AFRICAN DEVELOPMENT BANK

DRC

Tenke Fungurume Copper & Cobalt Project

EXECUTIVE SUMMARY OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

07 June 2007
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1. INTRODUCTION

1.1 This executive summary provides an overview of the environmental and social impact assessment (ESIA) for the Tenke Fungurume Mining S.A.R.L. (TFM) copper-cobalt mining project in the Democratic Republic of the Congo (DRC). It summarizes the five ESIA volumes, which include the Introduction and Project Description (Volume A), Baseline (Volume B), Impacts and Cumulative Effects Assessments (Volume C), Environmental and Social Management System (Volume D) and Appendices (Volume E). A compendium to this document summarizes the Resettlement Action Plan.

1.2 The ESIA follows the Terms of Reference (ToR) issued in May 2006 as well as the environmental and social requirements of the African Development Bank, requirements of the IFC Performance Standards, The Equator Principles, and DRC environmental guidelines. Both the ESIA and the Resettlement Action Plan (RAP) were prepared by Golder Associates Ltd (Golder) on behalf of the sponsor Phelps Dodge (PD), a US-based company. Work on the ESIA started in October 2004, benefited from studies from 1997 to 1998 conducted by TFM, and was completed in March 2007. Over 175 disclosure and public consultation meetings took place between 2005 and 2006 involving the participation of the local communities and affected families, the public, NGOs, special interest groups, regional and national government. The preparation of the ESIA involved collaboration within the TFM project’s ESIA team, which was comprised of TFM and PD staff, international consultants and many specialists based in Africa. The assessment considered baseline conditions and construction, operation and closure phases for the project.

1.3 As required by the ToR, the ESIA process included the following steps: (i) Identify the environmental and socio-economic resources potentially affected by the project; (ii) Predict positive and negative effects and the extent to which positive effects can be enhanced and negative effects mitigated; (iii) Quantify and assess the significance of effects where possible; (iv) Consider the need to compensate for any significant residual negative effects; and (v) Identify methods to mitigate and monitor resources that may be affected by the project. An important component of the assessment is its vision to move the project towards sustainability. TFM recognizes the needs of society and the value of economic prosperity, national security and a healthy environment. TFM is committed to integrating social, environmental and economic principles in its mining operations and in facilities associated with preparing products for further use.

1.4 TFM aims to be a catalyst for development beyond its own operations. It is working to ensure that the project will operate in such a way that does not deter other development and that will contribute to a net positive impact to the host communities where it operates. This net impact embraces social, economic and environmental conditions and builds capacities necessary to provide for the needs of current and future generations. The ESIA addresses many disciplines in each of the physical, biological and social realms. It is structured to assess two aspects for each discipline: (i) How the project can be designed to reduce or eliminate negative effects; and (ii) How the project can have a positive effect that will last beyond the life of the mine. This is the main goal of a sustainability approach. Within each discipline, both “actions” and “indicators” are used. Actions outline specific steps to be taken to reduce negative effects and to enhance positive benefits. Indicators are selected and used to monitor the success of actions in achieving the desired goals.

1.5 The ESIA evaluates residual impacts, or those that remain after various mitigation measures are implemented. In the context of this assessment, mitigation includes the following hierarchy: (i) avoidance; (ii) minimization; (iii) rehabilitation or repair; and (iv) compensation. In many instances results of initial impact analyses were provided to the engineering design team so that negative impacts could be minimized through improved design. The ESIA also provides the basis for the development of an environmental and social management system for construction, operation and closure.
2 PROJECT DESCRIPTION

2.1 The Tenke Fungurume project is located approximately 180 kilometers northwest of the provincial capital of Lubumbashi in the Katanga Province of the DRC, about 150 Km due north of the Zambian border. It includes two mining concessions extending over 1,437 Km². Proven and probable reserves are estimated at about 103 Mt with average grades of 2.09% copper and 0.30% cobalt. The Tenke Fungurume copper and cobalt deposits are part of the Central African Copper belt. The ore comes to the surface in a series of hills within the concession. The mean site elevation is 1,200 meters above sea level. Local hills rise 200 to 300 meters above the mean elevation. TFM proposes to mine the Kwatebala, Goma and Kavifwafwaulu (Fwaulu) ore bodies (hills) over more than an initial 20-year period, and to process ore for more than 40 years, during which up to 115,000 tons of copper cathode and 8,000 tons of cobalt cathode/cobalt hydroxide (with some flexibility to produce an additional 2,000 tons of cobalt as hydroxide intermediate) will be produced each year. During the processing of the low-grade ore stockpiles, production averages 16,500 tpa of copper and 5,100 tpa of cobalt.

2.2 The Kwatebala, Goma and Fwaulu hills will be mined using an open pit method. The project involves mining of Cu-Co bearing ore with a daily production of 50,000 tons of ore. The mining operation involves clearing the vegetation ahead of the area to be mined, stockpiling the topsoil for further use in the rehabilitation process. An additional 22 years of low grade stockpiles set aside during the mine life will be reclaimed and fed to the processing plant, extending the project life to 40 years. Rock overlying the ore will be excavated by mechanized equipment and transported by truck to waste rock facility areas. Ore will be mined using a surface miner, which is a track-mounted machine with a large rotating drum and
hardened steel picks that break the rock in situ. The ore, which is located in relatively thin seams, will be mined in thin cuts (0.6 meters) and will be broken to minus 150 millimeters in size to minimize ore dilution and loss. Surface miners provide significant capital and operating cost savings by eliminating the need to drill, blast and primary crush the ore. Next, the ore will be loaded into 45-tonne haul trucks. High-grade ore will be delivered to stockpiles near the mill feed chute where a loader will be used to produce an ore blend from these stockpiles that maximizes plant production. The lower-grade ore, (some 54 million tons after 20 years of operations) will be dumped on stockpiles near the waste stockpiles to the north and northwest of the plant site and southeast of the Goma pit.

2.3 The processing plant is located near the Kwatebala pit. The selected process for the Tenke Fungurume Project is well known (used in the Copperbelt of Zambia), which involves atmospheric leaching of ground ore followed by solution extraction and electro-winning for copper recovery. In order to extract cobalt, additional processing operations are required. Cobalt-rich liquor, bled from the low-grade raffinate stream, undergoes purification steps prior to precipitation of an intermediate hydroxide. To the extent not sold as an intermediate product, the cobalt hydroxide is then re-dissolved in acid and undergoes further removal of copper, nickel and zinc impurities prior to the electro-winning of cobalt metal (See figure below).

**Process diagram, utilities and ancillary plants**

2.4 During the process, the solids will be separated from the liquids by counter-current decantation thickeners. The sulfuric acid and sulfur dioxide (SO₂), which will be used to leach copper and for the recovery of cobalt is also diluted with air and used to precipitate manganese dioxide (MnO₂) in the manganese removal tanks. Waste heat from the acid plant is used to produce steam for various operations throughout the plant. The main wastes and emissions from the processing plant will be tailings and air emissions. Tailings from the processing plant will be deposited in a lined tailings storage facility, which will be formed by damming a small valley north of the Kwatebala pit. If required, a second tailings storage facility will be constructed north of Fungurume. Also, water, electricity and other raw materials such as lime, magnesium hydroxide and limestone will be used in the processing plant. Water needs will amount to 90 l/s. This water will originate from recycling as well as a reservoir fed by rain water and well fields.

2.5 Housing will be provided to the workers, some of which on a temporary basis (during construction) and some permanent in the local area at the operational phase. To that effect, TFM will build a housing conglomerate north of Fungurume. It is also expected that the flow of migration will increase in the area during mine operations TFM will provide
assistance to local authorities specifically to plan for this additional population with support from the social development fund in the form of basic infrastructure needed, such as water and power. Growth centers will be concentrated near both Tenke and Fungurume to allow for controlled growth of support services, such as market gardens and small businesses. Other infrastructure that will be constructed include deep water wells, power line links from the DRC electrical grid to the mine and plant, a sewage treatment plant, access roads from the mine to the plant and from the existing limestone quarry north of Fungurume to the mine and plant, storm water controls, fencing and access control facilities.

3. LEGAL AND POLICY FRAMEWORK

3.1 The DRC civil code applies to the project as limited by the Amended and Restated Mining Convention (ARMC), signed on September 28, 2005 between the DRC, the state mining company, Gécamines and TFM. Additionally, the Mining Law of 1981 continues to apply to the project rather than the New Mining Code of 2002 (NMC). TFM has its own mining policies comprising Safety, Health and the Environment; and Employment policies. Where TFM does not have specific policies of its own it will adopt those of PD. PD is a leader in world mining and manufacturing and maintains world-class environmental, social, and health and safety policies. Laws of the DRC as well as policies and guidelines of the African Development Bank’s Environmental and Social Impacts Assessment Procedures, the Equator Principles (EP) and the Performance Standards of the International Finance Corporation (IFC) on Social and Environmental Sustainability will apply to the construction, operation and closure of the TFM project. The EP policies and guidelines are internationally accepted environmental and social standards for major mining projects, and are derived from the policies and guidelines of the World Bank Group, which includes the IFC.

4. ANALYSIS OF ALTERNATIVES

4.1 A formal analysis of alternatives enabled decisions to be made on which resource to mine and where to site ancillary facilities, selecting from the following three broadly defined choices as appears in the table below. In the second round of design-related decisions was then undertaken to evaluate the best location for the processing plant within the area around Kwatebala. Three sites were ultimately considered at locations to the east, southeast and northeast of Kwatebala Hill. Option 3 was rated as the best project configuration based on technical, environmental, economic and social factors.

| Option 1 | Fungurume-Fungurume, under which the Fungurume ore body would be mined and the plant would be constructed at the existing, abandoned plant site near the town of Fungurume. |
| Option 2 | Kwatebala-Fungurume. For this alternative, mining of the ore body at Kwatebala would occur and the plant would be located at the abandoned plant site near Fungurume. |
| Option 3 | Kwatebala-Kwatebala. For this alternative, both the initial mine and the plant would be situated at Kwatebala (the Kwatebala option included mining of the Goma ore body in addition to the Kwatebala ore body). |

4.2 With the ore body selected and the tailings storage facility sited, the analysis of the best plant site alternative was driven largely by the need to minimize involuntary displacement impacts, with economics and technical factors integrated into the analysis. The following criteria, among others, were used in the evaluation for each of the three plant site scenarios, with additional details of the analysis provided in relevant topic sections: Air quality; Noise; Traffic hazards; Loss of agricultural lands. Technical and related economic factors included site preparation (e.g., relative requirements for leveling and filling at each site), as well as the cost of engineered solutions to mitigate potential impacts, such as noise abatement measures, and potential reroutes to roads and transmission lines. In summary, option 3 was preferred by the scoring methods used for the following reasons: (i) it disturbs the least amount of agricultural land; (ii) It has a short haul route for ore and waste rock similar to option 1; (iii) It relocates less people than Option 1; and (iv) it has the lowest cost.

4.3 The next analysis of alternatives conducted was the location of the construction camp and permanent village for up to 2,500 people. Five sites were compared: Kiboko, a site in or near Fungurume, a site in or near Tenke, a site north of Fungurume and a camp co-sited with the plant. None of these sites have a high probability of mineable ore beneath them. The analysis indicated that the preferred alternative for the construction camp site is the site north of Fungurume for environmental, social and technical criteria.

4.4 Three access road alternatives were considered: southern, central and northern routes. These would be used for transport of construction and raw materials to the site, transport of product and waste materials from the site, and to transport workers to and from the construction village to the site. All three route options originate from the road that approaches the
TFM camp from the Kakanda Mine to the south in order to avoid Fungurume. The northern route was clearly the preferred alternative, largely related to the decision to relocate the villages of Mulumbu, Amoni and Kiboko. This route is the shortest, crosses the fewest watercourses, crosses the least amount of sensitive vegetation types and would be less prone to flooding. It was decided that an option to also develop the southern route should be retained, to provide an alternate route to the plant site in the future. It received the second highest score and is acceptable from environmental, social and technical criteria.

4.5 Finally, the “no project” alternative was compared to the project alternative. The objective was to determine if the overall benefits of the project outweigh the overall negatives. The project alternative scored highest for social, technical and sustainability criteria, with lower scores for environmental criteria as compared with the “no project” alternative. Expected benefits as a result of the project include significant social and economic benefits from the local to the national level (e.g., increased employment opportunities, job training, education in work practices, infrastructure improvements and increased revenues), improved transportation and the introduction of better mining and mitigation methods. There will also be increased potential for small business development. Overall, the potential beneficial effects of the TFM project outweigh potential adverse effects.

5. PROJECT AREA ENVIRONMENTAL SETTING

5.1 Most baseline data was collected from late 2005 to May 2006, although groundwater drilling continued to December 2006. Water flow and climate monitoring are ongoing. This data supplements that collected by TFM in 1997 and 1998. Baseline conditions are discussed below for the physical, biological and social realms. The baseline physical aspects that were assessed included topography and geomorphology, geology, geochemistry, soils, visual aesthetics, major hazards, climate, air quality, noise and vibration, groundwater, surface water flow, water and sediment quality, and traffic. A general description of the baseline conditions is provided in the following sections.

Climatic Conditions

5.2 The DRC’s location in Africa, together with its undulating to high plateaus places it within the Köppen climatic classification of Cw (i.e. mild rainy, moist sub-tropical mid-latitude with dry winters). The climate is cool and dry between May and August, hot and dry between September and October, and rainy between November and April. The average annual rainfall is approximately 1,150 millimeters (mm). the daily average humidity in the most humid month of January is 85 percent. The daily average in the least humid months between July and September is 55 percent.

Physical Context

5.3 Regionally, the topography is dominated by the north and south limbs of the Dipeta syncline, forming a long valley, extending between the towns of Tenke and Fungurume. The local topography is characterized by a series of steep-sided prominent hills and ridges rising to an elevation of 1,500 meters above sea level and up to 170 meters above adjacent valleys. The Dipeta River flows through the valley from west to east. The landscape in the area of the TFM project includes a mixture of existing human-modified areas such as villages, agricultural lands, fallow lands, roads and power line rights-of-way, and natural habitats such as copper-cobalt hills and miombo woodland. The landscape types with the highest visual value were considered to be the copper-cobalt hills and areas of miombo woodland. The copper-cobalt hills are the most distinctive elements of the landscape of the Local Study Area (LSA). They are the areas of greatest elevation in the landscape and are places from which visibility is further enhanced by the absence of miombo woodland. The miombo woodland is not as unique a visual feature but is inherently varied and aesthetically distinctive.

5.4 Soils in the project region are typical of highly weathered, tropical soils. Soils are generally low in nutrients due to high rainfall which promotes leaching of minerals through the soil profile. Warm soil temperatures and high moisture conditions promote high levels of biological activity capable of rapidly degrading organic matter. Nine preliminary soil units were mapped for the LSA. Three were determined to be moderately to highly suitable for agriculture, two were found to be moderately suitable and the remainder not suitable. Among the not suitable units is a unique copper-cobalt soil type found on the mineralized outcrops of the concession.

5.5 Air quality varies with the season, reflecting variations in atmospheric stability, ambient air temperatures and rainfall. The main emission sources in the study area include domestic fuel burning (mainly firewood and charcoal), bush fires, burning of stubble, vehicle emissions (tailpipe exhaust gas and fugitive dust), agricultural activities (tilling, plowing, etc.) and wind erosion of exposed areas. Volumes of motorized traffic along local roadways are very low. Bicycle and pedestrian traffic remain the primary modes of transportation and account for most road traffic. The general condition of local roads is poor. No significant industry occurs within the immediate vicinity of the project. The nearest active mine is 21 kilometers to the southeast.
Noise within the project area is typical for a rural African setting. Daytime noise levels near villages ranged from 42 to 53 decibels. Nighttime noise levels ranged from 39 to 52 decibels. There may be some existing ground vibrations near the local roads and rail lines due to motorized vehicles passing by.

Groundwater in the Regional Study Area is associated with moderately to highly permeable limestone and dolomite aquifers. These aquifers have formed as a result of the dissolution of limestone and/or dolomite along fractures by infiltrating rainwater. This results in a highly transmissive aquifer capable of supplying large well yields. The total aquifer thickness is about 600 meters. The groundwater system is recharged by the infiltration of precipitation (rainfall) over the surface outcrop area of the aquifers and from river leakage/infiltration where the water table is below the elevation of the river bed. The general groundwater flow direction south of the Kwatebala ridge is from north to south toward the Dipeta River. From the Dipeta River, groundwater flow is predominately in an easterly direction. To the north of the Kwatebala ridge, groundwater flow is to the north and the Mofia River. The groundwater system and the surface water system are closely interconnected along the Dipeta valley. Two main surface water systems exist in the region: the Mofia River catchment to the north of Kwatebala Hill and the Dipeta River catchment to the south. The proposed mine and plant sites straddle the hydrologic divide between these two surface water systems, with surface waters from the mine area flowing toward the Dipeta River and surface waters from the areas of the plant site, tailings area, and waste rock piles flowing toward the Mofia River. The limestone quarry, airstrip and construction camp/permanent village will be located in the Kabomboy River catchment, which flows into the Mofia River. The catchments are dominated by deep well-drained soils. Infiltration into these soils is high and, as a result, very little surface runoff exists in the catchment headwaters.

Water quality sampling indicated that both E. coli and total coliform bacteria were high throughout the region in both groundwater and surface water. Some metals concentrations were very high in some of the samples, specifically for arsenic, copper and manganese. High concentrations of nitrate and ammonia were also observed in some of the samples. Historical data indicate that metal and nutrient concentrations were highly variable at all sites in both seasons. The Mofia River catchment and tributaries to the Dipeta River tended to have lower dissolved solids, suspended solids and hardness than the Dipeta River. The headwaters to the Dipeta River, where the Goma deposits are located, had very soft water. Sediment generally had low metals concentrations except for one site on the Sokalwela River downstream of the Kwatebala deposits that had elevated concentrations of cobalt, beryllium and copper relative to other locations. Uranium and thorium concentrations were low, indicating that the likelihood of finding radioactivity in the area is also low. Organic parameters were not detected in the sediment samples.

**Biological Context**

The TFM project is located in the DRC, a country rich in biodiversity. The DRC supports over 11,000 known higher plants, over 1,300 known mammals, birds, reptiles and amphibians and over 100 fish. The DRC is a signatory to the Convention on Biodiversity and has established national- and provincial-level plans for the conservation of biodiversity. Numerous protected areas exist in the DRC, to facilitate preservation of important biological habitats and species. There are no formal protected areas or Ramsar sites (internationally important wetland areas) within the mining concessions. However, there are five protected areas within 100 kilometers of the TFM project. These include the Upemba National Park, the Kundelungu National Park, the Lubudi-Samppa Hunting Reserve, the Tshangalele Hunting Reserve, and the Lufira Biosphere Reserve.

