





# ***MULTIVERSE MINING and EXPLORATION PLC***

## ***ENERGY AND RESOURCE EFFICENCY POLICY***



## **ENERGY & RESOURCE      EFFICIENCY PROCESS**

**Our Key Performance Indicators and sustainability targets are identified under the following headings:**

1. Energy efficiency
2. Water efficiency
3. Emission to Air, Water and Soil
4. Waste management
5. Health and Safety
6. Other Societal Targets



## **1. Energy efficiency**

Energy consumption and energy efficiency is of importance to our company. It is linked to the reduction of greenhouse gas emissions. It is particularly important and a natural target in the energy-intensive mining and metallurgical industry that we operate, where energy consumption is one of the main operating costs.

Ways of saving energy were sought through best practices on energy efficiency, supported in many cases by participation and membership in several energy saving organizations. Energy efficiency policies and energy performance management systems include energy efficiency targets, energy audits, and energy efficiency road maps.

Our energy saving actions start with small initiatives on fuel savings, by start-stop vehicles and timers, and control of standby equipment, lighting etc. Also we have investments such as improved air compressor controls, ventilation fans, fuel management processes, variable speed controllers of autogenous grinding (AG) mills and generally a high energy efficiency equipment policy, the total energy efficiency are increased significantly.

We also direct investment in higher efficiency generators and the adoption of new (cleaner, more energy efficient) technologies such as a new processing plant. And later on construction of own (efficient) power plants, which will make use of renewable energy such as hydropower, or solar power. All of these have a common feature in that their payback time can be calculated and in most of the cases their economic affect is positive

## **2. Water efficiency**

Water efficiency is another important target at the mines. We emphasise recycling based reduction targets. The target is to minimize the amount of fresh water consumed from all sources. This is carried out by the optimization of processing facilities and installation of effluent



treatment plans and modernization of the water supply network to be able to recycle the water. Grey water from local communities and mine water are used in the beneficiation.

Master plans for water resources include, for example, storm water diversion and collection systems including storage in plastic-lined ponds. The most efficient way, however, seems to be improving employees' discipline in using water. Monitoring of wastewater discharge, surface waters, soil, and ground water including the excess water from tailings along with physical, chemical and bacteriological analyses are used.

### **3. Emissions to air, water and soil**

Most of the emission-related targets are related to dust emissions from the mine. These include dust suppression systems, scrubbers and filters and other dust mitigation means and plans. The target is to go beyond the air emission regulatory standards.

The dust emissions can be registered by remote monitoring of emissions outside the plant with alarms to the employees in case the air quality in the vicinity of the mine below the target. Monitoring of wind speed and direction is an important part of dust reduction programs.

Emissions to water are also very important to a mine. Compliance with laws and regulations is the minimum target level. Monitoring of surrounding water systems is an important aim to keep the emissions below the target (Acidic Mine Drainage, AMD) including for example, the monitoring and public reporting of copper, sulfides etc. contained in the water.

### **4. Waste management**

Our waste management targets and programs are fully under the company's Mine Waste Management (MWM). For waste rock, there are targets and actions to use the waste rock for the construction of dykes and cell covers or plans for the rehabilitation of waste rock dumps with vegetative cover. In some cases when the waste rock still contains valuable metals, dump leaching is used to recover the metals even in old residues or just leaching the metals out of the waste rock to make it harmless.



We have a waste management plan, select and classify the residues, and store the residues separately to be able to recover valuable materials, if technology development or metal price fluctuation allows profitable recovery from the waste.

Management plans include regular risk assessment for tailings storage and tests of physical and chemical stability (acid drainage potential). Biological toxicity testing and geochemical characterization of acid generating materials are used and long-term closure management plans are based on resource modeling and encapsulation of waste rock.

## **5. Health and safety**

Health and safety issues is more important to mine operations. Our Policy is simply **'If we cannot mine safely, we will not mine'** i.e. no employee is expected to carry out work they consider to be unsafe.

We have fatality targets. As well as Zero Harm policy and zero lost workday rates policies and targets. These targets are supported by quality of life programs, daily safety talks, and health and safety training for all employees (and for contractors, visitors etc.)

Safety strategies (for example, a 4-point safety strategy i.e. systems, means, training, culture) are supported by voluntary bonus systems related to safety, assessments on occupational exposure hazards for physical exposure and in some cases caring for the health of employees and their families. Also, in some cases, mental health care training is offered to managers.

Spraying is also employed to control mosquitoes in order to avoid malaria. Also, HIV testing and education are available including among others AIDS programs to support the safety of the employees and their families.



## **6. Other societal targets**

Investment in the health and welfare of local communities and society is our voluntary societal target at our mine community. These include for example, programs to benefit local communities, upgrading of local hospitals, and provision of other preventive and curative healthcare facilities, early childhood development centers, and other support for education. Examples are also the organization of employee transport and supporting leisure activities, like football.

Local societal targets also include the aims to protect the local environment in terms of forest plantation, developing wildlife habitats and biodiversity action plans.

Approved by the Board of Directors this..... day of ..... 2018

Secretary

Director