Policy Brief

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- National capacities determine the effective level of decision-making power and the level of environmental management and pollution control.
- Decision-making power should be devolved to the lowest possible level(District), where it is most effective and national capacities and skills should build up continuously.
- The ESIA process is an Opportunity, e.g. to identify and address capacity gaps), and should not turn into a hurdle and cause trouble.
- A coordinated (multi stakeholder) approach for environmental management through a standardized set of principles and requirements is preferred to demonstrate institutional, technical and financial performance.
- Capacity building of institutional, organisational on environmental management is a long-term investment and requires a flexible approach to accommodate the different types of institutions and stages of organisational development.
- Capacity building support to districts and communities should be mapped and coordinated to ensure efficient & effective environmental Management.

Key messages on Environmental and Social Impacts Assessment for Musakashi River Catchment Area (An independent impact assessment of industrial mining waste pollution in Chambishi)

The Zambia Institute of Environmental Management (ZIEM) has been working in Kalulushi with government agencies and other relevant stakeholders with responsibility in environmental management through environmental social impact assessment (ESIA) platform for exchange of information and experience on Musakashi River catchment area pollution challenges. In 2011 and 2012, government officials from the various agencies and departments participated in Musakashi River catchment Pollution assessments. The process focused on developing an environmental and social impacts assessment for the Musakashi River Catchment area and particularly on addressing the environmental pollution coming directly from the Mining companies Non-Ferrous Company Africa (NFCA).

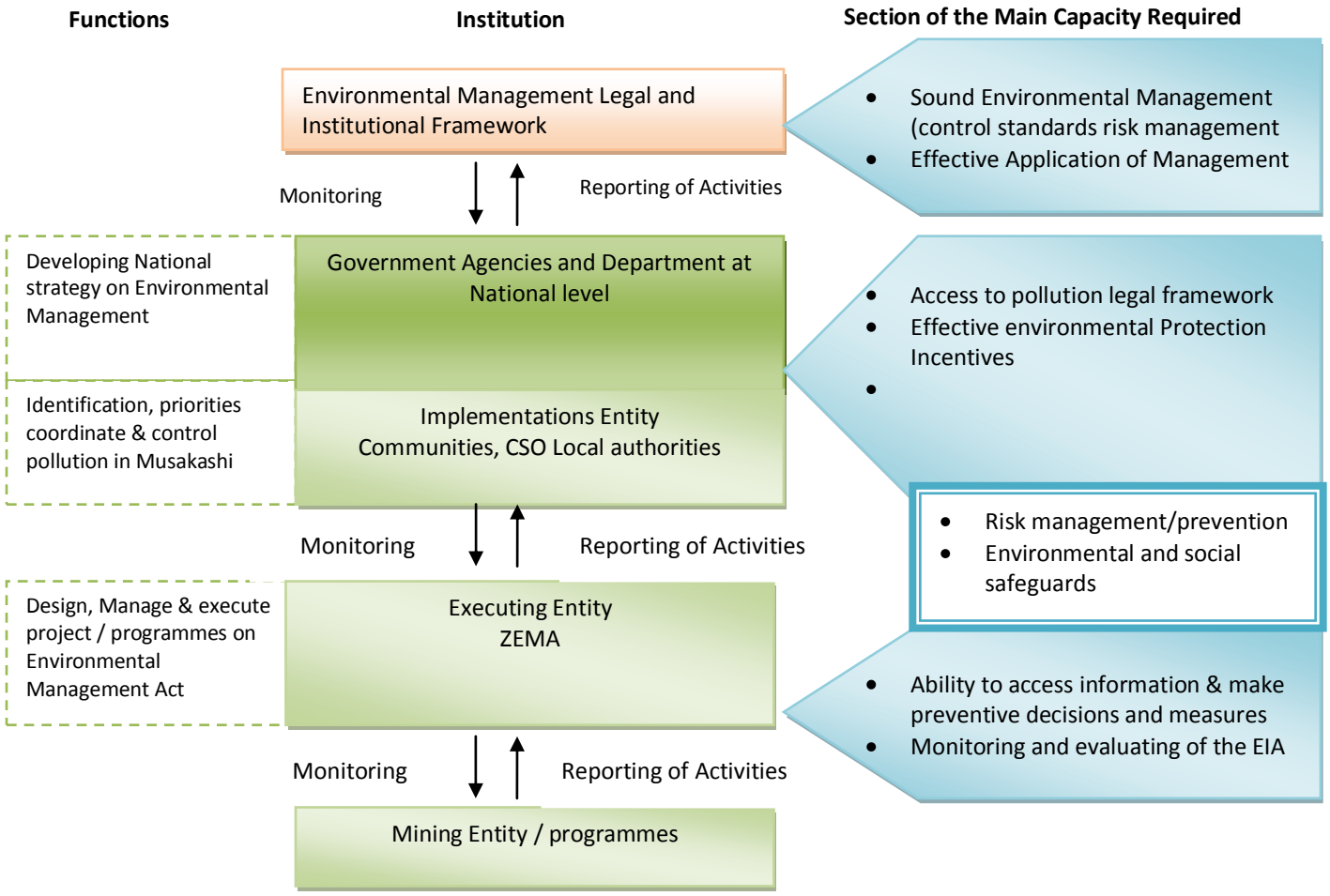
The participant also included the civic leaders from the affected wards and their subjects. Some individual community members had even reported their concerns on the pollution impacts on their communities. However, most of the affected communities were either in told to leave their farms and move elsewhere, because the affected area is a mining area. This policy brief presents the lessons learned and key messages from stakeholders in the Musakashi river Catchment area based upon their experiences and perspectives of the environmental pollution impacts with a special focus on the environmental management standards for predestining the best practice in management of mining waste and pollution.