The project region is within the miombo woodland belt of central Africa. Regionally, 634 species have been firmly identified, including 475 higher plants, 144 terrestrial vertebrates and 15 fish. Based on the literature, many more species have the potential to exist in the region. However, the local area is relatively fragmented and modified by man, reducing the numbers of species that presently exist. All habitat types support numerous species of flora and fauna and are of some value regardless of the state of disturbance. However, it is notable that two of the most biologically valuable habitat types (gallery forest and the copper-cobalt habitats) are rare and already under threat in baseline conditions. Of all vegetation types, the miombo woodland has the greatest flora species diversity. Miombo woodland is under pressure from human activities. Clearing for agricultural purposes, charcoal and fuelwood collection, urbanization, infrastructure and industrial development are all reducing the size of the miombo woodland community. The copper-cobalt habitat types also have high flora species diversity. Many of the species have a restricted distribution. Habitat potentially classifiable as ‘critical’ under the guidelines of the World Conservation Union (IUCN) was identified on Kwatebala Hill. In the past, artisanal mining impacted these habitat types.

Shifting agricultural practices are common and result in abandoning of sections of the land, likely due to the soil becoming too impoverished or perhaps because weed infestation was too high. Natural revegetation is generally reestablishing in these highly disturbed areas.
The fauna in the study area is diverse but densities are low. Hunting and habitat loss are realities in the area and have had a significant influence on the local fauna. A field survey during the wet season (2006) found 14 frog species, nine reptile species, 109 bird species and 12 mammal species in the LSA. From relevant literature, the miombo woodland footslope habitat alone would have been expected to contain 310 species, followed by riparian (streamside) areas with 264 species and miombo corridors (strips of forest between larger forest patches) with 262 species. Twenty large game species occurred in this area historically, but none of these remain having been hunted to local extinction. Three endemic fauna species (one frog and two birds) are expected to occur locally, but were not found during the studies. Four Red-listed bird species are expected to occur locally, according to the IUCN, but were not observed during the study. The short-eared trident bat (Vulnerable) of the woodlands and the otter shrew (Endangered) of the riparian environment are the only possible Red-listed mammals that could occur in the study area. Neither were observed during the field survey.

The rivers in both the Mofia and Dipeta catchments are generally regarded as degraded. This is mainly due to the extent of deforestation in the catchments as well as poor cropping activities into riparian zones. Both of these activities cause extensive sedimentation in the rivers. The effect of the sedimentation is evident in the generally low diversities collected for both macro invertebrates as well as fish for all the sites on the Dipeta River. However, a few riverine reaches (Shimpidi, upper Kazakenene) still exist where the riparian forests are intact. No Red-listed fish species were collected during the surveys. Given the degraded nature of the surveyed rivers it is unlikely that such species may persist in these catchments. Elevated contaminant levels, specifically arsenic, measured from collected fish tissues is of concern since these values may pose a current health risk for subsistence consumption.

Social and Cultural Context

The mine site is located in a hilly region within the Kolwezi District, between the urban centers of Fungurume and Tenke. At least 41 rural villages also fall within the TFM project’s LSA, including Mpala, Mitumbu, Mulumbu, Kiboko, Amoni, Mwela Mpande Gare, Kwatebala Gare and Lukotola. With a combined population of over 52,000, the main towns of Tenke and Fungurume each serve as a primary transportation center and marketplace for the region. Between the urban centers of Tenke and Fungurume is a patchwork of farm fields, villages, forests and mineralized lands which have undergone significant artisanal mining activities in the recent past.

The population of the region is young, with 54 percent under 15 years of age. Households in the rural villages tend to be small, averaging less than five persons per household. A striking characteristic of the villages in the region is the very small number of people (10 percent) residing in the same village where they were born. Thirty percent of the population has lived in the same village for less than five years. Recent years of conflict and resulting economic challenges throughout the DRC have contributed to a complex pattern of population movement. Most of the villages in the region are very recently settled. The latest population growth in the Kolwezi District is perceived to be the result of the return of war-displaced peoples to the region and the movement of miners and their families displaced by mine closures elsewhere. Such recent social and economic change is reflected in the cultural diversity of the area. The majority of the region’s residents belong to the Sanga ethnic group, the largest in the project area, along with the Luba, Ruund, Tshokwe, Bemba and Boyo peoples of the region. A local dialect of Swahili is the most common language spoken in the area. French is spoken and understood by only a small minority.

Archaeological and ethnographic techniques were used to locate and interpret several cultural heritage sites. These include two Palaeolithic (Stone Age) archaeological sites, at least one Iron Age site, three cemeteries, three cult sites (known as Kipanda) and five traditional sacred sites. The main types of cultural sites that were recorded within the concession area include: sacred waterbodies, cult sites, cemeteries, and archaeological sites. No sacred sites are located within the actual proposed facility footprint. Sacred sites and cemeteries continue to be used by groups and villages in the area. Overall, there is an expected variety, though not an overabundance, of cultural sites in the mine area.

Infrastructure issues have taken on particular importance in the DRC. Years of conflict have seriously degraded the quality of and access to basic infrastructure and services. Water is sourced mainly from rivers, streams and other unprotected sources raising associated health risks. Health services are available in the urban areas of Fungurume, Tenke and Lukotola. Despite differing levels of access to health services both urban and rural dwellers face similar health challenges. Medicine is normally in short supply and facilities are in generally poor repair. Malaria, a preventable illness, accounts for 54 percent of all health center visits. Health authorities indicate that HIV/AIDS is not yet a pressing problem. However, no HIV/AIDS testing is currently taking place and high-risk behavior was observed during the artisanal mining period. There is concern within the region that with development, such as the TFM project, HIV/AIDS will become a greater problem in the future.

Local Economy
5.18 Agriculture is the main economic activity for both rural and urban populations. Virtually all rural households engage in agriculture, as do more than 80 percent of the urban population. Rural livelihoods are based largely on a mix of subsistence and commercial agriculture, predominantly maize (corn) and beans. Secondary crops such as cassava, peanuts and soybeans are also produced. People rely on additional economic activities such as government jobs, occasional wage labor, beer brewing (a key source of income for women) and charcoal making (traditionally a male activity) to supplement farming incomes. Overall, the regional economy is characterized by multiple cash income and subsistence sources, of which agriculture is the chief component. Agriculture, however, accounts for less than 50 percent of household incomes.

5.19 Approximately 10 percent of the population has a salaried job, though not necessarily with regular pay. Employment typically consists of jobs in the civil service, education and health care systems. Almost 53 percent of people in rural villages and the urban centers of Tenke and Fungurume have never held a job. As a result, there are many job seekers in the area. Even those currently employed have expressed interest in working for TFM and consider themselves in search of work. While recent government reforms aimed at diversifying the agricultural and economic base of the country are underway, options for diversifying livelihoods remain limited.

5.20 An important component of the socio-economic context of the region is the practice of artisanal mining. Over the four-year period from 2002 to 2005 there was a boom of artisanal mining activity in Katanga Province. A significant amount of this activity occurred illegally on the TFM concession area. A final ban in the area was established in October 2005. This had an important effect on the local economy. Local villagers no longer sold produce and drinks to the miners. Women lost an important source of income as they no longer sorted, washed and bagged ore produced by the miners. Many goods were no longer available in the markets on a daily basis. The negative effects of artisanal mining were also recognized by local communities and were perceived as the source of an increase in social problems. Stakeholder consultations indicate villagers accepted that unauthorized artisanal mining needed to be stopped. Villages also expressed optimism for greater economic benefits from a large commercial mine. TFM on average has directly or indirectly employed approximately 1,000 people since February of 2006. People, some of whom formerly engaged in artisanal mining, have been hired for road building, geotechnical fieldwork, fence construction, brick making and other tasks.

5.21 Education levels in the region are generally low. During the artisanal mining period, boys were leaving school to mine. Although current enrollment suggests no gender bias, adult education levels indicate that men typically complete more grades than women. Almost 19 percent of women in rural villages have never attended school. In general, the rural population lacks many basic necessities. There is a general lack of education, poor housing, absence of household and farm equipment, poor access to health care, and almost no regular income. In urban centers the situation is somewhat improved. Better housing, higher educational achievement, slightly more regular income and better access to health care are characteristic of urban centers. Many more families in towns have access to protein foods in the form of dried fish. Annual median income among rural households was estimated to be 79,000 Fc (CongolesFrancs) (175 USD [US dollars]) and 115,000 Fc (255 USD) among urban households. The lingering effects of conflict and the slow pace of economic and infrastructure revitalization continue to present significant social and economic challenges for the region and throughout the DRC.

6. KEY IMPACTS AND MITIGATION

6.1 Key mitigation measures to protect and enhance the physical, biological and social resources of the project area, as well as residual impacts, are described below and are also summarized in Table 1. Results of the sustainability assessment and the assessment of the potential cumulative effects of the expanded project are provided later in this summary.

Topography and Geomorphology

6.2 The TFM project will result in changes to existing topographic features such as hilltops and hillside slopes. The project will create new topographic features such as the tailings storage facility and waste rock facilities. Indicators for such changes are slopes, heights of features, and variability of terrain. with the height of the hills reduced. Indeed, mining of the ore bodies will affect Kwatebala, Goma and Fwaulu hills, ultimately removing most or all of these prominent topographic features. Internal mine slopes (highwalls up to 155 meters high will have slopes of about 39 degrees) will be increased due to mining activities. Waste rock facilities will be created next to mining areas. At Kwatebala Hill, the maximum height of the main waste rock facility will be about 100 meters, with a side slope ratio of 1:1.5 (33.7 degrees). The waste rock facility east of the Goma hills is expected to be about 55 meters high with a side slope ration of 33.7 degrees. These slopes have been designed to take earthquakes, extreme climate and slope failures into account. These two waste rock facilities (stockpiles) will represent locally prominent topographic features. Stakeholder consultations regarding appropriate land uses at closure will help ensure the reclaimed landscape is appropriate for future land use activities.
Geochemistry

6.3 Geochemistry of potential mine wastes has to be understood so that predictions can be made regarding water quality of mine facility runoff, seepage and effluent. The geochemistry program characterized mine waste and ore, including: Waste rock, ore, and tailings. This information was then used to predict water quality for: waste rock storage facility runoff and seepage, ore stockpile facility runoff and seepage (for any potential seepage passing through the liner), open pit lake at closure as well as to determine appropriate water and waste management techniques. Radioactivity was also investigated as it was raised as a concern during stakeholder consultations for which testing indicated only a slight potential in the tailings with <0.0001 mg/L of both uranium and thorium. Also, testing have proven that concentrations in excess of the 5 pCi/gr criterion are unlikely. Overall, radioactivity levels in process effluents are not likely to exceed reference guidelines.

Soils

6.4 The TFM project has the potential to affect soil productivity and to impact unique or unusual soils. The project will impact approximately 2,400 hectares of soils over the mine project’s life. During operation and at closure about 1,300 hectares will be fully or partially reclaimed. The reclaimed processing plant area will be able to support land uses similar to those that existed before disturbance. The open pit will be allowed to fill with water. Tailings storage and top surfaces of the waste rock facilities will be revegetated to prevent infiltration and erosion. Mitigation for soil impacts includes the use of best management practices (BMPs) during construction and operation phases and a reclamation plan for restoring soils at closure. Topsoil salvage, management, placement and reconstruction of soil materials will be performed. The length of time topsoil will be stockpiled will be minimized. Separate stockpiling of different soil types and soil horizons will prevent mixing of soils. Organic matter in the topsoil will be increased through mulching and green manuring. Measures will also be used to prevent soil compaction and to prevent and clean up spills to avoid soil contamination.

Visual Aesthetics

6.5 The introduction of a major industrial facility into this setting will contrast with the existing patterns of land use and the natural habitats. It will contribute to a reduction in the visual aesthetics of the local area. The mine, tailings storage facility, processing plant site and other project infrastructure will be visible from nearby populated areas. Visual intrusion will also be caused by the ongoing operation of the mine, the movement of heavy vehicles and the generation of dust on unpaved roads around the mining area, between the mine and the waste rock facilities and on the tailings dam. The hilly terrain in which the project is situated results in fragmented viewsheds which do not extend uninterrupted over long distances. Regionally, even the top of Kwatebala Hill, which is the highest point in the area, is not visible over extensive areas. Only smaller villages such as Salabwe, Mwanga Muteba, Mwanga Sangu and Mulumbu Kiasa will have views of the processing plant and waste rock facilities. Visual impacts will be minimized through the use of vegetation screens, dust control, using appropriate colors at the processing plant site and the use of lights with fixtures that direct light downward. The visual quality of the existing landscape is moderate to high. Building the quarry will contrast with the existing patterns of land use and natural habitats. The powerlines will be linear intrusions across the same landscape, contrasting with existing patterns of land use and natural habitats and causing localized changes in visual quality.

Major Hazards

6.6 Major hazards include natural and man-made hazards. A natural hazard is a naturally occurring event that could lead to potential failure of project facilities that would impact the public or the environment. The principal natural hazards are from earthquakes and extreme climate and geotechnical (e.g., slope failure) events. Man-made hazards include accidents or malfunctions in the processing plant or other facilities, including rail or road transportation accidents (e.g., spills or collisions with people). Also, the transportation program will incorporate mitigation measures to minimize risks from accidental spills and collisions Risk mitigation measures will be implemented for all potential major hazard scenarios. Specific mitigation measures will be implemented at each of the project sites to minimize risks. Five examples of the many mitigation measures to be implemented are:

- There will be geotechnical testing of tailings, fill waste overburden and foundation materials. Outer slopes, containing tailing or fill materials, will be designed to withstand the predicted maximum earthquake (peak horizontal ground acceleration of 0.12 gravity units) for the area without a major failure. Additionally, buffer zones around the waste rock stockpiles will be maintained to protect the public from incidental rock falling or sliding during operations.
- The Tailings Storage Facility containment will be designed for an extreme storm and wet year water cycle.
- At the processing plant, tanks and vessels will be designed for anticipated wind loads; buildings and dams will be designed to withstand the design earthquake ground motions and deformations.
- There will be regular monitoring for the stability of slopes and fill materials.
- The tailings storage facility walls will be buttressed with waste rock so that the chance of a dam failure will not exist.

After the above mitigation, levels will be within international standards for mining operations to minimize risk to the public and to environmental resources.

**Air Quality**

6.7 Changes to air quality can affect nearby residents, agricultural crops and natural flora. Greenhouse gas emissions, although minimized through the use of hydroelectric power, can contribute to global warming. TFM proposes to mitigate the effects of dust through all phases of the project using effective and proven techniques. These include the use of water on roads, treating the surfaces of portions of the road network, use of speed limits for drivers and covering loads. Revegetation of selected exposed areas will also be used when feasible and the tailings storage facility will be kept wet to limit wind erosion. Water sprays will be used in high traffic areas and on the waste and ore stockpiles, as necessary, to control dust generation. Transport of the ore to the processing plant will be by a combination of mining equipment up to a stockpile and from there through a covered conveyor. Dust levels will be kept to within applicable standards through use of the above actions. Tailpipe exhaust will be kept low during all project phases through use of adequate exhaust control systems on vehicles that will be kept in good repair. Emissions from the acid plant, the leaching circuit and the cobalt recovery section of the processing plant will be minimized through the use of scrubbers. Air quality modeling predicted that all emissions will be within applicable and reference guidelines at the nearest communities during operation. Greenhouse gas emissions will be reduced through the use of hydropower that will provide electricity to the processing plant and other facilities.

**Noise and Vibration**

6.8 The TFM project will contribute to local noise and vibration levels at different levels including blasting and haulage of waste rock and limestone and processing of the ore and through vehicle traffic on the access roads. Noise and vibration modeling was performed, based on the proposed mining at Kwatebala. Results from the modeling indicated that none of the nearest communities (i.e., post-resettlement) will experience noise or vibration above applicable guidelines as a result of the project. Waste rock facilities, ore stockpiles and buildings will act as barriers to noise generated by the mine and the processing plant. No mitigation of vibration is recommended. Mitigation measures for noise include outfitting all vehicles with standard silencers that will be kept in good repair. This conclusion assumes that the three closest communities of Mulumbu, Amoni and Kiboko will be relocated.

**Groundwater**

6.9 Groundwater will be pumped from wells to supply the processing plant, construction camp and other mine facilities with water. Rainfall will also be captured on the tailings storage facility, waste rock storage facilities, ore stockpiles and portions of the processing plant site and used for process water and other uses. Beginning in Year 8, when the pit will be mined below the water table, groundwater flowing to the Kwatebala pit will be intercepted by dewatering wells to prevent the pit from filling with water. All of these actions have the potential to lower the local water table and reduce the discharge of groundwater to springs and surface water. Such changes in groundwater levels have the potential to affect local wells and springs, surface water hydrology and quality, fish and fish habitat, flora and fauna. TFM has designed the project to minimize the effects on groundwater levels. A design feature related to groundwater levels and flows includes allowing all water that does not come into contact with exposed waste rock or ore (“non-contact” water) to infiltrate into the ground to recharge groundwater levels. The construction of the tailings storage facility will be staged so that the amount of water that becomes “contact” water only increases as more tailings storage is needed. Groundwater will only be pumped from aquifers that are shown to have adequate long-term supply for the mine. Due to dewatering, it is predicted that 15 to 16 springs could be lost as water sources during operations. Over the long-term post-closure period, springs will recover, but several springs will show only seasonal, rather than year-round, discharge.

6.10 The environmental assessment concluded that some effects to groundwater levels within the local aquifer, where most of the mine facilities are located, are likely. Mitigation for water supply will be to augment baseflows in the Kasana, Sokalwela and Shimpidi rivers with excess dewatering water. Groundwater quality has the potential to be affected by water infiltrating through waste rock facilities and ore stockpiles, stormwater control dams, accidental spills, and to a lesser degree by lined facilities such as the tailing storage facility and the return water pond. The post-mining pit lake may also affect the long-term groundwater system. Secondary containment will be used at all surface tanks and fuel/chemical storage areas containing potential contaminants to prevent groundwater contamination. These measures will ensure that effects on groundwater quality are minimized. Despite these measures, some effects may occur due to seepage from the waste rock...
storage facilities and the ore stockpiles. Geochemical modeling has shown that the predicted impact is likely to be low, due to the fact that the ore and waste rock has a low potential for acid generation.

