laws. Moreover there are initiatives to ensure the health of employees, such as voluntary preventive vaccination against tick-borne encephalitis and flu vaccinations. (*SOKOLOVSKÁ UHELNÁ*, 2007).

Another benefit of being a company employee is the opportunity to join the company pension scheme that is partly funded by the company's revenue. In 2005 the employee's monthly supplemental contribution to this pension scheme was CZK 300 and each employee who successfully completed the three-month probation period is eligible to join the scheme. At the end of 2005 about 89% of the workforce had subscribed to the scheme (*SOKOLOVSKÁ UHELNÁ*, 2005).

*Sokolovská uhelná* also strives to live-up to the more general ideas of CSR (Corporate Social Responsibility). An important part of the company's corporate philosophy is to support cultural and sports activities, particularly those focusing on the children and youths of the wider Karlovy Vary region. Company financial contributions also made it possible to successfully organise prestigious sport events, e.g. Motocross World Championships (<http://www.loketmx.com/>) in Loket (see Figure 6.2). Donations also go towards holding many cultural events, as well as the restoration of heritage sites (*SOKOLOVSKÁ UHELNÁ*, 2005).

Reclaimed areas converted into recreational zones, such as the golf course or water park mentioned above lead to new employment opportunities and locals from surrounding towns and villages living close to will be able to benefit from this. *SOKOLOVSKÁ UHELNÁ* has an important role in stabilising the development of the entire region.

#### **6.4. CORPORATE POLICIES AND THE FUTURE OF THE SOKOLOV REGION**

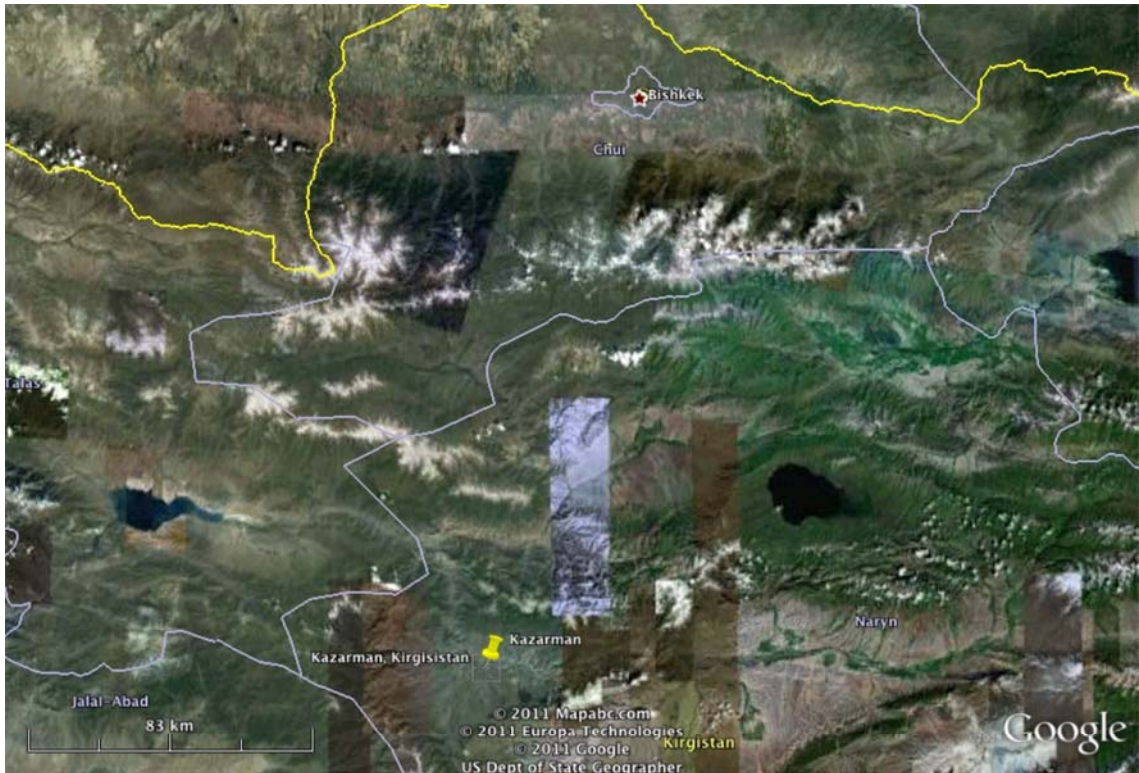
It became clear from the interviews held with *SOKOLOVSKÁ UHELNÁ* during a field visit in June 2010 that the mining operations will cease by 2030. Therefore, no actual conflict exists (anymore) between local communities and the mining company over a spatial extension of the open cast mines. *Sokolovská uhelná* owns also virtually all the land on which mining takes place and will take place in the future; only small areas of land used to dispose of mining residues belong to other stakeholders. *SOKOLOVSKÁ UHELNÁ* develops the land-use plans, and hence the concepts for remedial actions to be taken, in consultation with the local communities, but the process appears to be driven largely by the company itself. The reason cited for this is the lack of efficient decision making capabilities within the communities and the regional development organisations, such as the Mikroregion Skolov-výchód (see companion report on civil society policies).