Enhanced access environmental Information and pollution management

The long-term environmental management strategies should be able to monitor and provide preventive measure on environmental pollution in Musakashi River Catchment Area[i]. With the good legal and institutional frameworks, the modalities for accessing information and associated strategies should help out in protecting the environment. Traditionally, Musakashi River catchment area is both a mining and agricultural area with a wide variety of natural resources ranging from rich water sources, fertile land, minerals, plants and wildlife. However, the current mining activities are quickly distorting the environment and the ecosystems[ii]. The mines and agriculture have play an important role in providing employment and revenue to the Zambian economy. However, the communities living and drawing environmental social and economic benefits from the Musakashi River Catchment are disappointed with the levels of environmental pollution taking place as a result poor monitoring of the mining operations in area by the relevant authorities. The vulnerable communities are looking to obtaining lasting solution to the devastating effects of the mining waste pollution coming from the NFCA. Access to environmental information and coordinated approach to the pollution challenges at district level is one of the biggest challenges Musakashi River catchment areas is facing. According to the ESIA report on Musakashi, there is an urgent need to address the pollution concerns on the Musakashi river catchment area through the implementation of the of district environmental management strategies.

In order to meaningfully implement a district environmental management strategy, a functioning chain of activities is needed; from the design of the national strategy and implementation plans at the policy level; down to designing and implementing projects, as well as monitoring projects that reflect the national strategies. Looking at the process of environmental management and the decision-making process of controlling the impacts of environmental pollution and implementation of the national environmental management strategy, three main levels can be considered where a set of institutional capacities need to be in place: the international level, the national level and the project/programme level. As illustrated in a simplified way below in Figure 1, each actor involved requires a set of certain competencies to be able to take the decision.