**Surface Water Flow**

6.11 Surface water flows will be disrupted at the mine site by diversion of non-contact water around the facilities and by capture of all contact water for use in the processing plant. Clearing of land will lead to increased runoff until the land can be reclaimed and revegetated. Changes in groundwater levels, described above, will likely result in a lower rate of groundwater discharge to the headwaters of three local rivers: the Kasana, Sokalwela and Shimpidi rivers. Changes in flows in these rivers may affect downstream water users as well as fish and aquatic habitat, flora and fauna. Release of treated sewage effluent to the Kabomboy River will result in increased flows and all effluent will meet applicable standards. Mitigation measures to reduce the effects to surface water hydrology will include: (i) Staged development of the tailings storage facility so that the amount of water sent to the processing plant is minimized; (ii) Return of disturbed areas to natural runoff conditions as soon as possible; (iii) Augmentation of the baseflows in the three local rivers; and (iv) Provision of potable groundwater to downstream residents if dry season flows where people withdraw water are appreciably reduced.

6.12 A water-flow model was prepared for the mine site and used to predict effects. The environmental assessment determined that both wet and dry season flows would be reduced in the three headwaters draining the Kwatebala hill. A reduction in the wet season flows was not considered to affect local users, flora or fish due to the large amounts of water that flow during that season. However, a reduction in dry season flows could affect surface water availability to users immediately downstream, as well as ecosystems such as gallery forests on the Kasana River and aquatic habitat on the Shimpidi River. This impact is most likely to occur as a result of aquifer dewatering activities necessary to mine below the current water table at Kwatebala. It is predicted that the mining operation will reach the current water table in about the 8th year of mining. A portion of the groundwater removed for pit dewatering will be used to mitigate baseflows to the extent necessary to preserve the affected ecosystem. Excess dewatering water released to the three local rivers has the potential to cause stream bank erosion during the wet season. Erosion-control measures, adjustment of releases and/or piping of excess water to the Dipeta River will mitigate this effect. Changes to channel geomorphology in all rivers are expected to be negligible.

**Water Quality**

6.13 Results from the groundwater and surface water resources assessments were used in the evaluation of potential surface water quality effects. Little or no effects above baseline levels were predicted for erosion and sedimentation effects, sewage effluents, mine pit dewatering, or seepage from waste rock storage facilities and ore stockpiles. All parameters are predicted to be at acceptable levels at the nearest downstream village. Water quality in local springs and watercourses may be affected by site clearing and disruption of natural drainage patterns, disposal and stockpiling of waste rock and ore, ore processing, sewage treatment effluent, accidental releases and spills and site reclamation and closure activities. Water from mine pit dewatering wells may be released to local rivers and have a minor influence on water quality, but is not predicted to impair the water for any of its current uses. BMPs will be used during site clearing and construction to minimize erosion and sedimentation. These practices will include diversion of runoff water away from roads and disturbed areas and the use of sedimentation ponds and silt fences. The TFM project will be designed using a “zero discharge” concept, where water release will be kept to the minimum and will meet applicable water quality guidelines. Key mitigation measures for water quality include lining the tailings storage facility and return water dams and recycling of all contact water in the processing plant. Sewage treatment plants will be installed at the plant site and at the permanent village. Sewage will be treated so that all effluent meets discharge criteria. Solids will be composted and used as a soil amendment or disposed of in a landfill. Secondary containment will be used at all surface tanks and storage areas containing potential contaminants. BMPs will be employed during reclamation and closure. The closure landscape will be designed with sustainable drainage and vegetation cover so that erosion and sedimentation is reduced and so contact of runoff water with mine or waste material is minimized.

**Traffic**

6.15 Changes in traffic represent a considerable increase in traffic volumes particularly along the access roads. Overall, motorized vehicle traffic along the northern access route will increase by approximately 276 percent during construction, and by approximately 442 percent during the initial years of operation. During the construction phase, traffic access will be along the road from Likasi to Fungurume, using the Kambove to Kakanda mine road and cutoff to the TFM camp through the concession. Access will continue on the Fungurume bypass road and intersect with the Mulu mbu access road to reach the Kwatebala processing plant site. This northern access route will convey all traffic to and from the site (including the movement of supplies, reagents, product and personnel) during construction and initial years of production. A southern
access route (partly an upgrade of an existing road and partly a new road) along National Road Number 1 to the Kafwaya cutoff road may serve as the primary route for the transport of product and reagents for the remainder of the life of the project (years 5 to 40+).  

6.16 The TFM project is expected to bring about overall improvements in transportation infrastructure. Increases in traffic volumes along the northern and southern access routes will be minimized by the upgrading and maintenance of the Mulumbu access road and the Fungurume bypass road. Increases in traffic volumes along the northern access route will have the greatest potential impact in relation to bicycle and pedestrian traffic. To minimize this, TFM will delineate and mark a pedestrian lane on main access roads, including the use of marker stakes implanted in the road surface. Common crossing points will be identified by signs and crosswalks. Measures that are to be built into the project design include the construction of new roadways and upgrading existing roads within the concession. Several safety measures will also be implemented in parallel to these physical measures, including speed limits, drivers’ education, vehicle scheduling, and vehicle maintenance and, most importantly, public education. These measures will reduce the potential for accidents along roadways within the concession.

**Waste Management**

6.17 Management of wastes will include dedicated facilities for tailings, waste rock, water treatment residue, and domestic, industrial and hazardous waste. Hazardous wastes will include substances generated from plant and vehicle maintenance, the acid plant, the incinerator and lab and medicinal facilities. The major hazardous wastes will be used chemical reagents for copper and cobalt extraction processes, converter fluid from the acid plant, solvents, fuels, oils and grease, hydraulic fluids, incinerator ash and some lab and medical wastes. Objectives for waste management will be for (1) waste reduction, recycling, re-use and composting, and treatment, as applicable, and (2) safe storage of any wastes produced. Storage of wastes will be conducted such that effects to the environment (air, surface water, soils, groundwater) will be minimized. Monitoring of waste facilities will be conducted so that remedial action can be taken if any effects are found to occur. The tailings facility will be lined with an impermeable liner and tailings water will be recycled to the processing plant. Enhanced evaporation (water sprays) will be used, if necessary, to balance process water inventories, thereby minimizing the likelihood of process waters being discharged as a waste to the environment. Waste rock (and low-grade ore and plant site) runoff also will be collected and recycled in the processing plant. Process water treatment residues, including iron-aluminum-manganese (FAM) residue will be combined with the tailings.

6.18 Solid wastes will be classified and sorted according to their characteristics (recyclable, suitable for clean landfill, compostable or hazardous). Non-hazardous and hazardous waste management landfills will be constructed for the project, unless if a licensed, off-site hazardous waste facility operator is used, in which case there will be no need for an on-site hazardous waste facility. The proposed lining for such landfills will consist of double lining systems with a leachate collection system above the primary liner and a leakage collection system between the primary and secondary liner system. The leachate will be collected in a detention pond, then transported or pumped to the sewage treatment works (for non-hazardous waste leachate) or recycled to the processing plant (for hazardous waste leachate).

**Flora**

6.19 The TFM project will disturb floral communities on the ore outcrops that will be mined and in the areas where the mine and its associated facilities will be constructed. Other potential effects to flora include those from airborne dust, emissions from the mine fleet and the processing plant, changes in surface water hydrology and the introduction of non-native plants. Also of concern are effects related to the likely in-migration of people to the area. This may lead to increased clearing of forests for charcoal and agricultural production. An important issue affecting flora is the removal of rare copper-cobalt floral communities on the Kwatebala, Goma and Fwaulu hills as these hills are mined. These hills support unique floral communities of copper-cobalt flora and some species are currently known to occur only in the region. Habitat potentially classifiable as ‘critical’ under the guidelines of the IUCN was identified on Kwatebala Hill.

6.20 TFM will employ a multi-faceted approach to keep impacts to flora to an acceptable level. This will include avoiding copper-cobalt plants as much as is practical and the creation of copper-cobalt plant micro-reserves (PMRs) in areas adjacent to the development site. These reserves will be identified and protected from accidental disturbance. Conservation areas will be established to protect copper-cobalt flora for the life of the mine. TFM will also set aside areas for ecosystem reconstruction and plant propagation activities. Relocation of potential critical habitat will also be undertaken to meet the requirements of the IFC’s Performance Standard 6. Such activities will add to the current knowledge base for copper-cobalt flora conservation and will aid in the future planning for possible mine expansion. All of these activities will be implemented through a Biological Diversity Action Plan (BDAP). No species loss will occur as a result of the TFM project. An
equivalent amount of this vegetation type will be restored within the concession. Some gallery forest is also located
downstream from the project site on the Kasana and Shimpidi rivers. Should dry season flows to the river be reduced
sufficiently to affect the health of this forest flows will be augmented by use of groundwater. In addition, an equivalent
amount of gallery forest to that which may be affected by a lowered groundwater table will be restored in the concession. At
closure miombo woodland will be replanted over portions of the plant site and other areas as feasible, unless local land users
have preferred land use options.

Fauna

6.21 Impacts to fauna will include habitat loss due to site clearing and possibly habitat change as a result of changes in
dust or air emission, changes in stream flow, noise, and fencing or other obstructions impeding movement. Animals may also
be affected by mine infrastructure such as ponds, powerlines and stacks. Animals may be killed or injured by vehicles.
Increased hunting of fauna as the human population of the area grows is also an issue. The project is being designed to
minimize its disturbance area. For example, the waste rock facilities are being designed to be high so that their footprints can
be smaller. In addition, BMPs will keep erosion and sedimentation under control. Any areas that are abandoned will be
promptly reclaimed, as will all sites (except open pits) at closure. Most site clearing will occur in miombo woodland and
agricultural habitats. These habitats are not limited in the region. Site clearing will also affect copper-cobalt habitats.
However, no Red-listed species are known to be restricted to these areas. Effects related to noise and air quality are expected
to be negligible to low. This is based on the mitigation and impacts outlined in the noise and air quality assessments.
Similarly, changes to water flows and quality are predicted to have a low impact on fauna.

6.22 Wildlife movements may be affected by fencing, new roads and loss of habitat. However, buffers of viable habitat
will be left around the facilities to encourage faunal movement. Progressive reclamation will restore movement habitats as
land is made available for reclamation. Few large species currently exist within the LSA, so fencing will not deter wildlife
movement. Wildlife death due to the project will be minimized by appropriate project design, prohibition of hunting by staff
or contractors and establishing speed limits. Increased local harvesting due to in-migration of people to the concession area is
an issue that is difficult to mitigate. However, no species is expected to become extinct due to the project.

Fish and Aquatic Habitat

6.23 Fish and aquatic habitat may be affected by the TFM project due to loss or disturbance of habitat including changes
in surface water flows, sedimentation and water quality. Subsistence fisheries in the concession will be affected in a low to
moderate fashion, although it will be somewhat more difficult to monitor changes in informal fisheries, an activity, which is
likely to increase as more people move into the area. Increased fishing pressure due to an influx of newcomers into the area
will become of increasing concern, though no fishery of local importance occurs under baseline conditions. For mitigation
measures for fish and aquatic habitat, BMPs will be used to minimize erosion and sediment loading to streams. Watercourse
crossing guidelines will be implemented to protect aquatic habitats. Flows in the upper catchments around the mine site will
be augmented, when available, with pit dewatering water (intercepted by wells) to maintain dry season baseflow.

Natural Habitats and Biodiversity

6.24 Effects to natural habitats and biodiversity will be related to changes in flora, fauna and fish and aquatic habitat as
discussed above. Key issues are to do with habitat loss or alteration, direct or indirect mortality (death) of locally endemic
(native), threatened or endangered species and fragmentation of natural habitats. Mitigation measures include those aspects
discussed previously, including minimizing the project footprint, translocation of rare plant species and habitat to ecosystem
reconstruction sites, conservation of PMRs and larger areas, and reclamation. Gallery forest habitat will be directly affected
by site clearing but an equivalent area of forest will be replanted during operation and closure. Monitoring of changes in stream
flow near the mine will be undertaken and flow augmentation undertaken if gallery forests are shown to be affected. Copper-
cobalt habitats will be impacted as most of the ore bodies to be mined are covered by this vegetation. Mitigation measures as
described under flora above will limit but not eliminate these impacts. At the landscape level, the project will increase natural
habitat fragmentation (i.e., natural habitats will decline in total area and patch size and the amount of edge will increase).
Effects are expected to be low for miombo woodland and gallery forest habitats, but moderate for copper-cobalt habitats.

Protected Areas

6.25 No protected areas will be directly affected by the project. The nearest protected area is 75 kilometers away. It is
predicted that there will be little, if any, effects from air or water quality or increases in the local population that may put
pressure on protected areas.
7. SOCIO-ECONOMIC IMPACTS AND MITIGATION

7.1 Stakeholder consultation results indicate that socio-economic opportunities created by the mine are a main concern. This includes individuals who expect to directly benefit, but also those people (particularly rural villagers and women) who view employment as less of a project benefit. For these people assistance with agriculture, education, health services, water, electricity and housing are the expected benefits of project development. There is considerable complexity in assessing the socio-economic impacts of a project. Impacts, mitigation measures and even benefits can result in many interacting effects, both positive and negative. Managing socio-economic impacts, more so than other disciplines, involves minimizing negative effects and enhancing positive benefits.

Land Use

7.2 Impacts related to land use include impacts to livelihoods and residences. The loss of agricultural land due to occupation by the project may result in the loss of agricultural income and livelihoods, increased pressure on other farm lands or land-related conflicts. Depending on the land and livelihood resources that are affected by the TFM project, preferable alternatives for compensation will be identified for affected peoples. This could include replacing that portion of the land or livelihood resource affected, or other restoration measures. Where access to otherwise unaffected land may become difficult for users, consultations will identify preferred alternatives for addressing impacts. This can range from the provision of footpaths or other means of access to the eligibility of stranded or ‘ orphaned’ parcels of land for compensation or replacement. The intent is to ensure that peoples’ social and economic well-being are not harmed by project impacts.

7.3 Where permanent residences fall within the project footprint, residents will be physically displaced. People whose lands are required for the project will be resettled according to a Resettlement Action Plan (RAP). The village of Mulumbu will be impacted and all of the approximately 1,200 individuals in the village will be resettled. This impact will also apply to the villages of Amoni and Kiboko, which have 224 and 134 residents respectively. Criteria that have guided TFM resettlement planning are derived from the IFC Performance Standards and would address the following issues:

- Both economic (e.g., farm fields) and physical (e.g., homes) displacement will be addressed when resettlement planning is needed.
- If the source of any individual’s livelihood is affected by more than 10 percent (e.g. more than 10 percent of their farm fields), the replacement of that livelihood and not simple cash compensation will be required.
- Affected people will be left no worse off and preferably better off by the project.
- Losses will be compensated at full replacement cost plus 50% and informal occupation rights will be taken into consideration.
- Resettlement will be carried out in a consultative manner, particularly when it comes to the selection of resettlement sites, with the affected people, the host communities and local authorities. The objective is to reach broad community consensus.
- The RAP is tied to the ESIA process and provisions will be made for long-term monitoring of affected people and their livelihood.

Workforce and Population Change

7.4 Impacts to the local population are expected to begin during the construction phase as a large workforce will be brought in from outside the project area. Large numbers of job seekers and migrants can also be attracted to the project area. These often rapid changes in local demographics can result in a number of undesirable pressures and consequences, including:

- Pressures on housing and existing minimal infrastructure.
- Development of spontaneous settlements around the project site often associated with poor sanitation conditions, inappropriate rent taking and unmanaged agriculture.
- Disruptions to local cultures.
- Increased incidences of sexually transmitted diseases (STDs) and HIV/AIDS associated with worker and migrant influx.
- Measures to manage potential effects will be put in place through a combination of public consultations, policies and planning. These measures will include:
• A hiring policy giving preference for employment of local people with the best qualifications for a given position. In case of equal qualifications among many candidates, preference will be given to DRC citizens and local residents of the TFM area.
• A procurement policy that gives preference to locally produced goods and services.
• Accommodation of non-local workers in a dedicated construction camp with independent water and waste treatment facilities.
• Control of spontaneous settlements in the project vicinity.
• Busing construction workers from Tenke and Fungurume.
• Establishing a project-sponsored commercial area near the construction site.
• A code of conduct for project workers that establishes rules for interaction between the project, its workers and the local community.
• Developing a workforce HIV/AIDS management and awareness program.
• Voluntary and free-of-charge HIV testing and counseling for project workers.

7.5 The project itself will make few demands on existing services and infrastructure as the non-local construction workforce will be housed at dedicated camps where all their service requirements will be met. As well, project construction will require infrastructure upgrades in the power, road, and water supply sectors. These upgrades will remain after the end of construction and will be beneficial to local communities and beyond. Improvements to transportation infrastructure associated with the project will improve roadway safety and access for local residents.

Employment and Labor

7.6 Perhaps the most significant benefit for local communities will be through direct employment and job creation. The number of direct project hires is anticipated to be around 2,000 construction workers at peak of the construction phase and approximately 1,100 workers (1,000 employees and 100 contractors) during operation at the mine. A peak construction/operation workforce of 3,100 is expected to occur in the last year of construction. The direct and indirect economic contribution of the project sustains a multiplier process within the country, resulting in an increase in incomes and employment that exceeds the original contribution of the project. This economic rippling effect continues as portions of wages and profits are spent by businesses and workers within the local economy, supporting other jobs and businesses. It has been estimated that during operations, approximately four indirect livelihoods could be created for each direct job provided by TFM. Therefore about 4,000 individuals within the DRC could rely on the TFM project for their main source of livelihood during operations, in addition to the approximately 1,100 jobs provided by the company during that phase. This does not include consideration of the informal economy.

7.7 Salaries for locally hired residents will benefit both household and local economies through increases in purchasing power and by directing economies away from barter exchanges. As local people gain skills and experience through work and training, they will also improve their access to more skilled jobs. Experience from elsewhere in Africa indicates that labor conflicts are difficult to avoid at the end of construction when numerous work contracts are terminated. Poor human relations policies and the failure to adequately manage labor agreements and worker expectations can potentially damage community relations or even create local or regional unrest. The TFM project will reduce the potential. negative impacts of labor through compliance with national and international labor standards, and through on going consultations and monitoring. The project will also enhance the benefits of increased employment at the household, local and regional levels.

Training

7.8 It is the project’s policy to provide training to employees. A positive impact of local workforce recruitment is the improved employability of those hired. Local recruitment and training will improve skills needed for better job performance and promotion, broaden the skill base of employees and prepare them for new opportunities in the future. Temporarily hired local workers will obtain on-the-job training in aspects such as safety and other technical topics. This training will enhance the capacity of temporary workers to secure better jobs in the future.

Economic Impacts

7.9 It is estimated that a total of 650 million USD will be spent during the construction of the project. Of this, at least 75 million USD will be spent in the DRC. The estimated spending during operations will be significant, of which approximately 60 percent will be spent in the DRC. Taxation over the life of the project will also be significant and will be allocated to local, regional and national governments. Because anticipated project expenditures are expected to be large relative to the size of the local and national economy the benefit is considered to be of high consequence. The scale of the TFM project is
expected to bring large economic benefits to the local area through creation of employment, demand for businesses and improvements in infrastructure. The overall goal of managing socio-economic impacts is to minimize negative effects and to contribute to economic and social development through employment, business opportunities and training as well as through support of planned urban growth.