One can suspect a number of well-founded commercial rationales for the company strategies. As the revenue-generating mining operation will cease after about 2030, the company has to look for other revenue generating activities. The major company assets (and liabilities) are the areas of former mine land. It is logical that *SOKOLOVSKÁ UHELNÁ* intends to turn these liabilities into assets by reclaiming the land and turn it into some productive use where possible. While the practice of trying to limit the influence of external stakeholders may have good practical operational reasons, one could question the long-term viability of this strategy. There is a risk that planning undertakings by *SOKOLOVSKÁ UHELNÁ* and the municipalities/the region will become incompatible at some stage in the future.

## 7. Relevant Corporate Policies at the Makmal Gold Mine, Kyrgyzstan

### 7.1. CORPORATE SETTING

The *KYRGYZALTYN State Concern* was created in 1992 in order to concentrate into one hand the gold mining and milling interests of the Kyrgyz Republic. In 1999 the State Concern was reorganised into the *KYRGYZALTYN Joint Stock Company* (<http://www.kyrgyzaltyn.kg/>) in order to enhance the efficiency of its operations and to implement business management principles. *KYRGYZALTYN JSC* now is the largest company in the Kyrgyz Republic. Together with its joint venture partners, *KYRGYZALTYN JSC* produces more than 97% of the gold in Kyrgyzstan. Gold production contributes nearly 10% of gross national product, accounts for 40% of all industrial output and for 60% of the export of the Republic. The Kyrgyz Republic ranks third among the CIS countries in gold production.



**Figure 7.1:** Location of *MAKMAL GOLD MINE* in Kyrgyzstan.

JSC *KYRGYZALTYN* has seven branches:

- *MAKMALZOLOTO MINE*
- *TEREK-SAI MINE*
- Refining plant
- Specialised construction enterprise
- *SOLTON-SARY MINE*
- Motor transport enterprise
- Health resort *KYRGYZ VZMORIE*

Other assets of *KYRGYZALTYN* include a jewelry factory and store, a medical centre and a Hotel.



During the last years gold market revival enabled JSC *KYRGYZALTYN* to modernize operating mines and establish new gold mining enterprises. JSC *KYRGYZALTYN* represents the Kyrgyz side in the *CENTERRA GOLD Inc.* (*KUMTOR* deposit) and joint ventures *ALTYNKEN* Ltd. (Taldy-Bulak Levoberejniy), closed JSC *DJERUYALTYN* (*DJERUY* deposit). JSC *KYRGYZALTYN* follows the following strategic objectives:

- development of raw material base, complete and comprehensive exploitation of the gold deposits;
- rational use of production potential;
- development of external economic relations;
- creation of conditions for social development of the workforce;
- development of social infrastructure on its sites;
- provision for safety measures;
- fulfillment of environmental requirements etc.

Presently, JSC *KYRGYZALTYN* is actively being developed and nearly all of its profit are being re-invested into development, production extension and deposit exploration.