Figure 1: Institutional arrangement and capacities with regard to direct access



At the National level, national legal and institution frameworks allocate responsibility to the various institution to sustainably manage the environment on the basis of an approval process, which is still to be defined through the EIA and EMP. Government bodies at the national level determine mining projects by explicitly formulating their strategies to act in the face of environmental, social and economic protection (and on priorities). Often with a focus on the sub-national level, government departments and agencies actually promote/design, select and coordinate national mining projects. The entities that are actually executing projects can be national or multinational mining companies and in this instance NFCA is a mining company implementation the mining operation in Chambishi. The required competency to ensure the effective and efficient management of the environment by the mining company is a key priority of The Zambia Environmental Management Agency ZEMA which is the Executing entity[iii]. ZEMA is the national institution and the custodian of the Environmental Management Act 2011(EMA 2011).

Even more decision power remains at the ZEMA level when the actual environment pollution decisions and management of environment take place at the district level; e.g. NFCA a mining entity operates in Kalulushi Municipal Council and the pollution is taking place in Musakashi River Catchment area which is a resettlement in Kalulushi. The local authority should have the decision power to monitor the mining company activity and advice on environmental management in line with th national institutional and legal framework. This corresponds to the term enhanced access to environmental information and coordination at district level and community level, which has should provides communities with confidence in the management of environmental matters. Enhanced access to environmental information is currently not applied in environmental management at district and community levels and modalities for it are not defined in the environmental management strategy.

To conclude, the specific national, district and community capacities and skills determine largely the degree on access to environmental information and management of the environment. It is important to devolve the environmental management decision-making power to the lowest possible level where it is most effective. This implies as well, that it is essential to try to transfer more competencies and decision-making power step by step to the local governments. However, while the principle of direct (enhanced) access is an attractive option for many countries, it may not be a suitable one for everyone. The environmental problems and challenges in Musakashi River catchment area may justify the need to supervise environmental management at district and community level.

Experience and lessons learned from the Environmental Social Impacts Assessment (ESIA)

Social and Economic analysis: A social barrier analysis has been conducted supplementary to the economic analysis.
The main social barriers to the environment around Musakashi River Catchment area include the following:

1) Social barrier. People are not able to carry out many activities that define their livelihood because of the pollution surrounding of in their communities (communities who use to sell vegetables from Musakashi are no longer doing so, because the vegetable can no longer grow and mature). The social cost per house hold affected by the pollution in the Musakashi River Catchment area is much higher than normal level of Zambian average (I.e. Musakashi communities suffers social stigma from other competitors in other farming blocks).This has the authority to stop some farmer from farming along Musakashi river line this farming season .This has contributed to higher levels of poverty in the area, high risk of dependence and more difficulty in obtaining sustainable livelihood.

2) Economic barrier. The people Musakashi River Catchment area where the project is located depend mostly on agriculture activities such as growing vegetables, maize, poultry, fish farming and fishing from the Musakashi River Catchment area. These activities have been disrupted by the pollution in the water and the soils surrounding the polluted rivers. The sludge that comes with the waste water from the mining operations has filled the rivers resulting in the contamination of the water and soils. Farmer in Musakashi area have suffered excessive competition at the vegetable market as they are un able to sell their vegetables , because communities feel the taste of vegetables from Musakashi has a bitter taste. Therefore, these farmers have suffered loss of welfare and economy.

In addition, NFCA has given some people notification to vacate from their pieces of land; the people are discouraged carrying out any economical activities. This has reduced house hold incomes, resulting in people failing to pay for social and health services. A number of parents are unable to take the children to school because they have no incomes to do so. Their sources of income have been curtailed by the pollution caused by the NFCA mine. Their incomes are not able to meet domestic needs such as food, education and transport.

3) Food security and energy security barrier. The non cultivation of the crops and failure to growth enough food is resulted into food insecurity and has been clearly described in the ESIA as serious. The access to energy per household feed stock has also been reduced drastically because people are now required to move long distances to collect their energy feedstock. The women and children who traditionally are subjected to source energy feedstock at house hold level are serious affected. This scenario applies to the water security situation the nearby sources of clean and safe water have been polluted by the effluent coming from the NFCA operations. The Musakashi River Catchment Area thus faces a health risk since the water is highly polluted for normal human and animal consumption.