Community Safety

7.10 It was clear during stakeholder consultations that there is a strong desire for improved roads within the project area. Access to agricultural markets, health and educational services would all be enhanced by road improvements and would significantly assist in addressing fundamental socio-economic constraints. Communities also expressed concerns about the deterioration of roads as a result of increased traffic and raised community safety concerns regarding potential accidents. Increases in traffic volumes will be minimized by the construction, upgrading and maintenance of access roads and by the construction of a bypass road around Fungurume. The implementation of safety measures such as speed limits, drivers’ education, public education and scheduled maintenance of vehicles will reduce potential impacts to community safety.

Health and Well-Being

7.11 The potential for adverse effects to human health during operations and post-closure were considered low to negligible. Potential impacts on aquatic life and agricultural resources were also considered negligible. The risks of increasing incidences of Sexually Transmitted Diseases and HIV/AIDS are of special concern and will be addressed through vigorous prevention, awareness and monitoring programs. Safeguarding human health is of critical importance. Sound and sustainable project development is built around regard for the social well-being of locally affected communities. The fabric of community life can be affected by a project through increases in many unwanted social pathologies, such as crime and other social ailments, or social disruptions caused by the unequal distribution of income and employment. Several measures and policies will be employed to reduce potential negative impacts on community well-being, including: (i) implementation of a workers’ code of conduct, (ii) accommodation of non-local workers in a dedicated construction camp, (iii) establishment of a fair compensation mechanism, and (iv) transparent and publicly-disclosed employability and hiring policies. Community development investments supported by the TFM project are expected to bring significant benefits to the local community. This program has already been launched with the building of three primary schools and installation of 10 village wells during the project ESIA and Feasibility Study phase. TFM is working closely with local communities and NGOs to identify and implement additional such projects during the construction phase of the project in 2007.

Cultural

7.12 Avoiding sites of cultural and historical significance is always the preferred mitigation option for sound and sustainable project development. Archaeological sites within the project’s buffer zone (at the western boundary of the project area) can be avoided. Protecting or enhancing the cultural and historical resources of the area relies not only on best practices for appropriate identification, protection and mitigation, but also on consultation with local communities to assist in understanding the meaning and importance attached to particular locations and resources. While several Kipanda sites were identified within chiefs’ land holdings in the project area, none were considered to be of cultural significance by the chiefs. The significance of certain sacred sites is also open to modification of use and cultural meaning. Sites such as the Kabakishi River and the Maoma cemetery and adjacent gallery forest continue to have important cultural significance within the region. If sites were impacted by the TFM project, practices such as the deconsecration or relocation of existing sites or cemeteries will assist in preserving the region’s cultural resources.

8. CUMULATIVE EFFECTS ASSESSMENT

8.1 A cumulative effects assessment was conducted for each physical, biological and social discipline. A cumulative effects assessment should consider the proposed project in addition to all other existing, planned or reasonably foreseeable projects in the regional study area. The nearest industrial project to the TFM concession is the Kakanda Mine, located some 21 kilometers to the southeast. It was considered to be outside any zone of possible interaction with the TFM project. Also, no other planned or reasonably foreseeable projects are known for the region other than TFM’s own potential expansion plans. The ESIA focused on the effects of the Kwatebala mine. The cumulative effects assessment investigated the effects of the current proposed project with the effects of an expanded project, including development of the Goma and Fwaulu ore bodies. Expansion of the project to a production rate of 400,000 tonnes per year of copper was considered for the cumulative effects assessment. Because of the conceptual nature of the expanded project at this time, the following assumptions were made: (i) Mining of ore at Kwatebala, Goma, Fwaulu and Fungurume; (ii) Expansion of the proposed Kwatebala processing plant to a production of 200,000 tonnes per year of copper; (iii) Construction of a second processing plant
north of Fungurume with a production of 200,000 tonnes per year of copper; (iv) Construction of a second tailings storage facility north of Fungurume; (v) Deposition of waste rock near the Goma, Fwaulu, Kwatebala and Fungurume pits, and (vi) Expansion of the construction camp and ancillary facilities as required. Predictions of effects are made with a low level of confidence given that the eventual form of the expanded project may be different from that considered in the analysis. Given the conceptual nature of the expanded project scenario, the description of cumulative effects is similarly broad and conceptual in nature. More specific and detailed assessments of potential impacts would be required prior to any expansion of the project.

**Physical Effects**

8.2 Cumulative effects to topography are expected to be high as approximately four times more land will be mined out or otherwise used, compared to the current project. Effects to soils are expected to be similar to, but larger than, those for the current project. Some 2,700 ha of soils are predicted to be lost due to the current and expanded projects combined. Visual aesthetics are expected to be highly altered during operations, but the impact will be reduced to moderate levels following reclamation and closure. Hazards are expected to be similar to those discussed for the current project, but the chance of hazards occurring (e.g., interaction of people with traffic) will be higher. Air and noise impacts are expected to be greater due to the increased size of the project, and it being spread out over a larger area. Separation of emission sources, such as through construction of a second plant or mining of widely separated pits, will help to lessen cumulative effects. Groundwater is expected to be affected due to an increase in groundwater demand. Water quality effects have the potential to be greater due to mining and processing of sulfide ores. Mining of sulfide materials may require that mitigations to control acid rock drainage be put in place.

**Biological Effects**

8.3 The cumulative effects for the biological disciplines are all expected to be larger in magnitude, but similar in type, to effects predicted for the current project. The only exception is for protected areas, where few if any effects are expected for either the current or expanded project cases. The most important terrestrial effect is predicted to be the potential loss of rare copper-cobalt plant communities, as these occur where most mining is expected to take place. Mitigation techniques developed over the course of the current project, including translocation of rare species, ecosystem reconstruction and conservation of small management areas, will aid for future mitigation for the expanded project. However, the expanded project will result in larger areas of tailings and open pits that will not be possible to restore to the conditions that exist at these sites today. In-migration of people to the region as a result of an expanded project, and their effect on the local ecology through deforestation, increased fishing pressure, and other impacts, will also be an important cumulative effect.

**Social and Cultural Effects**

8.4 Extension of the current project’s life through expansion will have a positive effect on the local and regional economies through continued and increased employment, acquisition of skills, taxation and payments to the local development fund. The expanded project will therefore aid in the sustainable development of the region. More land, however, will be required to achieve these benefits and some additional communities may have to be relocated. Planning has already been initiated during the current project to minimize population influx to mineralized areas in order that future relocations can be kept to a minimum. Other negative social effects will be as described for the current project. These include effects related to in-migration of people with a resultant strain on local infrastructure and social fabric and increased likelihood of alcoholism, prostitution, drug-use and sexually transmitted diseases. Effective means to address these concerns, developed over the course of the current project, will be used to lessen these potential effects of the expanded project. The cumulative effects of an expansion of the project could considerably increase the geographic extent of impacts on cultural heritage resources. Project development would occur across much of the study area, including additional ore-bearing hills such as the Fungurume hills. However, with additional consideration of the cultural and heritage resources of the area including surveying, ongoing consultation with local communities and best practices for the preservation, enhancement and mitigation of heritage resources, the social consequence of cumulative impacts is likely to be negligible.

9. **PUBLIC CONSULTATIONS**

9.1 Ongoing consultation has been and continues to be an important part of the ESIA process. More than 200 disclosure and consultation meetings took place from November 2005 to December 2006 with a variety of stakeholders, including individual members of the general public, Non-governmental organizations (NGOs), special interest groups, regional government representatives, and national government representatives. Some meetings were large and involved many stakeholder groups at once. Other meetings were small, such as meetings with village members living near the project. Along
with professional expertise, consultation with stakeholders provided a solid basis for focusing mitigation planning and impact analyses on issues of concern. Stakeholder consultation included:

- Announcement of opportunity to comment, through meetings held by the socio-economic baseline team, meetings held by TFM, distribution of letters of invitation and a background information document, radio announcements, newspaper advertisements, websites and distribution of sets of posters. Over 4,000 copies of the background information document (BID) were distributed.
- Distribution of an Issues and Response Report providing an ongoing record of all stakeholder issues raised and TFM’s comments.
- Distribution of a draft Scoping Report that described the proposed TFM project and defined the proposed scope of the ESIA.
- Open houses to enable comment on the draft scoping report.
- Focus group discussions, village meetings and key informant interviews conducted as part of the socio-economic baseline study.

9.2 Many issues were raised during consultation and these have been discussed throughout the ESIA. Some key issues include:

- The need to optimize employment and economic benefits for Congolese people.
- Concern over the loss of farmland and residences and the need to resettle people.
- Concern over possible health and safety effects on people, including HIV/AIDS linked to migrant workers.
- Concern that changes to water quantity and quality downstream of the mine and tailings storage facility could damage the environment and affect people and agriculture.
- Concern over the level of impact the mine will have on biodiversity of flora.

9.3 Stakeholder consultation will continue during the construction and operation phases.

10. ENVIRONMENTAL & SOCIAL ENHANCEMENTS

10.1 Many mitigation measures are proposed for construction, operation and closure to minimize negative effects of the project on biodiversity. These have been detailed in the flora, fauna, fish and aquatic habitat, biodiversity and protected area sections of the ESIA and summarized in Table 1. Additionally, there are those project actions which will enhance positive biological effects and which are over and above mitigation measures for specific project impacts. These actions have been included in the ESMP some of which are highlighted in the next section. TFM will provide assistance in the area of agricultural credit (seed money), agroforestry, soil mulching to improve soil quality; construct wells equipped with hand-pump systems; training on the use of water from springs and dug wells to minimize pollution and human health impacts; assist the local government with watershed planning; assist local NGOs to set up small business to make energy-efficient wood stoves; help establish a private electrical distribution utility to provide electricity to growth centers and permanent villages; promote sustainable commercial extraction of non-timber forest products by purchasing for use in the camps; promote sustainable harvesting of fish population; increase awareness of communities for better management of natural resources; create farmers’ association in all 41 communities to help them improve agricultural production, provide oxen for ploughing fields; assist women’s groups with a micro-savings, literacy and leadership development; a region-wide HIV/AIDS initiative; disseminate project-acquired heritage data and share with local schools and University; help establish a demonstration vegetable garden that could supply the project; etc.

11. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMP)

11.1 An environmental and social management system (ESMS) has been designed to implement the measures required to mitigate and manage the environmental and social impacts of the proposed project. The implementation of the ESMS will fall under the responsibility of the Environmental and Social Department, which will be comprised of two main sub-departments: environmental and social. The manager of the Environmental and Social Department will interact with government institutions and with third-party organizations throughout the implementation of four different action plans (environmental, social, reclamation and closure, and emergency response) that constitute the Environmental and Social Department. These will be managed by the Environmental and Social Manager.

11.2 The environmental action plans alone include 15 separate plans for pertinent environmental disciplines (e.g., air quality, surface water, flora, etc.) assessed in the ESIA and important waste streams (e.g., mine waste, domestic and...
industrial waste) as well as materials management. The social action plans consider four key aspects relating to social mitigation, management and monitoring, including: (i) a social management plan to address the key socio-economic issues raised in the ESIA, (ii) a cultural heritage plan to minimize impacts to archaeological, historical and cultural resources, (iii) a resettlement action plan (RAP) to ensure that any required resettlement is carried out to best international standards (see below), (iv) a community development plan (CDP) will be implemented to provide a framework for effective local development, and which is unrelated to mitigation-driven actions. An occupational health and safety plan will be managed by the Occupational Health and Safety Department.

11.3 The reclamation and closure plan describes the actions that will be taken for the closure of project facilities. The main objectives of the reclamation and closure plan are to ensure the long-term physical and chemical stability of the project, wherever possible restore the project site conditions that would allow post-closure beneficial use, and to protect humans and wildlife from any hazards. This plan will also present necessary post-closure treatment, maintenance and monitoring measures that would be required following completion of closure measures. The occupational health and safety plan describes the actions that will be taken to protect the health and safety of the employees involved in the construction and operation of the project. The emergency response plan describes the actions that will be taken to respond to situations out of the scope of normal operations such as medical emergencies, fires, non-schedule explosions, vehicle accidents, hazardous materials spills/releases and natural disasters. Direct benefits of the project to the DRC are expected to contribute to alleviating local poverty and large-scale unemployment during operation and include provincial and municipality royalty shares, workforce earnings, local procurement, corporate income tax, withholding tax, export and import duties, transportation and a local agriculture and social investment fund.

11.4 It can also be reasonably expected that the project will have secondary and tertiary development effects from increased activity in the area. During construction, the project will employ approximately 2,000 people, the majority of which are anticipated to be for local people recruited in the Katanga area. During plant operation, TFM expects to employ approximately 1,100 people, the majority of which are expected to come from local communities, with the number increasing over time as the local workforce increases its capacity. Each direct job should create roughly four indirect jobs in the DRC, significantly increasing local employment opportunities. As well as these regional financial benefits, the project will be focused on improving transport infrastructure and will be committed to investment in training its employees. At the national level, TFM is expected to pay taxes, duties, a royalty and dividends to the DRC and Gécamines in the amounts set forth in the ARMC.

11.5 A community development plan is being developed by TFM to ensure that social development occurs in a sustainable manner that reflects the needs and desires of the local population. A “road map” for the plan has been developed as part of the ESIA. The strategy behind the road map is to make the communities in the Fungurume and Tenke region independent from the mining operations within a 20-year time frame. In order to reach this level of economic sustainability, the strategy will focus on basic needs of the communities, income generation and livelihoods, social and community infrastructures, and good governance. TFM recognizes the importance of building its social license to operate, and is committed to investing with local government for the benefit of the surrounding communities above and beyond the statutory royalties. Accordingly, an additional amount that will be equivalent to 0.3 percent of net sales revenue from mine production will be contributed to a social development fund. TFM also is investing a dedicated amount ahead of production during the development phase to assure a sustainable start-up to social development and is investing in a positive relationship with communities and the government of the DRC. Investments made in community development during both of these periods will be guided by the basic concepts set forth in the ‘road map’ strategy.