The *MAKMAL GOLD MINE* ([http://www.kyrgyzaltyn.kg/mzdk\\_en](http://www.kyrgyzaltyn.kg/mzdk_en)) is the main production unit of *KYRGYZALTYN JSC*. It was established to exploit the the Makmal gold deposit discovered and explored in 1969-1977. The deposit is located in the Toguz-Toro region of the Jalal-Abad Oblast of the Kyrgyz Republic, about 630 km from the capital Bishkek. Full exploitation commenced in 1986. The mine employs about 1200 staff and its tax payments contribute 95% of the gross domestic product of the Toguz-Toro region. The mine is located at 2350-2800 m above sea level in a remote area, the nearest railway stations being Balykchy (465 km) and Djalal-Abad (170 km). Access by road, however, it possible all year round through the Bishkek-Kazarman road.

The Makmal deposit was exploited from 1986-1996 by open cast mining only. The technical capacity of the mine and mill was 500,000 t of ore per year. Over its 10 year life-time a total of 21.7 t of gold were produced. Processing of previously stockpiled low-grade ore commenced 1997 in pursuance of the Kyrgyz Governmental Decree #722 (On the extension of the Makmal Gold Enterprise operational period) from 10 December 1997. Open pit mining finally terminated in 2003.

In order to extend the life time of the mine, a decision was taken to develop the remaining reserves at Makmal through to a level below 2500 m. *KYRGYZALTYN JSC* plans to invest US\$ 4 million from its own funds into the rebuilding and modernisation of the production facilities and an additional US\$ 3.5 million for exploration of deep levels of the mine and flanks of the 'Vostochnaya' and 'Dioritovaya' zones of the deposit. Subject to the proof of geological reserves at the lower levels and the flanks of the existing mine at an estimated 13 t, the mine's life may be extended until 2016.

## 7.2. ENVIRONMENTAL CORPORATE POLICIES

For each Kyrgyzaltyn branch a number of environmental permits exist, such as the 'environmental passports' that describe the potential sources of contamination and their likely impacts, standards for maximum permissible air emissions, standards for maximum permissible waste water discharges, and standards for solid waste treatment. These documents indicate actual sources and amounts of emissions and discharges. According to Article 15 of the Kyrgyz Law "On environmental protection", a quarterly payment is made for environmental contamination through emissions, discharges and waste disposal. This annual permits are granted to the respective Kyrgyzaltyn branches the responsible regional units of the State Agency for Environmental Protection and Forestry.

Environmental protection measures at the production facilities of *KYRGYZALTYN JSC* are undertaken by:

- reducing all forms of possible contamination and to minimise waste generation through the rational use of process chemical, water, fuels and other resources;
- effectively operating tailings neutralisation plants and tailings management facilities;
- effectively operating sewage treatment plants to minimise emissions;
- monitoring of all environmental compartments.

Environmental permits concerning emissions and waste disposals have been developed for all production branches of *KYRGYZALTYN JSC* and strictly monitored. The *MAKMAL GOLD MINE* monitors on a daily basis wells and springs in the surrounding area in particular for cyanide contamination. An independent and certified laboratory, CHUI Ecological Laboratory, carries out environmental surveys twice a year on which the reports to the competent authorities are based.

The environmental benign operation of *the MAKMAL GOLD MINE* poses a number of challenges:

- it is necessary to carry out regular (daily and weekly) monitoring of the water resources and soil for the heavy metals content in the impact zone of tailings management facility;
- this also includes regular meteorological observations;
- the local communities must be informed about environmental situation around *MAKMAL GOLD* in a timely fashion;
- these undertakings are hampered by a lack of equipment and trained staff.

The *MAKMAL GOLD MINE* undertakes several initiatives to address these issues:

- a hydrogeological survey of groundwater below the tailings management facility will be undertaken;
- a monitoring network for the water resources and soil in the impact zones of present and the new tailings management facility is being established;
- the observation wells will be equipped with sensors for environmental monitoring;
- the monitoring results will trigger necessary preventive measures (in a case of exceeding any threshold values) and will be used to inform local communities and regulatory authorities about the state of environment;
- two meteorological stations, one at the mine and a second one at the tailing management facility will be installed;
- measures to train monitoring staff in using the above equipment and in processing the results will be undertaken.