Step 4 – Common practice analysis: The common practice analysis shows that NFCA has not put in place the common and best practices in the management of waste water and effluents coming from their mining operations. NFCA practices have serious implication to the long term existence of the environment. Besides these, all other similar Mine operations in the area show that the mining company has neglected it responsibilities of environmental management. Documentation supporting these assertions has been verified. ZIEM was able to verify that the environmental Impact assessment and the environmental management plan ware not implemented based on the common practice in the mining industry.

Step 5 – Impact of analysis: The future impact analysis shows that the potential of increased environmental pollution and ecosystem distortion if NFCA[iv] does not review its environmental management plans, conduct fresh EIA on Musakashi tailing dam to incorporate new changes in environment. The mining company should also make correction to distortion caused to the environment and ecological system. Given the above, it is sufficiently demonstrated that Musakashi River catchment has serious environmental challenges which require serious interventions by all the relevant stakeholders.

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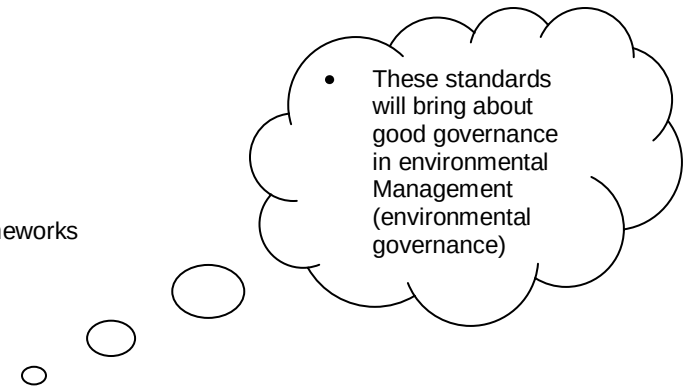
Table 1: Minimum Environmental standards of the Mining Operation

- External Environmental Management Audit
- Environmental and Social impact Management and Control Frameworks
- Environmental Disclosure
- Code of Ethics
- Internal Environmental Audit
- Project Appraisal Standards
- Procurement Processes
- Monitoring and Project-at-Risk Systems
- Evaluation Function
- Investigation Function
- Hotline and Whistle blower Protection



For the purpose of mobilizing information and managing the environment and reducing the impacts of pollution, it is beneficial to involve all stakeholders at district level that coordinate efforts regarding environmental management and link respective efforts with national sustainable management strategies. The minimum standards Listed above would go a long way in mitigating the current mining pollution on the copperbelt and other mining towns in Zambia.

However, considering the complexity of environment management, ZEMA is not present at districts level. There have are two regional offices one on the copperbelt and the southern province. In fact, a national institutional framework for environment management is important: a set up that allows inter-ministerial coordination, utilization of expertise of different agencies or organisations and to clarify roles and responsibilities of different government agencies and other stakeholders involved in environmental management.

Sustainability of Environmental Management – Kalulushi district council does not have a committee or board that could coordinate environmental management activities at districts level. This means that there is need to encourage the district council and the district commissioner's offices to establish an environmental Task force to over look the issues of environmental management. Sustainability occurs once there is an establishment in place to follow up and coordinate the issues of environmental management activities. The task force would advocate for appropriate technologies that would reduce pollution in the Musakashi River catchment areas and benefit both the manunciparity, communities and the Investors. Depending on ZEMA for follow up on environmental pollution concerns is not very sustainable especially that ZEMA is found in Ndola 87 kilometres from Kalulushi district. The district needs to have an institution that would collaborate with ZEMA and other relevant stakeholders on issues of environment management.

Musakashi River Catchment Area Household Statistics and Livelihood

About 330 households representing about 2000 people are affected, while about 100 households within that figure are displaced as a result of the impacts of pollution, while 50 of the remaining 230households have lost part of their assets such as land, infrastructure, access roads, clean water and income generating activities. The environmental pollution coming from the poor management of the tailings dam has directly affect estimated 50 households and the consolidation and restructuring of plots and landholdings is estimated to affect 50 households. Additionally, there is a good portion of the household who have been told to stop cultivating.