11.6 Table 1 below outlines the main issues, mitigation and residual impacts for the TFM project. Total cost of mitigation measures is estimated to be USD 9.5 million (for the RAP, BDAP, and ESMS).
<table>
<thead>
<tr>
<th>Discipline Category</th>
<th>Potential Impacts</th>
<th>Mitigation</th>
<th>Residual Impacts</th>
</tr>
</thead>
</table>
| Physical | **Topography and Soils**  
• Changes in the landscape and underlying geomorphology.  
• Changes in soil quality/productivity.  
• Effect on unique copper-cobalt soils. |  
• Erosion control and water management as described below.  
• Reclamation planning to restore sustainable biological communities or agriculture as feasible.  
• Salvage of topsoils that may be useful for reclamation.  
• Avoidance of large-scale soil compaction.  
• Control of soil erosion with vegetative ground cover and other temporary measures.  
• Adherence to an erosion and sediment control plan.  
• Spill containment and clean-up practices.  
• Soil restoration as needed through mulching and fertilization.  
• Reclamation and monitoring of reclaimed land to ensure acceptable productivity.  
• Use of minimum feasible mine impact area.  
• Unique soil types to be stored in separate stockpiles.  
• Strive for the reclamation of copper-cobalt soils as much as feasible.  
|  
| |  
• Minimize project footprint and diversion of streams; develop tailings facility in stages.  
• Maximize recycling of process water.  
• Establishment of a sustainable reclamation drainage plan with drainage paths to natural receiving waterbodies.  
• Dry season flows in the Kasana and Shimpidi rivers will be augmented if necessary following monitoring.  
• Surface and groundwater volume changes due to changes in flow regimes, catchments, groundwater drawdown.  
• Surface and groundwater quality changes due to metal leaching and transport, releases from containment ponds, seepage from tailings, effluent releases, treated sewage releases or accidental spills.  
|  
| |  
• Implementation of runoff and sediment control procedures during site clearing and preparation to minimize the migration of sediments to waterbodies.  
• Use of runoff from waste rock and ore storage facilities in the processing plant.  
• Treatment of storm water runoff from the plant and other facilities prior to release.  
|  
| |  
• Moderate to high impact on far north and north aquifers due to groundwater drawdown.  
• Limited dry season surface flow declines predicted at year 15 for Mofia (-4%) and Dipeta (-7 to -16%) assessment nodes.  
• Maintenance of baseflows at Kasana (10% at year 15), Sokalwela (15%) and Shimpidi (35%) assessment nodes.  
• Low to moderate impact on groundwater quality at far north, north and Dipeta aquifers.  
• Low impact on surface water quality due to groundwater flow and runoff during storm events from waste rock and ore stockpiles.  
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<th>Mitigation</th>
<th>Residual Impacts</th>
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</thead>
<tbody>
<tr>
<td>Physical (continued)</td>
<td>• Lined tailings facility and return water dam.</td>
<td>• Secondary containment around surface tanks and storage areas containing potential contaminants.</td>
<td>• Treatment of effluent, if needed.</td>
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<td>• Treatment of effluent, if needed.</td>
<td>• Comprehensive environmental action plan to include hazardous materials handling requirements and spill response capability.</td>
<td>• Emergency measures for prevention or cleanup of containment pond releases.</td>
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<td>• Restoration, as much as possible, of native plant communities at closure to control erosion.</td>
<td>• Removal of potential contaminants and contaminated infrastructure at closure.</td>
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<td>• Reduction on water supplies used by people.</td>
<td>• The groundwater process supply / pit dewatering system will be designed to minimize drawdown impacts on local wells / springs.</td>
<td>• Negligible impact after mitigation.</td>
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<td>• Basic groundwater supply systems will be provided to villages where spring water sources are affected.</td>
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<tr>
<td>Air, Noise, Traffic, Natural Risks</td>
<td>• Increase in dust, sulfur dioxide and nitrous oxide levels due to mine fleet exhaust, emissions from facilities and fugitive dust.</td>
<td>• Dust control measures including wet suppression, wind breaks, treatment of surface roads and prompt revegetation of selected exposed areas.</td>
<td>• Impacts due to dust and vehicle emissions are low in magnitude in construction and closure phases.</td>
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<td></td>
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<td>• Maintenance of air quality levels within applicable guidelines at receptor locations.</td>
<td>• In operation phase, low increases in sulfur dioxide, nitrogen dioxide and dust, carbon monoxide, volatile organic compounds, odor and acid mist.</td>
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<td>• Increase in greenhouse gas emissions.</td>
<td>• Energy/fuel efficiency and use of hydroelectric power.</td>
<td>• Impacts due to greenhouse gas emissions are low in magnitude relative to the DRC.</td>
</tr>
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<td></td>
<td>• Increase in noise and vibration at the site and along access routes.</td>
<td>• Use of vehicles equipped with appropriate noise limiting devices.</td>
<td>• Negligible impacts on receptors.</td>
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<tr>
<td></td>
<td></td>
<td>• Use of continuous miner in place of ripper, truck, shovel and crusher combination.</td>
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<td></td>
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<td>• Maintenance of noise and vibration levels within applicable guidelines at receptor locations.</td>
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<td></td>
<td>• Increase in traffic congestion and traffic accident rate.</td>
<td>• Roads will be upgraded and widened to accommodate traffic – separate pathways constructed along some roads for pedestrian and bicycle traffic.</td>
<td>• Large increases in traffic will occur on local roads that are being upgraded.</td>
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<td>• A bypass road will be constructed around Fungurume.</td>
<td>• Small proportional increases will occur on other existing roads farther from the project.</td>
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<td>• Speed limits, driver education, public education, vehicle scheduling and vehicle maintenance.</td>
<td>• Potential increases in accident rates; low impact to community safety.</td>
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<td>Mitigation</td>
<td>Residual Impacts</td>
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<tr>
<td>Physical (continued)</td>
<td>Increased risk of project or public facilities being adversely affected from extreme natural events, including seismic activity and high rainfall; and resulting effects on the public and environment. Examples include exceedance of water containment capacity or slope failures.</td>
<td>Assessment of natural risks. Project design based on international standards to manage and protect facilities and workers against extreme events. Build in conservative design features in tailings facility including adequate capacity; emergency planning to mitigate effects if a failure occurs. Implement risk management program including aspects such as spill clean-up and protection of the general public. Dewatering and consolidation of tailings to reduce long-term hazards.</td>
<td>Residual natural risks and hazards from the processing plant, tailings facility, mine and transportation activities are expected to be in the low to moderate risk rating defined by the project risk matrix.</td>
</tr>
<tr>
<td>Visual Aesthetics</td>
<td>Decline in visual aesthetics due to construction of the mines, plant and associated infrastructure on visual aesthetics.</td>
<td>Use of vegetation screening, dust management, color management, and limiting light pollution. Reclamation for establishment of native vegetation cover.</td>
<td>Low to moderate impacts of most facilities on visual aesthetics.</td>
</tr>
<tr>
<td>Biological</td>
<td>Biodiversity, Flora, Fauna, Fish</td>
<td>Direct loss of biodiversity including rare habitats and local endemic species, especially in copper-cobalt vegetation communities.</td>
<td>Modification/minimization of footprint. Establishment of off-site natural areas to compensate for disturbed copper-cobalt flora communities. Establishment of PMRs. Relocation of critical habitat. Direct translocation of rare plants and critical habitat to off-site areas. Restoration of gallery forest and some miombo forest. Transfer of fauna microhabitat features from disturbed areas to areas unaffected by clearing. Reclamation of terrestrial and aquatic habitats, as much as possible.</td>
</tr>
<tr>
<td>Biological</td>
<td>Indirect loss of habitat quality due to dust, air quality, and human population change Improved access to rare habitats and local endemic species, resulting in increased hunting, fishing and trapping.</td>
<td>Dust control measures as described above. Agroforestry program for local residents to reduce dependence on natural habitats. Employees and subcontractors not permitted to hunt, fish or trap on project sites.</td>
<td>Negligible to moderate indirect impacts on vegetation due to dust and sulfur dioxide. High indirect effects on fauna due to hunting/collecting of larger local human population.</td>
</tr>
<tr>
<td>Biological</td>
<td>Reduction in on connectivity of habitat affecting movements of wildlife species.</td>
<td>Compact project design to reduce edge. Use of existing disturbed areas for temporary accommodation areas to avoid new fragmentation. Reclamation to connect fragmented habitats.</td>
<td>Moderate impact on fragmentation of habitats for fauna. For overall landscape biodiversity, low impact on miombo woodland and gallery forest; moderate impact on copper-cobalt habitats.</td>
</tr>
<tr>
<td>Biological (continued)</td>
<td>Introduction of exotic species (terrestrial and aquatic).</td>
<td>Monitoring and control of exotic species. Use of native species for reclamation.</td>
<td>Increase in some weedy species (mainly plants) representing a low impact after mitigation.</td>
</tr>
<tr>
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<td>• Changes in water flows or quality from the development during operations may affect adjacent plant communities.</td>
<td>• Minimize water-related effects to vegetation through maintenance of flows in the dry season, if needed, and treatment of effluent. Restore equivalent amount of gallery forest.</td>
<td>• Negligible impact after mitigation.</td>
<td></td>
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<tr>
<td>• Destruction of natural habitats in downstream areas (terrestrial and aquatic) in the case of a dam failure.</td>
<td>• Build in conservative design features in tailings dam (proper safety factors). • Emergency planning to mitigate effects if a failure occurs. • Major hazards mitigation as above.</td>
<td>• Residual natural risks for the environment from the tailings dam are expected to be in the low to moderate risk rating defined by the project risk matrix.</td>
<td></td>
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<tr>
<td>• Water quality and volume changes in streams and wetlands, affecting fish and aquatic fauna.</td>
<td>• Mitigate effects through site design and water management plan (see water, above). • Mitigation as needed to address water quality issues, including lining of tailings storage facility and recycling of all waste rock, ore stockpile and plant site runoff (see water above). • Minimum dry season baseflows to be maintained for Kasana, Sokalwela and Shimpiti catchments, if needed.</td>
<td>• Low to moderate impacts due to changes in downstream water flow. • Low impacts due to water quality changes, mainly associated with instream works, spills or releases from containment ponds and groundwater affected by mine materials. • Restoration of gallery forest will result in positive impact.</td>
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<tr>
<td>• Fish habitat degradation as a result of riparian deforestation.</td>
<td>• Water quality protection through runoff and sediment control. • Prompt revegetation of areas disturbed along watercourses.</td>
<td>• Low impacts with water sediment changes, due to erosion during surface water runoff.</td>
<td></td>
</tr>
<tr>
<td>• Degradation of protected areas.</td>
<td>• Location of project away from protected areas.</td>
<td>• Negligible negative effects and potential positive effects.</td>
<td></td>
</tr>
<tr>
<td>Social Public Health and Safety</td>
<td>• Increase in transmission of HIV/AIDS and other transmissible diseases. • Increased public safety risks due to the presence of large imported workforces.</td>
<td>• HIV/AIDS and transmissible disease programming, including public education. • Workforce codes of conduct and training.</td>
<td>• Medium impact due to influx of workers with associated risks of sexually transmitted diseases. • Low impact due to increase in crime caused by influx of job-seekers.</td>
</tr>
<tr>
<td>Livelihoods</td>
<td>• Loss or reduced access to natural resources. • Higher density of people using the same agricultural and grazing resources. • Resettlement and loss of agricultural land, fruit trees and perennial crops. • Disruption to subsistence livelihood as people leave their land and try to re-establish themselves on new land.</td>
<td>• Co-operative forest management program. • Compensation and resettlement planning as appropriate. • Comprehensive resettlement, if appropriate, and compensation program, following detailed consultation with local communities; assistance to develop agriculture in host areas. • Provision of a combination of compensation, replacement land, title, payment of all moving costs, and temporary income during the re-establishment phase.</td>
<td>• Moderate impact due to loss of agricultural land. • Low impact due to loss of access to lands.</td>
</tr>
<tr>
<td>Discipline Category</td>
<td>Potential Impacts</td>
<td>Mitigation</td>
<td>Residual Impacts</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------</td>
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<td>-----------------</td>
</tr>
</tbody>
</table>
| Social (continued)  | **Community Infrastructure**  
• Loss of immovable assets and community infrastructure.  
• Increased pressure on existing social and physical infrastructure.  
• Loss/alteration of historic resources and places of cultural importance.  
• Disruption of social networks and support systems.  
• Migration (temporary workers and infrastructure needs).  
  • Replacement of community infrastructure, especially around areas of direct impact and in host communities.  
  • Cooperative community development and infrastructure planning.  
  • Avoidance, excavation and preservation of historic resources, as needed.  
  • Resettlement planning, if appropriate, to keep extended families and sub-communities together.  
  • Planning for temporary workforce.  
  • High impact due to physical displacement and resettlement of Mulumbu, Kiboko and Amoni.  
  • Medium impact due to strain on local infrastructure with corresponding positive impact with long-lasting improvements to some local infrastructure.  
  • Low impact due to developments of spontaneous settlements near project facilities.  
  • Positive impact with increase in fiscal resources to government. |
|                     | **Economic/Income Effects**  
• Increase in inflation.  
• Increase in income effects (increased inequality, competition for jobs, increased demands on disposable income).  
• Loss of incomes at closure.  
  • Enhance community support systems/development.  
  • Economic and social programming; proactive local employment and procurement; opportunities for training and employment with the project and assistance with business development.  
  • Cooperative efforts with stakeholders during operation to plan for closure; reclamation planning designed to meet the needs of local stakeholders.  
  • Low negative impact of inflation, potentially detrimental to poorest in the community.  
  • Medium negative impact due to loss of artisanal mining activity.  
  • Positive impact of training for workforce with long-term improvement of local population employability.  
  • Positive impact in local household income and corresponding medium negative impact at end of construction and operation “booms”. |
|                     | **Cultural and Social Change**  
• Loss of traditional rights to the land, which are intimately related to history on the land.  
• Social conflict in host communities.  
• Cultural change (dissimilarity in age, gender, or ethnic composition).  
  • Compensation for land and resource use; return to title holder at closure.  
  • Dispute resolution mechanisms; community policing.  
  • Comprehensive workforce management program; cultural awareness program for expatriate staff; community initiatives.  
  • Low impact due to cultural conflict between local residents and job-seekers moving from outside the area.  
  • Low impact due to increasing gap between “haves” (people with jobs or other benefits) and “have-nots” (people without jobs or other benefits). |
|                     | **Cultural Resources**  
• Loss of cultural heritage sites.  
  • No sites of importance will be impacted by the project.  
  • Indirect impacts may be mitigated through educating non-locals of the local cultural practices.  
  • Low impact on cultural heritage sites in the project operations phase. |
AFRICAN DEVELOPMENT BANK

DRC
Tenke Fungurume Copper & Cobalt Project

EXECUTIVE SUMMARY OF THE RESETTLEMENT ACTION PLAN (RAP)

07 June 2007
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>ARMC</td>
<td>Amended and Restated Mining Convention</td>
</tr>
<tr>
<td>BDAP</td>
<td>Biological Diversity Action Plan</td>
</tr>
<tr>
<td>BFS</td>
<td>Bankable Feasibility Study</td>
</tr>
<tr>
<td>Co</td>
<td>Cobalt</td>
</tr>
<tr>
<td>Cu</td>
<td>Copper</td>
</tr>
<tr>
<td>DFI</td>
<td>Development Finance Institution</td>
</tr>
<tr>
<td>DPEM</td>
<td>Department of Mine and Environment Protection</td>
</tr>
<tr>
<td>DRC</td>
<td>Democratic Republic of Congo</td>
</tr>
<tr>
<td>EP</td>
<td>Equator Principles</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
</tr>
<tr>
<td>ESMS</td>
<td>Environmental and Social Management System</td>
</tr>
<tr>
<td>EMP</td>
<td>Environmental Management Plan</td>
</tr>
<tr>
<td>EPC</td>
<td>Engineering, Procurement &amp; Construction</td>
</tr>
<tr>
<td>EPCM</td>
<td>Engineering, Procurement, Construction &amp; Management</td>
</tr>
<tr>
<td>FTSE</td>
<td>Financial Times Stock Exchange</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GDRC</td>
<td>Government of DRC</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
<tr>
<td>LIBOR</td>
<td>London Inter-bank Offered Rate</td>
</tr>
<tr>
<td>LME</td>
<td>London Metal Exchange</td>
</tr>
<tr>
<td>LSE</td>
<td>London Stock Exchange</td>
</tr>
<tr>
<td>Mt</td>
<td>Million tons</td>
</tr>
<tr>
<td>NMC</td>
<td>New Mining Code</td>
</tr>
<tr>
<td>PAP</td>
<td>Potentially Affected Parties</td>
</tr>
<tr>
<td>PD</td>
<td>Phelps Dodge</td>
</tr>
<tr>
<td>PFS</td>
<td>Preliminary Feasibility study</td>
</tr>
<tr>
<td>PS</td>
<td>Performance Standard</td>
</tr>
<tr>
<td>RAP</td>
<td>Resettlement Action Plan</td>
</tr>
<tr>
<td>ROM</td>
<td>Run of Mine</td>
</tr>
<tr>
<td>SMEs</td>
<td>Small and Medium Sized Enterprises</td>
</tr>
<tr>
<td>TFM</td>
<td>Tenke Fungurume Mining SARL (Project Company)</td>
</tr>
<tr>
<td>TMC</td>
<td>Tenke Mining Corporation</td>
</tr>
<tr>
<td>TPA</td>
<td>Tons per annum</td>
</tr>
</tbody>
</table>
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8. CONTACT PERSONS ............................................................. 27
1. INTRODUCTION

The Resettlement Action Plan (RAP) has been commissioned by Phelps Dodge (PD) and complies with the African Development Bank Involuntary Resettlement Policy (2003). The purpose of this document is to summarize the key elements of the RAP that identifies detailed management measures to which Tenke Fungurume Mining S.A.R.L. (TFM) will commit for addressing involuntary displacement impacts caused by the project construction and operations phases.

Based on the various project alternative (discussed in the Executive Summary of the ESIA), TFM concluded that resettlement of the three most proximate villages to the mine site, Mulumbu, Kiboko and Amoni, with an estimated combined population of 1,600 individuals, represents the lowest overall risk to both the residents of these communities as well as to the future viability of the TFM mining operation. The quality of life for residents in these three villages will be arguably better if resettled appropriately (i.e. consistent with Equator Principles and DRC law) than it would be if they were left in their current location, to be eventually surrounded by industrial development and overwhelmed by population influx. The Potentially Affected Parties (PAP) reactions to a possible displacement were tested in May and June 2006, and a positive response was obtained from all three communities.

2. LEGAL, REGULATORY AND INSTITUTIONAL FRAMEWORK

The RAP complies with:

- DRC Land Law and Mining Code.
- Institutional arrangements of the DRC government relative to involuntary displacement.
- Resettlement policies and guidelines of international lending institutions.

2.1 Democratic Republic of the Congo (DRC) Institutional Framework

Interviews with Gécamines officials indicate that usual practice in the DRC is that within the perimeter of a mining concession, the title holder has all liberty to use land as best fit for its operations, and that the involvement of other parties is usually not required for occupation of land related with such activities as follows:

- The establishment of industrial and mining facilities inside the concession area.
- Identifying and developing resettlement sites, as long as they fall within the boundaries of the mining concession.
- Managing compensation entitlements.

In addition, the ESIA for the TFM Project, including this RAP, is to be reviewed by the Department in charge of Mine Environmental Protection (DPEM).

2.2 International Guidelines and Policies

TFM has committed to complying with the Equator Principles in the design, construction, operation and closure of its mining project. The Equator Principles (EP) refer to the International Finance Corporation’s social and environmental policies. These have recently been restructured into one new overarching policy, the Policy on Social and Environmental Sustainability, as well as eight Performance Standards. This new policy has been applicable since April 30, 2006, and the IFC later released guidance notes intended to guide in the implementation of each of the eight Performance Standards (PS). The RAP also conforms to the African Development Bank’s policy on Involuntary Resettlement.

3. RESETTLEMENT FRAMEWORK

For the purpose of resettlement planning, a ‘Project-Affected Area’ was designated around Kwatebala Hill, where the first phase deposit will be mined, and including the spaces to be occupied by the process plant, waste rock piles, low-grade ore stockpiles, tailings storage facilities and other project infrastructure. In terms of social impacts, the Project-Affected Area also includes the following:

- The villages of Mulumbu, Kiboko and Amoni.
- Two large farms of about 30 hectares in surface (Kazakele and Mukalai farms).
- Agricultural land used by residents of all three villages above, as well as by transhumant farmers from Tenke and Fungurume towns.
- The hill of Kwatebala, which due to high concentrations of metals is not cultivated but hosts copper tolerant floral communities.
- Limited areas of miombo, degraded miombo and other natural vegetation associations.

The Project-Affected Area has a total surface of 2,911 hectares.
3.1 Census of Project-Affected People

A comprehensive census of Project-Affected People has been carried out in May and June 2006 by TFM’s qualified socio-economic personnel, with methodology guidance and supervision from the TFM socio-economic consultant team, including the RAP author. This census entailed the following component elements:

- The numbering of all residential structures in the three affected communities, and the related numbering of all resident households.
- The inventory of all structures (both residential and non-residential), including their measurement and description.
- The inventory of all fields cultivated in the Project-Affected area, including their measurement, description of standing crops if any, identification of stakeholders (owners, tenants, sharecroppers, as appropriate).
- The census of Project-Affected People, including the administration of a socio-economic questionnaire.
- The identification of disabled and sick people, who may be categorized as vulnerable.

As identified in this census, the total number of Project-Affected People is 1,660 individuals belonging to 391 households. Table 1 below shows the breakout of these numbers for the three affected communities.

<table>
<thead>
<tr>
<th>Village</th>
<th>Residential Structures</th>
<th>Households</th>
<th>Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mulumbu</td>
<td>329</td>
<td>309</td>
<td>1,302</td>
</tr>
<tr>
<td>Amoni</td>
<td>52</td>
<td>52</td>
<td>224</td>
</tr>
<tr>
<td>Kiboko</td>
<td>30</td>
<td>30</td>
<td>134</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>411</strong></td>
<td><strong>391</strong></td>
<td><strong>1,660</strong></td>
</tr>
</tbody>
</table>

3.2 Categories of Project-Affected People

The following categorization of Project-Affected People is used in further sections of this summary, and in the full RAP.

**Physically-Displaced People:** Physical displacement occurs with the ‘loss of shelter and assets resulting from the acquisition of land associated with the Project that requires the affected person(s) to move to another location’.

- **Category A:** Permanent residents, also customary concession-holders of agricultural land. People in this category are both:
  - Permanent residents of Mulumbu, Amoni and Kiboko communities, owners of their residence in most instances (with a few households being tenants in their residences).
  - Concessionnaires of agricultural land awarded to them by local “Chefs de Terre” under traditional land tenure arrangement.

- **Category B:** Permanent residents and tenants or sharecroppers of agricultural land. People in this category are both:
  - Permanent residents of Mulumbu, Amoni and Kiboko communities, owners of their residence in most instances (with a few households being tenants in their residences).
  - Tenants or sharecroppers of agricultural land under verbal agreements with landowners of Category A.