### **7.3. SOCIAL CORPORATE POLICIES**

#### ***Social policies***

JSC *KYRGYZALTYN* as a mining enterprise understands its responsibility with respect to local communities in the regions, where *KYRGYZALTYN* entities perform their activities, for inconveniences, disturbance of normal lifestyle, environmental impact caused by such activities. *KYRGYZALTYN* attempts, where possible, to compensate for such detriments, in addition to providing direct employment opportunities for the local population, by making contributions to the development of local infrastructure (incl. social), by supporting local producers through purchasing local goods and services, as well as by creating Development Funds through establishing and funding micro-credit organizations. For instance, JSC *KYRGYZALTYN* and its branches support local agricultural producers by purchasing their produce, spending annually over 13 to 14 million Soms (around 210,000 €) on it.

Regional Development Funds are set up not only in the areas of *KYRGYZALTYN* branches' operations, but also in the areas of operation of companies with which *KYRGYZALTYN* creates joint ventures. The contributions to the funds budgets depend on economic potential of the joint ventures. For example, the Kumtor project makes contribution to the regional development fund of the Issyk-Kul province in the order of 1% of its gross revenue, the Djerui project is expected to contribute 3 million USD per year to the Talas province Development Fund once the mine starts operation. Presently, a micro-credit organisation is already functioning there into which the investor contributed 1 million USD.

It is planned that the project TALDY BULAK LEVOBEREJNYI will make contributions to the Kemin district Development Fund in the order of 7 USD per each ounce sold. The existing micro-credit organisation has a fund of 40,000 USD.

On a corporate level *KYRGYZALTYN JSC* also engages in an active social policy that manifests itself in sponsorships and charitable activities in both, the public and private sector. The company supports industrial and military invalids, aged people and large families by direct aid and through the provision of medical treatment at reduced fees in its own medical centres. *KYRGYZALTYN JSC* operates its own spa facility/health resort *Kyrgyzskoye Vzmorie* for vouchers are given to the above target groups. More than 1 million Soms (16,000 €) are directed annually to charitable activities.

*JSC KYRGYZALTYN* considers the creation of new employment by attracting employees into the newly established joint ventures from the citizenship of the Kyrgyz Republic as one of its most important social tasks. Nearly 90% of the JV employees are Kyrgyz citizens. The number of newly created jobs increases depending on the exploration of new deposits and expansion of the existing deposits of gold and other non-ferrous metals.

Health and safety at the workplace at *JSC KYRGYZALTYN* is implemented on the basis of the Labour Protection Law of the Kyrgyz Republic and its subsidiary regulations and instructions. The technical-organisational implementation plans are agreed with and approved by the Central Committee of the *Mining and Metallurgical Industry Workers' Union* with the view of the creation of healthy and safe working conditions and to prevent industrial accidents. Today all branches and subsidiaries of *KYRGYZALTYN JSC* have workplace health and safety specialists whose task it also is to implement preventive actions. Substantial amounts of funds are allocated annually to workplace health and safety measures, in particularly addressing those technical staff who handle explosive and dangerous substances as well as the respective supervisory and management staff. Training courses are undertaken on a regular basis.

#### ***Participation in the work of public organisations***

*JSC KYRGYZALTYN* is a founder and active member of the Kyrgyz Mining Association ([www.kyrminas.kg](http://www.kyrminas.kg)) comprising the majority of big mining companies with shares of foreign investors and mining development companies. Its web-site is.

*JSC KYRGYZALTYN* takes an active part in activities undertaken by similar organisations such as the Association of Miners and Geologists and the Guild of Miners.

*JSC KYRGYZALTYN* is the first mining company in Kyrgyzstan that began to implement the requirements of the Extractive Industries Transparency Initiative (EITI, [www.eiti.org.kg](http://www.eiti.org.kg)).