Musakashi River Catchment area comprises a mix of farmers on a gross area of 4,000ha. The type of land access in the area can be divided into three. Group discussions with farmers in the area revealed that there are about 25 farmers with title to land, including some graduates from colleges of agriculture and other farmers. A second group of farmers have numbered plots for which title is yet to be formalized. The third group consists of farm squatters, some of whom may have been living in their current stations, even before their locations became titled.

Most farmers cultivate rain-fed crops of maize, groundnuts, sugarcane, pasture, sweet potatoes, sugar cane and cassava. During the months of February to March, hippos destroy crops especially those close to the banks of the river. Among the emergent farmers, those who have title to land, most of the cultivated land is allocated to maize production followed by pasture for those who own cattle, groundnuts and vegetables.

Several farmers have also established small irrigation areas using diesel or electric powered pumps to abstract water from the small perennial streams that traverse the area or from the one small dam located on the northern boundary of the area. Mostly vegetables are grown under irrigation in the dry season, for example tomatoes and okra. Dry season vegetable cultivation depends on accessibility to water fronts or wetlands and not all farmers have access. Among the emergent farmers, most had access to this resource. One large commercial farm pumps water from the nearby Kafue River to irrigate 600 hectares of wheat about 3 kilometres north-west of the site.

Various types of livestock are raised in the area, including cattle, pigs, goats and broilers. Discussions with representatives from the emergent farmer group revealed that about 55 percent of them own cattle, 35 percent own pigs, 15 percent keep goats and only 2 of them raise broilers on a regular basis. Two of the emergent farmers listed the provision of extension service as an activity that generates income for their households. The two provide artificial insemination assistance and other livestock related services to other farmers at a fee.

Five main criteria were used by the emergent farmer group to grade the well being of households in their category. These were area cultivated, employment of labour, type of housing, number of bags of maize marketed and household food security. Twenty five percent who were said to be the most well off cultivated 8 hectares or more and marketed 120 bags or more of maize. They were also able to market their produce without difficulty and employed both permanent (5 or more) and casual labour. The housing of this group was made of burnt bricks and iron roof.

The medium group cultivated 3-5 hectares, hired 1-4 persons on permanent labour and some casual labour; and marketed 70-120 bags of maize. The housing of this middle group was made of burnt bricks, mostly thatch roof with only a few households affording iron roofs; and their houses had 1 to 3 rooms.

The least well off category cultivated up to one hectare, marketed up to 50 bags of maize, did not hire permanent labour, hired casual labour only sometimes; and had houses made of un-burnt bricks and thatch roof.

Overall, only about 15 - 20 percent of the emergent farmers were said to be food insecure, those who ran out of food during the months November to January, but managed to struggle through with the little income from vegetable sales.

Resettlement Policy Framework Purpose

There is need to clarify resettlement principles, organizational arrangements and design criteria for the resettlement of affected persons in the course of environmental pollution caused by NFCA to the Musakashi River catchment area. Specific Resettlement Action Plans (RAPs), consistent with guidelines in to the national resettlement policy framework and should be submitted to the District Environmental Management Task for approval once specific information about land expropriation becomes available.