**Economically-Displaced People:** Economic displacement occurs with the ‘loss of income streams or means of livelihood resulting from land acquisition or obstructed access to resources (land, water or forest) caused by the construction or operation of the Project or its associated facilities. Not all economically displaced people need to relocate due to the Project’.

- **Category C:** “Transhumant” farmers. People in this category are both:
  - Non-permanent (seasonal) residents, staying during the agricultural season in non-permanent structures established on their agricultural land.
  - Concession holders of agricultural land awarded to them by local Land Chiefs under traditional land tenure arrangement.

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Category D: Non-resident formal concession holders. Formal concession holders of agricultural land awarded to them by the administrative authority (one case).

Category E: Non-permanent agricultural laborers, residing in temporary housing on the agricultural plots of their employers.

4. RESETTLEMENT AND COMPENSATION STRATEGY

The purpose of this section is to summarize specific component plans of the RAP, comprised of the following:

- The principles on which the resettlement and compensation approach are based.
- The means by which individuals in the project affected area are determined to be eligible for compensation.
- The different types of assets, including land and structures, which will be impacted by the project, and what type of compensation entitlements will be linked to each.
- The amounts and types of compensation that affected parties will receive under these entitlements.
- The resettlement plan, including selection of candidate sites, site preparation, construction, replacement of farm fields and assistance with moving.
- Provisions for cash compensation.
- Provisions for livelihood restoration.
- Assistance during the transitional period.
- Provisions for parties impacted during early construction.
- Resettlement management.

4.1 Key Principles

TFM has committed to the following key principles for guiding the implementation of the resettlement and compensation programs:

- Resettlement and compensation of Project-Affected People will be carried out in compliance with DRC legislation and the Equator Principles, which reference IFC Performance Standard 5.
- As the vast majority of Project-Affected People derive their livelihood from agriculture, they will accordingly be offered a resettlement option that includes the provision of agricultural land of equivalent potential to that which they have lost.
- Both Physically-Displaced People and Economically-Displaced People will be compensated for their losses of livelihood.
- TFM will assist PAP’s in restoring their affected livelihoods, and will provide assistance as necessary during the transition period until livelihoods are restored to their previous level.
- The RAP implementation and outcomes will be monitored and evaluated as part of a process that is transparent to all stakeholders.

The PAP’s and host communities will be informed and consulted during the whole course of RAP development, implementation and evaluation.

4.2 Eligibility

The determination of eligibility for various types of compensation is framed both in terms of the PAP categories, as well as whether individual PAPs and affected property were present in the project affected area before the resettlement cutoff date.

In functional terms, a resettlement cutoff date establishes a calendar limit on the project’s responsibility to compensate impacts, specifically by defining a date after which the public ‘should know’ not to make improvements or settle on project land by virtue of public consultation and other communications efforts. There are ample cases in Sub-Saharan Africa of individuals or groups deliberately establishing themselves within a project footprint in anticipation of compensation benefit. The cutoff date concept protects project owners from this opportunistic and potentially costly phenomena, which can significantly delay compensation of the legitimately entitled affected parties.

Ideally a cutoff date would be correlated with the assumption of ownership or control over the target property by the project sponsor. In the TFM case, effective control of the concession on property was gained in November 2005, which was well before project design, impact prediction, baseline studies and public consultation could be conducted. The cutoff date has therefore been determined by the timing by which several key activities were completed, including the census, asset survey and aerial photography of the project-affected area; as well as the validation of these data by the competent authorities. The validation of data by authorities was the responsibility of the Office of the Mayor for the Urban-Rural City of Kolwezi, who visited the TFM area and reviewed the subject data. With their formal acceptance of the TFM program and supporting data, a
resettlement cutoff date was established as July 15, 2006. Individuals and their assets not established in the project affected area prior to this date are not deemed eligible for displacement compensation.

4.3 Entitlements

In the context of the RAP, ‘entitlement’ is a term introduced as an organizing concept for how compensation is assigned to individuals, and what type of compensation they receive. The process begins by linking an array of affected asset types to an affected interest or legal right, then to a potentially affected party who is deemed ‘eligible’ or not according to specific conditions. If qualified, the affected party is then a candidate is considered ‘entitled’ to an appropriate compensation package.

In TFM’s case, the primary asset types that are evaluated are agricultural lands under the various tenure arrangements encountered in the area, as well as residential land, residential and non-residential structures, standing crops and jobs. These concepts are summarized below:

- **Agricultural land.**
  - Titled agricultural land, for which restoration of equally productive land with equal legal standing is the required compensation entitlement.
  - Untitled agricultural land, for which restoration of equally productive land with equivalent customary concession rights is the required compensation entitlement.
  - Rented agricultural land, which is not replaced, but the rightful owner is compensated for any immovable assets or improvements, as well as for any standing crops.
  - Sharecropped agricultural land, which is not replaced, but the value of standing crops is compensated via an equitable split with the concession holder, tentatively set at 70:30 for the sharecropper-concession holder respectively pending further consultation.
  - Management (allocation) of agricultural land, which is a livelihood source for Land Chiefs, which is compensated by the reestablishment of equivalent rights on new land, with the cost of this process born by TFM.

- **Residential land,** replacement with similar lands having equivalent title or rights, as well as access to public services, and with cash compensation provided for immovable assets.

- **Undeveloped land,** for which there is no compensation entitlement unless parcels of comparable quality can be found to serve as re-emplacements in the resettlement area.

- **Residential structures:**
  - For owners, the compensation entitlement is replacement with equivalent or better housing, on resettlement lands and cash compensation for the house at full replacement value plus 50 percent.
  - For tenants the compensation entitlement is for the full cost of moving to a new house, plus 50 percent.

- **Non-residential structures,** the compensation entitlement are the full replacement value plus 50 percent.

- **Crops,** both standing perennial and standing-non perennial, compensation will be the value of the crop plus 50 percent.

- **Affected and eligible businesses** are entitled to compensation for the loss of income for business plus 50 percent, for the full cost of resettling the business plus 50 percent, and for the replacement cost of immovable assets, again plus 50 percent.

- **Jobs at affected businesses:** employees who lose permanent jobs are entitled to cash compensation in the amount of three months equivalent pay.

- **Shrines,** affected and eligible parties are entitled cash compensation of the structure at full replacement value plus 50 percent, as well as compensation for the cost of performing relocation rituals.

4.4 Overview of Compensation Packages

The RAP describes specific compensation arrangements to which the five categories of PAPs are entitled. The basic compensation formulae for each of the PAP categories A to E are summarized in Table 2.

<table>
<thead>
<tr>
<th>Compensation Elements</th>
<th>Category of Project Affected Person</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>1 replace lost w/new lands of similar potential &amp; tenure arrangements</td>
<td>√</td>
</tr>
</tbody>
</table>
### 4.5 Resettlement Plan

The resettlement discussion presented in this section covers the following planning elements.

- The selection of candidate resettlement sites, including selection criteria.
- Comparison of the relative suitability of candidate sites as based on preliminary data.
- Description of next steps for finalizing selection of candidate sites.
- An initial characterization of resettlement plots and housing.

#### 4.5.1 Site Selection Scenarios

Seven candidate scenarios have been identified for resettling populations from the three affected communities of Mulumbu, Amoni, and Kiboko. Criteria used to identify candidate sites for reinstallation of village populations included the following:

- Proximity to either the current village location, or to one of the towns of Tenke or Fungurume.
- Availability of large tracts of uncultivated agricultural land, similar or larger in size to the current area cultivated around Mulumbu.
- Suitable surface topography for establishment of a human settlement.

Though not an easily addressed area of concern, another consideration to be taken into account when evaluating resettlement sites is the phenomena of induced development. In-migration to the TFM area will occur anyway as a matter of course, and the site of new construction for a village of 1,200 people would constitute a significant draw for these opportunity seekers. This issue is further addressed under the topic area of RAP related environmental management issues.

With regard to the first criteria listed above, candidate sites for the communities of Kiboko and Amoni have been sought in areas that offered the closest possible proximity to the existing villages, while still placing relocated residents outside the sphere of potential air quality impacts and mine vehicle traffic. If feasible, the Amoni-Kiboko candidate sites should allow these villagers to continue using their existing agricultural fields, which would minimize the primary difficulty in resettling rural agrarian populations.

Two sites have been identified to the north and east of the existing village sites of Amoni and Kiboko, and preliminary reconnaissance of these sites has been conducted. This initial evaluation indicates that either site would be suitable for resettlement purposes, pending in-depth analysis of water availability, topography and cultural acceptability. Three possible configurations are proposed in the RAP, including separate sites for each Amoni and Kiboko, plus a scenario under which the two populations are co-located on one of the two sites.

With regard to Mulumbu, this population will lose too much of their existing agriculture land, and are in general too near the proposed mine operations for the same approach to be considered feasible. Accordingly, five candidate sites have been identified at distances ranging from 5 to 18 kilometers from the existing village site, as further identified below.

- Lands straddling the Monfya River near the original source village location of Mwanga Muteba to the northeast of Mulumbu.
- Land north of the national highway near the village of Postolo, in undisturbed Miombo woodlands.
- Two sites east of Fungurume in the zone designated as the ‘Growth Centre’ under the 1998 feasibility study.

Initial evaluation indicates that any of these three sites may be feasible as a Mulumbu resettlement village, though additional fieldwork is needed to determine groundwater availability, soil fertility, potential significance of deforestation impacts and

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2 Sharecroppers will divide compensation for standing crops with the concession holder
potential impacts to existing residents. Furthermore, only one of these sites (i.e., on the Monfya River) would be within the existing traditional sphere of authority for the Mulumbu land chief.

Consultation on resettlement sites is well underway at the time of RAP preparation. Consultation will target both the affected communities and the host communities where applicable. During this early program, affected people in Mulumbu and their representatives within the Resettlement Consultation Committee have repeatedly expressed the following concerns in respect of the location of the resettlement site:

- The resettlement site should be located at a reasonable distance of the existing location, and not unduly remote from other populations of the concession area.
- The resettlement site should be located in an area where the traditional powers of the Chief can be re-established, otherwise the community might suffer hardship if he loses his ability to protect their interests.

4.5.2 Process for Resettlement Site Selection

The process for the final selection of resettlement sites is as follows.

- Presentation to communities of the pre-identified resettlement sites, and initial discussion of their acceptability.
- Further discussion with Resettlement Consultation Committees.
- Pre-selection of best candidate sites.
- Visits to pre-selected resettlement sites with the Resettlement Consultation Committees.
- Selection of preferred sites in collaboration with the Resettlement Consultation Committees.
- Validation of choice in general community meetings.
- Securing land on resettlement sites, particularly with respect to ascertaining relocated Land Chiefs as competent “Chefs de Terre” on the new sites, which will require contacts with higher-ranking traditional authorities, and possibly ceremonies, the cost of which will be covered by TFM.

4.5.3 Resettlement Plots and Houses

Houses will be replaced on the basis of the following guidelines:

- Entitlement: the guiding principle will be “house for house”, in that one replacement house will be provided for each affected residential house.
- It is observed in the Project Affected Area that where a given household includes several residences, the typical arrangement is for there to be one primary house with the additional ones of much more basic construction; and two different types of building will therefore be proposed:
  - One type of house for all households who currently own one residence, and which will serve as a first house for all households who own more than one.
  - A second and simpler type of house will be provided for additional houses where households currently own more than one residential structure.
- Every resettled household will receive one pit latrine, with double, brick-lined pits, regardless of the number of secondary houses.
- Ancillary structures such as kitchens, sheds, racks of various kinds, will not be reconstructed, and will be compensated in cash, re-settlers being expected to rebuild them themselves.

For every resettlement house, a plot of 250 square meters will be allocated. Apart for the Chief, who must be in a prominently placed location, the location of each household’s resettlement plot will be decided by lottery or otherwise depending on the results of consultation feedback.

4.5.4 Site Development

The resettlement team drew on experience elsewhere in sub-Saharan Africa as well as measurements of existing houses in the Project Affected Area to propose considerable detail on the dimensions, layout and construction of houses and ancillary facilities in the resettlement villages. In summary, the primary residence will be 50 square meters in total area, and will have a cement foundation, inside partition into four rooms, unfired plastered brick exterior walls, a corrugated iron roof and wooden doors and window shutters. The second house, if present, will be constructed at an approximate size of 50 square meters, with an earthen floor, thatched roof and no inside partition. Amongst all affected residential houses (both first and second homes), very few have concrete floors (fewer than 10 in total). If there happens to be an "additional feature" such as a concrete floor in a second home, then this will be compensated at replacement cost plus 50 percent. Ancillary structures, such as kitchens or pens for livestock will not be provided by the resettlement program, but will be compensated in cash.
The RAP gives detailed consideration to a number of infrastructure related needs for the final development of the resettlement villages, including consideration of the following requirements:

- Roads, streets and other public spaces.
- Potable water, liquid and solid waste management structures and facilities.
- Plots for commercial use.
- Marketplaces.
- Community facilities, including schools, churches playgrounds, cemeteries.

In consideration of the house plot sizes and additional need for public spaces, calculations in the RAP indicate that the resettlement sites of Mulumbu, Amoni and Kiboko will occupy 13, 2.2 and 0.9 hectares respectively. Final plans will be prepared once sites have been selected, and under the supervision of the TFM resettlement planning team (see Section D4.3-9).

4.5.5 Replacement of Agricultural Lands

*Replacement Lands for Eligible Residents:* Amoni and Kiboko residents will be moved to a small distance from their current location and should be able to cultivate most of the same fields that they are presently farming. Whichever resettlement site Mulumbu community eventually chooses amongst the five currently being considered, the farmers will need replacement agricultural land. As shown above (see Tables 16 and 18), the availability of replacement land in sufficient size and potential is the main criterion of resettlement site identification and comparison. Soil investigations are yet to be carried out, but all sites identified will require soil preparation works prior to being handed over to farmers.

Depending on which livelihood restoration package PAPs choose, these soil preparation works may be handled by TFM if the household chooses an agricultural livelihood restoration package, or by the PAPs themselves for those who select another livelihood restoration package. Where required and subject to a detailed assessment of soil characteristics, these may include the following:

- Tree felling and brush clearing.
- Deep plowing (preferably mechanical).
- Initial fertilization, including pH correction if needed.

The process for land allocation to eligible affected Mulumbu residents near the resettlement site will be the following:

- Re-establishment of the traditional authorities’ prerogatives (the “Chefs de Terre”) over the new piece of land (this process will be facilitated by TFM through the higher traditional authorities).
- Allocation of agricultural land, “surface for surface” (one square meter of lost land gives entitlement to one square meter of replacement land), with a minimum of 0.75 hectare per affected resident household, under control by:
  - The land chiefs.
  - The Resettlement Consultation Committee of Mulumbu.
  - TFM, which will make sure that land allocation complies with the above “square meter for square meter” requirement, and will delineate the plots based on resettlement committees’ decisions to avoid further disputes.

4.5.6 Replacement of Agricultural Lands for Transhumant Farmers

Transhumant farmers temporarily occupying non-permanent housing near their fields are not eligible to the resettlement package. They are however eligible to the replacement of their agricultural land, but as they are not strongly linked to the Mulumbu community, this replacement land could be anywhere in the Concession Area. The process for this particular group of Project Affected People will be the following:

- Identification on a case-by-case basis of available, suitable replacement land.
- Facilitation by TFM of access to this land by the affected household, for instance through the payment of a symbolic land access fee to the Land Chief.
- Compensation in cash of labor required to bring the replacement land to a condition similar to that of the lost land.

The one farmer who currently farms a large estate (about 30 hectares) in the Project-Affected Area has little relationship with the Mulumbu community and has expressed willingness to be assisted in identifying and securing replacement agricultural land elsewhere, not necessarily near Mulumbu resettlement site. TFM is actively working with this individual to identify land of similar potential and similar surface in the area. One existing concession has been pre-identified in this purpose, where this farm could be relocated. It remains to be checked for agronomic potential, land tenure issues, and suitability to the affected person.
Land Tenure Arrangements for Replacement Agricultural Land: Where a farmer was holding untitled land allocated under traditional arrangements, the replacement land will not be titled either, but will be secured through the same traditional arrangement as the initial land.

As this farmer apparently holds a formal concession for his land, the replacement land will need to be under a similar arrangement, with an equivalent concession. Expenses for establishing this title shall be covered by TFM.

4.5.7 Moving Allowance and Moving Assistance

Re-settlers will be provided with the following forms of assistance in moving from their current villages to the resettlement sites.

- Payment of a cash moving allowance of 50,000 Fc (about 110 USD) per household, subject to the household actually vacating the current village by the date that will be agreed upon by TFM; this allowance is intended to cover miscellaneous moving expenses such as the labor required to move personal belongings from the old place to the new one.
- Assistance in transporting persons and all personal belongings, including animals, stored grain and other foodstuffs, furniture; by vehicles made available by TFM to re-settlers at the time of moving, again subject to the household actually vacating the current village by the target date that will be announced by TFM.

4.5.8 Salvaging

Re-settlers will be allowed to salvage any materials in the structures they own at the current village. These materials (e.g., iron sheets, poles and other carpentry components) will be transported by TFM’s vehicles (see previous section) with the exception of bricks and roof straw, which are too bulky and fragile to be easily transported in TFM’s vehicles.

4.5.9 Environmental Impacts and Management of Resettlement Sites

A number of potential environmental issues have been identified in this text and in the attached RAP. One potential environmental issue can be identified for a candidate Mulumbu resettlement site near Postolo on the national highway. Use of this area as a resettlement village would result in the conversion of a large area of intact miombo woodland to another land use. Should the Mulumbu community opt for this site this issue will require a comprehensive impact assessment before a final decision is made, with a particular focus on the area’s potential value as floral or faunal habitat.

For the other sites, potential environmental issues are largely manageable and include the following:

- Limited forest and brush clearing in areas having secondary growth mixed with farming and/or bushfires.
- Potential erosion during earthmoving works during the construction phase.
- Potential for surface and ground water contamination related to uncontrolled release of human sewage.

Management of these issues at the construction phase will follow the same rules for the resettlement sites as are applicable to the general project.

Finally, induced development is an indirect impact that is very likely to result from the creation of new settlements in the TFM area, especially if these communities enjoy improved facilities and public services as compared to the surrounding population. TFM will work in collaboration with local government authorities, and will make urban planning expertise available as part of this effort, so as to minimize impacts derived from an otherwise unplanned population influx.

4.6 Cash Compensation

The term ‘cash’ is used in this RAP to denote payments in currency. Experience elsewhere in sub-Saharan Africa indicates a high risk potential with large, lump-sum cash payments to parties who have little experience with money management. The situation in the DRC is further constrained by a weak banking system that is entirely absent in rural areas. While TFM shall provide compensation in cash consistent local law requirements, TFM will also include a number of additional benefits that are not represented in the cash compensation package. These additional, non-monetary benefits are intended to mitigate resettlement risks recognized under the Equator Principles, but not DRC law. Though not legally required, the incremental costs of these benefits will be borne by TFM so as to assure compliance with TFM’s stated commitment to follow the guidelines and recommendations of the Equator Principles, while complying with the local law requirement to provide cash compensation valued at real replacement value, increased by 50 percent.