## 8. Conclusions

The significant socio-economic and environmental impacts that are often associated with mining operations have generated an increasing number of claims by civil society and regulators. These have resulted in a variety of new actual or perceived obligations on the side of the mining operators, who had been traditionally focussing almost exclusively on their economic profitability. Thus new stakeholders or traditional stakeholders with new areas of interest have appeared on the scene and cause existing corporate policies to adapt or the development of new fields of corporate policies. Most notably environmental policies have been developed in response to new regulations imposed by regulating authorities and in response to pressure by other groups of external stakeholders. While social issues have been addressed by many mining companies in traditional and well-established mining areas, e.g. by building company housing, schools and welfare institutions, this may have been less so in boom-and-bust type mining areas. Patterns of corporate social responsibility not only change over time, but can vary from one region of the world to another. In some countries perhaps rather patriarchal forms of CSR are still maintained with respect to internal stakeholders, most notably for instance in Japan. Worker-employer relationships in the former Eastern Block countries did have a quality rather different from that in the Western world: they tended to be often quite encompassing and also controlled much of the private life. Social facilities, such as company crèches, holiday facilities, and so on took much more care of the employees than was usual in the post-war Western world. Some of this seems to linger on at the Kyrgyz site. This form of relationship to internal stakeholders not necessarily is extended to outside stakeholders or internal stakeholders in a foreign country, however.

**Table 8.1:** The varying interests of stakeholders in different aspects of corporate policies (after CHAMARET, 2007).

Stakeholders	Economy	Environment	Social
<b>Traditional internal</b>			
employees			
trade unions			
<b>Traditional external</b>			
contractors			
suppliers			
customers			
shareholders			
investors			
insurances			
<b>Extended external</b>			
local communities			
non-governmental organisations			
<b>Regulating authorities</b>			
local authorities			
central government			
<b>Legend: level of interest</b>			
<b>strong interest</b>	<b>moderate interest</b>	<b>little interest</b>	<b>no interest</b>

Local authorities in mining areas are painfully aware of the social and economic implications of the dependency on single major economic activities, such as mining, and try to coerce mining companies to think beyond the days of active mining.

Table 8.1 summarises broadly the differing interests of different groups of stakeholders; the strong interest in economic performance by most stakeholders is obvious. It should be noted that this pattern is likely to vary somewhat depending on the region and the type of mining industry.

Over the past decades in many parts of the world different forms of governance and new qualities of stakeholder relationships have developed. Since mining seems to meet with critical response particularly from extended external stakeholders, mining companies seek to establish more pro-actively 'social contracts' with these groups of stakeholders. This is not necessarily done altruistically, but there is a strong economic incentive in this, as a well established 'social contract' with stakeholder groups perceived as relevant will help to minimise business risks, that may arise from protests and legal actions. Such behaviour is also encouraged by investors and insurers, who have a strong interest in business risk minimisation. By the same token, complying with (environmental) regulations – and being seen so – reduces business risks.

Today it is considered to be a paradigm of good company policy and good company governance to be pro-active and pre-empting, rather than to be reactive and remediating.

Interviews with a variety of stakeholders at the test sites pointed to a considerable variation in the relationship between stakeholders and different patterns of actual and perceived corporate social responsibility. It may be rather premature for such conclusions, but it appears that in general the quality relationship between mining company and (external) stakeholders is determined by the size of the company or corporation: large, international corporation tend to have more confrontational relationships than companies that are more locally rooted. The differences in the situation in South Africa and the Czech Republic may be a point in case. At this point nothing is known about stakeholder relationships at the Makmal mine site.

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## Appendix 1

### List of relevant corporate stakeholders

Mining Companies	Contact
ANGLOAMERICAN COAL	<a href="http://www.angloamerican.co.za/our-operations/thermal-coal.aspx">http://www.angloamerican.co.za/our-operations/thermal-coal.aspx</a>
KUYASA MINING, Witbank	<a href="http://kuyasamining.co.za/">http://kuyasamining.co.za/</a>
KYRGYZALTYN JSC	<a href="http://www.kyrgyzaltyn.kg/">http://www.kyrgyzaltyn.kg/</a>
SOKOLOVSKÁ UHELNÁ	<a href="http://www.suas.cz">http://www.suas.cz</a>