Structures

Residential Structures: Structures will be compensated in cash, even where in-kind replacement is provided as an additional benefit.
The RAP provides supporting details for how existing structures will be valuated. The RAP details include a set of criteria for screening existing residential houses into compensation classes, as summarized below.

- **Class 1**: Walls of crude bricks, thatch roof, earthen floor, and any residential structure of lower standard\(^3\) (including mud and wattle houses and makeshift shanties of cardboard, fabric, used iron sheets, etc.).
- **Class 2**: Walls of crude bricks, roof in aluzinc or other metallic material, earth floor.
- **Class 3**: Walls of fired bricks, roof of straw, earth floor.
- **Class 4**: Walls of fired bricks, roof in aluzinc or other metallic material, earth floor.

Based on unit costs and categorization also presented in the RAP, the following calculation table (3) will be applied to guide calculations of cash compensation for full replacement value of residential houses displaced by the TFM project.

### Table 3: Calculation Matrix for Cash Compensation at Full Replacement Value for Residential Houses

<table>
<thead>
<tr>
<th>Class</th>
<th>Unit Rate (Francs Congolais per Square Meter)</th>
<th>Surface (m(^2))</th>
<th>Calculation</th>
<th>Compensation Due with 50% Bonus as per DRC Law (Francs Congolais per Square Meter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fc 2,000 (USD 4.4)</td>
<td>A</td>
<td>(c_1 = A \times 2,000)</td>
<td>(C_1 = 1.5 \times A)</td>
</tr>
<tr>
<td>2</td>
<td>Fc 15,000 (USD 33)</td>
<td>A</td>
<td>(c_2 = A \times 15,000)</td>
<td>(C_2 = 1.5 \times A)</td>
</tr>
<tr>
<td>3</td>
<td>Fc 4,000 (USD 8.8)</td>
<td>A</td>
<td>(c_3 = A \times 4,000)</td>
<td>(C_3 = 1.5 \times A)</td>
</tr>
<tr>
<td>4</td>
<td>Fc 20,000 (USD 44)</td>
<td>A</td>
<td>(c_4 = A \times 20,000)</td>
<td>(C_4 = 1.5 \times A)</td>
</tr>
</tbody>
</table>

According to this guidance table, a house of 50 square meters would range in value from 330 USD to 3,300 USD across the four compensation classes, including the 50 percent bonus.

Additional features, such as verandas, cemented floors and plastered walls will be valued on a case-by-case basis at full replacement value and added to the result of the above calculation. This is justified by the relative scarcity of such features, which does not make it necessary to have a standalone calculation formula for these cases.

**Non-residential Moveable Structures**: These include granaries, sheds and verandas of various kinds. These structures are usually almost entirely moveable, and as long as the owner will be able to salvage the materials, the loss will be very limited. The compensation at full replacement value plus 50 percent is therefore mainly intended to cover the labor needed to dismantle and re-establish the structure elsewhere. The following rates will be applied:

- **Granaries**: application of the Class 1 rate applicable to residential structures.
- **Others**: 2,000 Fc each.

**Non-residential Immovable Structures**: These include latrines. The compensation at full replacement value plus 50 percent is therefore mainly intended to cover the labor needed to build the structure at the new site. The following rate will be applied:

- **Latrines**: 10,000 Fc (22 USD), equivalent to four days of labor.

Non-residential structures that would not fall in one of the above categories will be valued and compensated on a case-by-case basis.

**Churches**: Though these structures will be compensated with cash, no new church building will be constructed by TFM, as this has potential to cause dissent between the many different denominations. Churches vary outwardly in standing, from the Pentecostal church in Mulumbu, a building of reasonably solid construction, to some churches that consist of a few poles with a straw roof and makeshift benches, the latter type being entirely moveable.

Churches are not residential buildings and their relocation has no potential to deprive people of shelter. There will therefore be no upgrade for churches such as that applied for residential houses of a standing lower than Class 1. Churches will therefore be valued for cash compensation as follows:

- Valuation either on the basis of rates applicable to Class 1 to Class 4 houses if they fall in one of these categories.

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\(^3\) This inclusion of lower standard structures in Class 1 implies that the owner of a lower standard residential structure would receive cash compensation at the rate of a Class 1 house, which will allow him/her to upgrade their new structure to a Class 1 house. It is beneficial to the poorest in the community, particularly PAPs in Categories C and E and is thus consistent with resettlement planning Best Practices.
• On a case-by-case basis if they are of a standing lower than Class 1.

The entity to which cash compensation is paid will need to be cautiously identified in each case. Provisions will be made to defray the cost of re-consecration ceremonies required by local church leadership.

Shrines: Those shrines that could be observed are generally very modest structures, the cost of which should be close to zero. However, it is also acknowledged that the relocation of a shrine may entail other costs than that of the structure itself. In practice, ceremonies may be needed to allow for the relocation not only of the structure but of the spiritual powers it represents, and the cost of these ceremonies will be part of compensation. Generally, such ceremonies include the offering of a certain category of sacrificed animals, while communication with the spirits is also facilitated by the formal offering and further consumption of alcoholic beverages. The cost of sacrifices and alcoholic beverages will be valued on a case-by-case basis, based on requests by the owner and/or user of the shrine.

Crops: Crops will be a major element of the cash-based compensation program. Costs are calculated based on an estimated value of several component crop stages and crop types, as described below.

Soil Preparation: In most instances, farmers will be given sufficient notice to be able to harvest their crops prior to the occupation of their fields by TFM. In such cases, they still need to be compensated for ground preparation. Based on village interview results, the full cost of clearing new land from woodland is 10,000 Fc for a unit parcel of 625 square meters, or 25 Fc per square meter. Adding the legally required bonus of 50 percent, the compensation rate for empty fields cultivated during the previous agricultural campaign will be 38 Fc per square meter (about 0.08 USD).

Annual Crops: In situations where the farmer cannot be given sufficient notice to harvest his crop, compensation will be paid based on the market value of the non perennial crop, which was determined from data collected during the 2005-2006 socio-economic baseline study. Based on the results of several hundred agricultural questionnaires as well as monthly market surveys, the following values were derived for use in cash compensation for standing annual crops (inclusive of the 50 percent markup required by DRC law).

- Maize = Fc 85 (0.19 USD) square meters.
- Beans = Fc 112 (0.25 USD) square meters.
- Intercropped maize and beans = Fc 126 (0.28 USD) square meters.
- Cassava = Fc 61 (0.14 USD) square meters.

It should be noted that these values are slightly less than those used for compensating the transitory impacts to crops experienced during the FS fieldwork. Crop prices were at historically high levels in the 2005-2006 growing season, perhaps due to scarcity caused by the illegal artisanal miners, and the early campaign of crop compensation reflected these conditions.

Perennial Crops: These include fruit trees such as papayas and mangoes that require several seasons to attain peak production. The calculation of the full replacement value therefore requires consideration not only of the product of the crop over one year, but also the cost of reestablishing the crop and lost income as it matures. The RAP provides a formula for calculating the cash value of fruit trees, factoring in age, time to maturity cost of planting and labor required for it to reach maturity.

Specifics of Tenant-Sharecropper Relations: Early feedback from the Resettlement Compensation Committee indicates that an equitable division of crop values between tenants and sharecroppers is a highly controversial topic in the Project Affected Area. The relative proportion of crops provided to the ‘landowner’ ranges from zero to nearly 50 percent, with most individuals reporting a 30:70 split between the concession holder and the sharecropper. TFM has imposed the need for a uniform proportion, since disparities and grievances would almost certainly plague the process if it were left up to individual arrangements. Consultation on this issue is on-going with resettlement committees and Project-Affected People regarding the development of a fair and equitable sharing arrangement.

Moving Allowances: These are a form of cash compensation provided to offset the expense and effort of physically moving from one residence to another. A lump sum amount of Fc 50,000 (110 USD) is proposed for each household to cover this entitlement, for which individuals in PAP categories A, B and C would be eligible.

Businesses: Impacts to businesses such as grain mills will be mitigated with the cash compensation payments identified below:

- Compensation of the cost of moving and re-establishing the mobile assets, such as the mill itself
- Compensation of immobile assets (if applicable) at full replacement value (for example a concrete pad), based on a valuation calculated on a case-by-case basis,
- Compensation of the loss of income during the period of forced inactivity of the business (for example between the dismantling of the mill in the old location and its re-establishment in a resettlement site), based on a case-by-case
valuation of the net income generated by the activity. In the absence of records, this valuation will be established based on interviews with the operator and observations of the actual activity.

Where applicable, employees of the business will be compensated in cash for their loss of income during the period of forced inactivity of the business. This latter provision applies also to employees of the 30 hectares agricultural estate (Mr. Kazakele) located in the Project-Affected Area.

**Updating Compensation Rates and Market Value Monitoring:** Compensation rates for crops will be updated on a yearly basis based on a fresh market survey at “lean” season (January) and after harvest (May). The market survey will include price monitoring in Tenke and Fungurume towns, confirmed by interviews with potential farmers.

**Money Management Capacity-Building:** For most PAPs, the cash compensation they receive from TFM will represent an amount of cash far beyond any that they ever handled before. Experience of similar situations in Africa indicates that rural compensatees are particularly vulnerable to fraudulent or criminal treatment (and quite ironically to termites), as well as to misuse and mismanagement of sudden influxes of cash. Cash may be used on short term spending (particularly alcohol and commercial sex where male household heads are concerned), which will eventually leave the household in its entirety in hardship worse than they experienced before compensation. Although such problems cannot be avoided entirely, they can to a certain extent be mitigated by creating better awareness on the challenges of money management.

Any PAP receiving cash compensation will receive a one day course on money management delivered by an organization with experience in similar matters, with the following objectives:

- How to secure cash.
- How to use and management cash effectively.
- Household savings and expenditures planning.
- Benefits of keeping money in bank accounts.

There are NGO groups in Katanga that have initiated rural credit programs, and whose expertise would be potentially applicable to this capacity building program.

### 4.7 Livelihood Restoration

Livelihood restoration is a cornerstone element of resettlement planning under IFC guidelines and hence Equator Principles. The concept grew from early resettlement experiences of the World Bank Group. These experiences taught that PAPs who lost their source of livelihood and were compensated entirely in lump sum cash payments frequently ended up more destitute than before due to inexperience with money management. The IFC resettlement guidelines now require that if project-related impacts to livelihoods are significant, with a 10 percent loss or greater frequently used as a benchmark, livelihood restoration is the appropriate mitigation to include in the RAP.

**Eligibility for Livelihood Restoration:** Project-Affected Households of categories A, B and C are eligible to one of the three livelihood restoration packages proposed, in reason of one such package per household. These packages are the following.

- Agriculture enhancement.
- Employment.
- Training on non farming income-generating activities, and related business support, such as small and medium enterprise (SME) development.

**Household Selection of Livelihood Restoration Packages:** The total number of eligible households is about 450. The preference within this population for one kind of compensation over another has not been investigated at the time of completing this RAP, so the following assumptions are made for planning and budgeting purposes.

- 50 percent will opt for an agriculture enhancement package, or 225 households.
- 25 percent will opt for employment, or 113 households.
- 25 percent will opt for non farming Income Generating Activities, or 112 households.

It is likely that more households would prefer employment. However, the number of positions potentially offered is limited by TFM’s operational requirements. Prioritization criteria will therefore be developed and consulted upon with Resettlement Committees.

**Agriculture Enhancement Package:** The following components would qualify an agricultural improvement program as a livelihood restoration package appropriate for including in the RAP:

- Increased surface of agricultural land above 1:1 replacement.
- Provision of training on improved agricultural techniques.
• Support for the purchase of agricultural equipment, fertilizers and improved seeds.
• Extension services and related monitoring for five years.

Training and extension services will be delivered by an experienced organization with permanent presence in the area.

**Employment Package:** The employment livelihood restoration package will be consistent with DRC labor laws and TFM employment policies, as further described in Section D4.1. Within that legal and policy framework, the following characteristics would qualify an employment offer as a livelihood restoration package appropriate for including within the RAP.

- Full-time employment of at least five years duration for one member of a project-affected household opting for this package.
- If employment cannot be maintained for five years through no fault of the employee (e.g. construction stops), TFM will provide one of the other livelihood restoration packages for the balance of the five-year period.

The package will include training appropriate to the position for which the PAP is recruited.

**Income Generation-Enterprise Development Package:** This package will include the following conceptual elements:

- Identification of one activity with the household members within a list of feasible non-farming income-generating activities.
- Technical and management training in the selected activity.
- Financial support in the purchase of equipment related with this activity.
- Monitoring and technical assistance for a period of five years.

Training and further technical assistance will be delivered by an experienced organization with permanent presence in the area (potentially PACT-Congo, which has been implementing similar programs in Katanga for a number of years). This livelihood restoration package has strong links to the Community Development Program.

**Links to the Community Development Program Activities:** TFM has committed to fund a Community Development Program (CDP) and is working with a number of NGOs on its preparation and consultation. PAPs are not the sole focus of this program, though they will benefit from such activities as the following (tentative list, to be confirmed after consultation).

- Micro-credit.
- Health education.
- Income-generating activities.
- Agriculture.
- Infrastructure.
- Capacity building and education.

A number of SME activities are currently being implemented in TFM concession area that could be appropriate for this livelihood restoration package, including brick making and fence making enterprises.

**4.8 Assistance During the Transition Period**

The Project construction schedule currently envisages that much of the Project-Affected Area will have to be vacated in December 2007, and PAPs within these areas will have to move before this period. The implication is that they will not be able to farm those portions of the Project-Affected Area from July 2007 onward, as they would normally have done, because they would not be able to harvest these crops as the harvest starts in February. As a result, many PAPs will have no harvest in 2008, just after they have moved to their new locations. A shortage of food is therefore highly likely during the period from January 2008 to February 2009, when the harvests will start on the new replacement land. Transitional food assistance is therefore required for a period of about 13 months, to allow PAPs to face this period without any hardship. This food assistance will be served in-kind. Details of the package will be developed in due time in cooperation with competent organizations such as the World Food Program. Community participation will be sought in implementing the food aid deliveries and distribution.

**4.9 Resettlement Impacts from Early Works**

TFM will perform early works, specifically site preparation for the process plant construction in 2007, in an area of about 200 hectares within the Project-Affected Area. These early works are scheduled to start in the 3rd quarter of 2006. People now farming in this particular area will therefore lose their 2006-2007 crop, unlike most PAPs who will be able to farm during this last season in their current place of residence.
People within this area will therefore require compensation so that they are not impacted by the lack of a harvest, which would normally start in February of 2007. The compensation will be a mix of cash and in-kind, based on the currently applicable compensation rate of 160 Fc per square meter, as follows.

- In cash: 43 Fc per square meters.
- In kind: the equivalent of $$[(160 \text{ Fc} \text{ to } 43 \text{ Fc}) \text{ per square meter}]$$, which is 0.043 meka of maize per square meter, and 0.032 meka of beans per square meter.

The cash compensation will be paid in two installments, one in September 2006, and the second one in December 2006. The in-kind compensation will be delivered in two deliveries, with one in December 2006, and the second one in February 2007.

**4.10 Compensation Management and Associated Procedures**

**4.10.1 Database**

A database of affected households will be established for purposes of compensation management. This database will be designed from the outset so as to allow effective management of compensation during the active phase of RAP implementation, as well as during follow-on monitoring. The database will include files of affected assets to allow compensation management, and files of households to allow further socio-economic monitoring, with appropriate relationships between each other. To the extent possible, it will also be linked to the general Project GIS. All relevant census and socio-economic information related to both affected assets and affected households will be entered into this database.

**4.10.2 Delivery of Entitlements**

Once a given project-affected household has selected compensation and livelihood restoration options, a comprehensive compensation agreement will be signed by the household head and TFM. This compensation agreement will clearly spell out commitments of both parties, i.e., the following:

- For TFM: commitment to deliver and/or pay compensation and livelihood restoration packages at certain contractual times and according to certain contractual modalities.
- For the affected household: commitment to vacate agreed land at a date agreed upon by both parties, with financial incentives attached to the compliance with commitment.

Further to the all-encompassing compensation agreements, receipts and certificates of delivery will be signed by both parties upon delivery of any of the components of the overall entitlement.

**4.10.3 Vulnerable People**

**Identification of Vulnerable People**

**Vulnerable people** are those who by virtue of gender, ethnicity, age, physical or mental disability, economic disadvantage, or social status may be more adversely affected by resettlement than others and who may be limited in their ability to claim or take advantage of resettlement assistance and related development benefits.

As defined by the IFC, vulnerable people include, but are not limited to the following:

- Households headed by women or children.
- People with disabilities.
- The extremely poor.
- The elderly.
- Groups that suffer social or economic discrimination, including indigenous peoples and minorities.

When the June 2006 census was carried out in the Project Affected Area, about 20 individuals were identified as vulnerable on the basis of evident disabilities and illnesses. Other vulnerable people will be identified in consultation with the community.

**Potential Assistance Activities to Vulnerable People**

It is not the TFM’s mission to assist vulnerable people in general. However the company will identify and address the needs of vulnerable people within the PAP population, at least insofar as they are affected by the displacement and resettlement

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4 Meka standard measure for cereals, beans & other agricultural products, having weight of approximately 2.6 to 2.8 kg
process (see Appendix D4.3-I for further description of assistance to vulnerable peoples). Such assistance may include the following activities:

- Identification of vulnerable people and assessment of the cause and impacts of their vulnerability, either through direct interviews by a project social worker or through the community; this step is critical because often vulnerable people do not participate in community meetings, and their disability/vulnerability may remain unknown.
- Identification of required assistance at the various stages of the process, including negotiation, compensation, moving.
- Implementation of the measures necessary to assist the vulnerable person with the resettlement process.
- Monitoring and continuation of assistance after resettlement and/or compensation, if required, and/or identification of those entities, whether Governmental or not, that could sustain the Project’s assistance beyond its period of activity.

Assistance may take the following forms, depending upon vulnerable persons’ requests and needs:

- Assistance in the compensation payment procedure (e.g., specifically explain the process and procedures, make sure that documents are well understood).
- Assistance in the post-payment period to secure the compensation money and reduce risks of misuse/robbery.
- Assistance in moving: providing vehicle, driver and assistance at the moving stage, assist the person in identifying his/her resettlement plot.
- Assistance in building: providing materials, workforce, or building houses.
- Counseling in matters such as family and health.
- Assistance during the post-resettlement period, particularly if the support networks that the vulnerable person was relying on have been affected, such as food support, health monitoring, etc.
- Health care if required at critical periods, particularly the moving and transition periods.

It should be noted that assistance to vulnerable people is not intended to provide additional benefits, but rather to assure equitable access to benefits provided to all PAPs; access that may be otherwise constrained by their lack of equal capacity.

**Process for Identifying Vulnerable People**

Resettlement Consultation Committees have been established in each of the three affected communities of Mulumbu, Amoni and Kiboko. These committees will need to play a role in the identification of vulnerable people and the definition of appropriate assistance activities. The following actions will be undertaken to identify and provide appropriate assistance to vulnerable people:

- Provide notice of TFM’s intention to provide appropriate assistance for vulnerable people within the PAP population.
- Designation of a sub-committee within each of the three Resettlement Committees to handle specific issues related with vulnerable persons, supplemented by one TFM representative.
- Identification by the sub-committee of vulnerable persons requiring assistance, through applications by the vulnerable persons themselves and through identification by social networks in the villages.
- Identification of assistance measures on a case by case basis, with the following process:
  - Review of each case by a TFM social worker with one sub-committee member, including a visit at home and a detailed interview.
  - Discussion on required assistance measures between the two individuals above and the vulnerable person.
  - Report to the sub-committee on proposed assistance measures.
  - Review and decision by the sub-committee.
  - Implementation of assistance measures.
  - Monitoring.

TFM will allocate a specific budget to assistance to vulnerable persons.

**4.10.4 Grievance Mechanism**

**Likely Types of Grievances and Disputes**

In practice, grievances and disputes that are most likely during the implementation of a resettlement program are the following:

- Misidentification of assets or mistakes in valuing them.
Disputes over plot limits, either between the affected person and the Project, or between two neighbors.
Dispute over the ownership of a given asset (two individuals claim to be the owner of this asset).
Disagreement over the valuation of a plot or other asset.
Successions, divorces, and other family issues, resulting in disputes between heirs and other family members, over ownership or ownership shares for a given asset.
Disagreement over resettlement measures, for instance on the location of the resettlement site, on the type or standing of the proposed housing, or over the characteristics of the resettlement plot.
Disputed ownership of a business (for instance where the owner and the operator are different persons), which gives rise to conflicts over the compensation sharing arrangements.

Management Mechanism

Overview: Many grievances derive from misunderstandings of the Project policy, or result from neighbor conflicts, which can usually be solved through adequate mediation using customary rules. Most grievances can be settled with additional explanation efforts and some mediation using such customary disputes settlement mechanisms as follow:

- Supplementary explanations (for instance explain in detail how the Project calculated the complainant’s compensation and that the same rules apply to all).
- Through arbitration, resorting to elders or individuals well-regarded by the community and external to it.

In contrast, resorting to the judicial system often results in long delays before a case is processed, may result in significant expenses to the complainant, and requires a complex mechanism, involving experts and lawyers; which can fall well beyond the complainant’s control, and ultimately prove counterproductive to their own interests. Also, courts may declare themselves not competent for matters related to informally owned property, which is the case for nearly all PAPs in the TFM concession.

The Project thus will put in place an extra-judicial mechanism for managing grievances and disputes arising from the resettlement process, and based on explanation and mediation by third parties. Each of the affected persons will have access this mechanism without compromising access judicial resolution that may be due; before, during and after the use of this mechanism, parties have the option to seek a judicial resolution as well.

The grievance process will entail the following three fundamental levels of treatment:

- Registration by TFM of the complaint, grievance or dispute
- Processing by TFM of the grievance or dispute until closure is established based on evidence that acceptable action was taken; and
- In the event where the complainant is not satisfied with action taken by TFM as a result of the complaint TFM, an amicable mediation can be triggered involving a mediation committee independent from the Project.

Grievance Registration and Monitoring: TFM will establish a register of grievances, which will be available at the following locations.

- Community Liaison Officer in Fungurume Town.
- Community Liaison Officer in Tenke Town.
- Fungurume Camp.
- Construction Site in Mulumbu/Kwatebala Hill.

The existence of this register, as well as procedures to lodge a complaint (e.g., location and timing), will also be broadly advertised by TFM. The register will be established as of the commencement of resettlement and compensation activities.

A file will be opened for each grievance, to include the following elements:

- Initial grievance sheet (including the description of the grievance), with an acknowledgement of receipt handed back to the complainant when the complaint is registered.
- Grievance monitoring sheet for recording actions taken (investigation, corrective measures).
- Closure sheet, one copy of which will be handed to the complainant after he/she has agreed to the resolution and signed-off.

All grievances and related data, including resolution, will be entered into the RAP database maintained at the TFM office in Fungurume. This database will be the primary tool for evaluating TFM performance in grievance management.
Complaint closure does not necessarily mean that the complainant is satisfied with actions taken. TFM may conclude that the complaint is not founded and that the RAP principles have been followed. Rather closure means that the complainant agrees that action has been taken without necessarily being satisfied with the outcome.

**Mediation Committee for the Amicable Resolution Mechanism**

**Grievance Mediation Committee:** Complaints that cannot be closed to the complainant’s satisfaction will be handed over to a mediation committee that will include the following individuals:

- One representative from local government.
- One TFM representative acting as an observer.
- Three representatives of the affected people, including at least one woman, chosen from the Resettlement Consultation Committees and/or amongst community-based organizations, elders or customary authorities.
- One representative of an NGO or of a religious organization present in the field in the concerned area and well regarded by the population, such as the Lukotola Mission or PACT Congo.

The mediation committee will meet as needed, depending on registered complaints and disputes.

**Grievance Processing:** After a complaint or dispute has been registered, TFM will prepare the technical background to the complaint, such as a proposed compensation amount, list of meetings and interviews with the complainant and description of the exact reason of the dispute, for further consideration by the mediation committee. The complainant(s) will be invited before the mediation committee, which will mediate and attempt to propose a solution acceptable to both TFM and the complainant. If need be, other meetings will be held and the committee may resort to one of its members to arbitrate in a less formal framework than meetings, if appropriate.

If reached, the agreement will be sanctioned by a settlement agreement signed by the parties, and the president of the mediation committee will be responsible for monitoring the implementation of this settlement agreement.

5. **MONITORING AND COMPLETION AUDIT**

5.1 **General Objectives**

Monitoring will examine the following RAP performance aspects.

- Social and economic monitoring to provide a follow-up on the status of resettled people, the cost of housing in the displacement area, potential land speculation, environmental and health situation, success of livelihood restoration including agriculture, small businesses, employment and other RAP component activities.
- Monitoring of vulnerable people.
- Technical monitoring to include qualify control on infrastructure and housing construction where relevant, commissioning and testing of the technical components of the resettlement housing.
- Implementation of the grievances and grievance management system.

The RAP monitoring effort will have both internal and external components, as described below.

5.2 **Internal Monitoring**

**Internal Monitoring Objectives:** Monitoring will address the following internal aspects of RAP performance.

- Social and economic monitoring, including the follow-up of the status of resettled PAPs, cost of housing in the displacement area, potential land speculation, environmental and health situation, livelihood restoration including agriculture, small businesses, employment and other activities.
- Monitoring of vulnerable people (see Section D4.3.6).
- Technical monitoring, including supervision of infrastructure and housing construction where relevant, commissioning and testing of the technical components of the resettlement housing.
- Grievances and grievance management system (see Section D4.3.7).

**Indicators and Frequency of Internal Monitoring:** During the active phase of resettlement and compensation, the following six key progress indicators will be measured internally by TFM on a quarterly basis.

- Numbers of households and individuals affected by project activities.
- Numbers of households and individuals displaced as a result of project activities.
- Numbers of households and individuals resettled by the project.
- Numbers of houses taken possession of by resettlers.
- Grievances (open, closed).
• Amounts of compensation paid per category (structures, land, crops, others).

A brief quarterly internal monitoring report will be prepared on this basis. It may be publicly released depending on lenders’ requirements.

In addition, simple socio-economic parameters will be established and monitored annually for a sample drawn from about 20 percent of PAPs, such as follows:

• Average monetary income, and total income including self-consumption.
• Breakdown of household expenditures.
• Surface area of land holdings.
• Crops and estimated or observed yields.
• Number of unemployed people.
• Number of children at school.

Every two years, the socio-economic quality of life index that was calculated as part of the initial baseline study will also be measured and calculated to allow comparisons with the initial index. This will require socio-economic surveys to be administered once every two years over a ten-year period on a sample of approximately 20 percent of the PAP population.

5.3 External Monitoring

TFM will hire a suitably qualified external social auditor with significant experience in resettlement to carry out twice-annual reviews focusing on the assessment of compliance with social commitments contained in DRC legislation, Equator Principles, in the RAP, in the ESIA and its attached action plans, and in the Social Management Plan.

Objectives of these reviews are as follows:

• To assess overall compliance with the RAP and other social commitments made in the Environmental and Social documentation.
• To verify that measures to restore or enhance PAP’s quality of life and livelihood are being implemented and to assess their effectiveness.
• To assess the extent to which the quality of life and livelihoods of affected communities are being restored in an appropriate manner.

This review will also assess overall compliance with other mitigation measures to address social impacts described in the ESIA, the SMP and the Contractor Plans. The types of commitments that will be verified by the external monitoring expert include the following:

• Pollution prevention, including as appropriate dust and noise management in communities.
• Community safety, including as appropriate awareness programs in communities on communicable diseases, community awareness of project traffic routes and traffic safety briefings.
• Infrastructure and services, including as appropriate reinstatement of damaged infrastructure and compensation process, and that roads shared by with the public are maintained in reasonable condition.
• Community liaison, including as appropriate community awareness of project activities, complaints procedures, camp rules, recruitment process, project traffic speed limits, pre-warning of blasting, noisy activities and other planned disruptions; procurement process and regular community meetings and access to community liaison officers.
• Grievance management, including follow-up on reported grievances, accessibility of Community Liaison Officers; community awareness of complaints procedures and closes-out on registered complaints.

External monitoring reports will be prepared independently by the reviewer and released to the lenders (and possibly to the public depending on lenders’ requirements) after review by TFM for factual accuracy.

5.4 Resettlement Completion Audit

The purpose of the Completion Audit is to verify that TFM has complied with resettlement commitments defined by the RAP, and more generally if compliance with Equator Principles is warranted.

Reference documents for the Completion Audit are the following:

• This Resettlement Action Plan.
• Congolese laws as they are described in Section D4.3.3 of this RAP summary.
• IFC’s PS-5.
The Completion Audit has the following specific objectives:

- General assessment of the implementation of the RAP against the objectives and methods set forth in the RAP.
- Assessment of compliance of implementation with laws, regulations and IFC PS-5.
- Assessment of the fairness, adequacy and promptness of the compensation and resettlement procedures as implemented.
- Evaluation of the impact of the compensation and resettlement program on livelihood restoration, measured through incomes and standards of living, with an emphasis on the “no worse-off if not better-off” requirement.
- Identification of potential corrective actions necessary to mitigate the negative impacts of the program, if any, and to enhance its positive impacts.

The Completion Audit will be based on documents and materials generated by internal and external monitoring. In addition, auditors will make their own assessments, surveys and interviews in the field and with Project-Affected-People.

6. CONSULTATION AND DISCLOSURE

6.1 Previous Consultation

Consultation with affected communities has started in June 2006, when the design of the Project was sufficiently final to allow the disclosure of a clear footprint and residents could be advised of likely impacts.

Meetings were then held in all three communities to present the main RAP features and the overall schedule of the resettlement process.

The main issues raised in these initial meetings are summarized as follows:

- Interim arrangements for the 2006 farming season.
- Chief’s power in the resettlement site.
- Agricultural technical and input assistance.
- Allocation of fields in the resettlement sites.
- Livelihood restoration, and the recognition of agriculture’s critical role in current livelihoods.
- Employment.

6.2 Village Resettlement Committees

A formal consultation mechanism has been put in place to allow for continuous interaction between the communities and TFM. Resettlement Committees have been nominated in each of the three villages. Interim resettlement committees (mainly the chiefs and a few elders) were first put in place following a meeting with all Chiefs in early June 2006, and were then broadened to ensure wide community representation.

6.3 Consultation Concept

**Resettlement Planning Stage:** Any sensitive decision will be made by the affected communities in consultation with TFM. TFM will organize meaningful information and consultation so that this process can take place between the company and fully informed community members.

Although the initial consultation described above has played a key role in defining preliminary options outlined in this RAP, consultation with communities will be critical in refining options identified in this RAP. The following issues still require extensive consultation before a final RAP is disclosed:

- The selection of resettlement sites.
- The details of the eligibility and compensation policy, for all categories of PAPs and all categories of assets.
- The design of resettlement houses.
- The details of the livelihood restoration packages.
- The activities directed at vulnerable people.
- The schedule of resettlement and compensation.

Wherever decisions have to be made by communities, consultation at planning stage will generally be organized in the three following stages:

- Disclosure of preliminary options, as described in the RAP, to the resettlement committees.
- Discussion of these options with resettlement committees, and tentative selection of the preferred option.
- Disclosure of the preferred options in public meetings with the resettlement committees and the general population, and validation of this option in public.
Consultation during Resettlement Implementation: The resettlement committees will remain active during the implementation stage, and will remain the choice channel to convey communities’ concerns and questions to TFM. It is likely that a number of issues will need consultation and discuss, such as, for instance, the following:

- Allocation of residential plots in the resettlement sites and of agricultural plots in the identified replacement land nearby.
- Community infrastructure re-establishment.
- House reconstruction, including issues related with design, finish, location, etc.
- Management of transitional assistance.
- Management of assistance for vulnerable people.
- Disputes of various kinds.

6.4 Disclosure
The society in the project-affected area does not function on the basis of written information. Most communication is verbal, and meaningful consultation will not take from the disclosure of written documents. Due to this constraint, as well as TFM’s legal obligations for local disclosure, the following documentation will be made available:

- Full RAP in French (one copy available at all times in project information offices, one copy given to each of the resettlement committees).
- Simplified version of the eligibility and entitlement policies in French (one copy available at all times in Project information offices, five copies given to each of the resettlement committees).
- Update notes will be provided when needed to each of the resettlement committees and publicly available at Project information offices.

7. RAP IMPLEMENTATION
7.1 Implementation Arrangements
Compliance with social commitments contained in this document will be under the responsibility of the TFM’s Environmental and Social Manager, who reports to the TFM General Manager. The Environmental and Social Manager is responsible for securing and maintaining the TFM project social license to operate, which during the project’s construction phase will entail the following areas of oversight and responsibility:

- Recruit and manage the TFM community and social team members for the following functional areas.
- Resettlement planning.
- Community relations.
- Community development.
- Develop and administer budgets for all SAP, community development and community liaison activities.
- Oversee and provide quality assurance on the following.
- Resettlement action planning and execution.
- Community relations.
- Socio-economic impact assessment.
- Implementation of social aspects of recruitment and procurement policies.
- Development and execution of additional needed policies for all operational areas of responsibility.
- Establishment of the future community development foundation for management of the social development fund.

As mentioned, the Environmental and Social Manager will be supported by team leaders in the primary functional areas of environmental management resettlement planning, community relations and community development, each of whom will have the requisite staff and material support to achieve their mission. These team leaders will have the following individual responsibilities under the SAP.

The Resettlement Planning Task Leader will have operational, daily responsibility for RAP execution, including the following specific program components:

- Survey and value assets taken during project construction.
- Conduct census and census updates of affected households.
- Plan and supervise compensation activities, including for lost crops, land buildings and livestock, and to restore lost livelihoods.
- Coordinate selection of alternative resettlement sites.
- Monitor and report on the construction of replacement village structures.
• Plan and coordinate the move into replacement housing for affected parties.
• Conduct ongoing consultation with affected parties via communication with resettlement consultation committees, with affected individuals, in community-wide consultation venues.

The Resettlement Planning Task Leader will be supported by a staff of up to three additional professionals who will be responsible for asset survey and valuation, resettlement consultation and for assuring equitable treatment of vulnerable and disadvantaged groups within the population.

The **Community Liaison Officer** (CLO) will serve as the primary point of contact between communities of the DCA and the TFM project, and will have the following primary areas of responsibility *inter alia*.

- Liaise with local government with regard to local community liaison and issues and in consultation with appropriate TFM personnel.
- Oversee and assure compliance with implementation of TFM policies on recruitment.
- Log and respond to grievances lodged by members of the community.
- Assist in identification of individuals to receive compensation through intended or accidental damages during field work as required by the 2002 DRC Mining Code (Article 281), and as described in internal procedures.
- Organize and facilitate compensation payment actions.
- Obtain prior written permission from community leaders / affected members for any intended damage to any infrastructure, crops or land as a result of exploration, FS or ESIA work, and compensation to be paid.
- Notify communities in advance of any exploration, FS or ESIA tasks that they may observe (e.g., field visits by study team members) or that may affect them (e.g., intended damage through field work).

The CLO will be supported by at least four additional team members who will staff TFM community liaison offices in Fungurume and Tenke, as well as additional community liaison posts at southern and northern village sites within the DCA (e.g., Kafwaya and Mulumbu).

Though not technically responsible for mitigation-driven activities, the **Community Development Coordinator** is nonetheless a key member of the TFM social team. The CDC will prepare and assist in the implementation of the community development ‘Roadmap’ that is presented independently of this SMP document. Key elements of the Roadmap include community governance, food security (agricultural programs) livelihoods (e.g. small and medium enterprise development) and improvements to healthcare and educational opportunities among the urban and rural populations of the DCA.

**7.2 Liaison with DRC Authorities**

Although this is not a requirement of the DRC legislation, this RAP will be submitted to the provincial Ministry of Mines before it is implemented in the interest of transparency. The provincial Ministry of Mines and other DRC authorities, as appropriate, will furthermore be kept informed periodically of the RAP implementation, through the following mechanisms:

- At local level: periodic information on an “as-needed” basis to the local administration representatives, i.e. the “Chef de Poste” de Tenke, and the “Chef de Cité” of Fungurume.
- At district level (Kolwezi): involvement of the technical services attached to the District (under the leadership of the “Maire”), particularly the Mining Department, which is supposed to enforce the mining regulations, particularly the 1981 Mining Law applicable to the TFM project, which includes general provisions related to pre-existing surface rights and compensation thereof (see Section 4); the Kolwezi Mining Department must, amongst others, sign off on the TFM census.

At regional level: periodic information on an “as-needed” basis of the Governor’s cabinet in Lubumbashi.

**7.3 Budget**

Table 4 below presents the budget that TFM commits to make available for the implementation of this RAP, whereas figure 1 provided the RAP implementation schedule.

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**Figure 1: RAP implementation schedule – 1st part – Planning and RAP finalization**

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</table>
8. CONTACT PERSONS

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