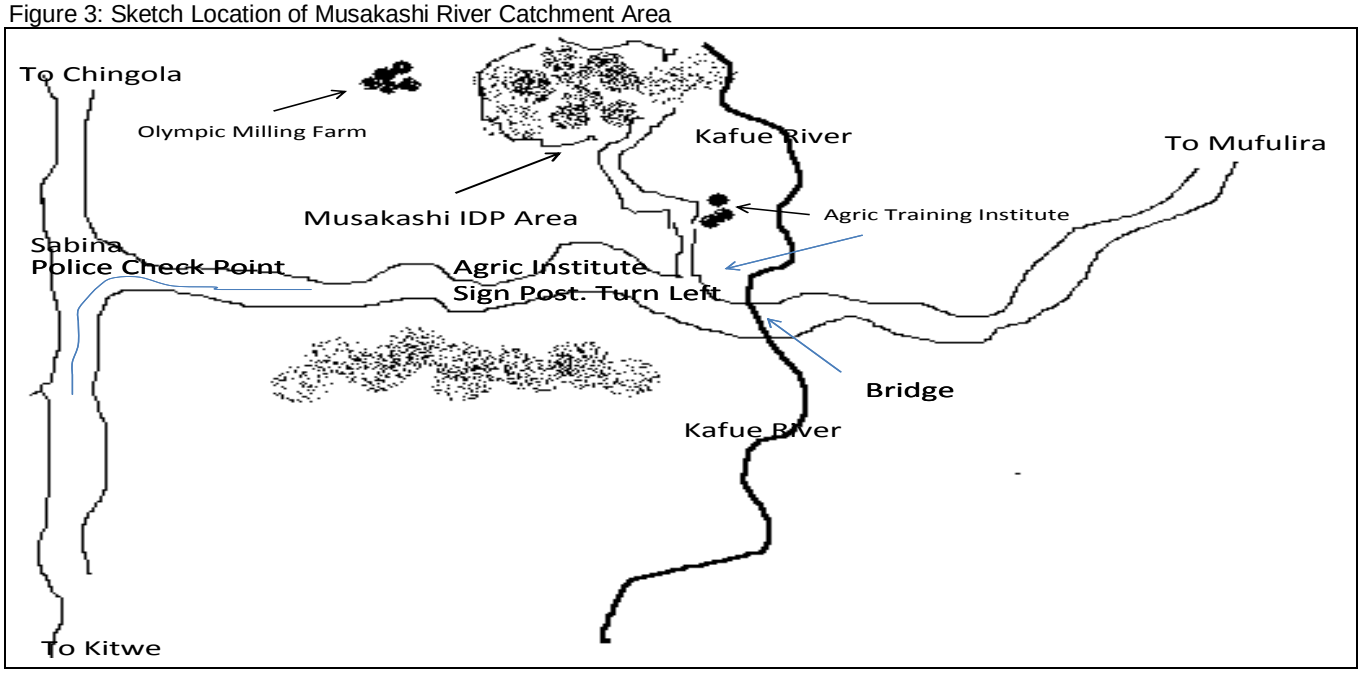
Implementation of the recommendation provided in the ESIA will trigger resettlement policy because land will be acquired for and environmentally sustainable tailings dam and affected persons will need to be compensated for loss of land, housing or homes, loss of employment or revenues from business, etc. Relocation to outlying areas far from family support networks resulting in potentially diminished mutual assistance is also a consideration for compensation.

Musakashi River Catchment Area - Location Climate and Agro-ecological Setting

The Musakashi River Catchment Area is located on the border of three important mining towns Kitwe, Kalulushi, Mufulira and Chingola is located on the Copperbelt Province of Zambia at approximate latitude 12o 37'south and longitude 28o 09'east and altitude of about 1,200m above sea level. The area can be accessed by a gravel road from the main Kitwe-Mufulira road about 35kms north-west of Kitwe as well as from Chingola Kitwe Road. Figure 2 shows the catchment location. The Musakashi River Catchment area is a classified recharge for the Kafue River, which is one of Zambia's most important river in relation to the environmental, social and economic development.

Figure 1: This is part of one the main tributary (Namumba Stream) to Musakashi river which is fill with the slag from the mine

Figure 3: Sketch Location of Musakashi River Catchment Area



The Musakashi one of the government settlement scheme, and according to plan, the area will contain 53 plots of 3-5 hectares, 25 plots of 5-10 hectares and 30 plots of 10-150 hectares. The area was initially settled by graduates from the Zambia College of Agriculture in Monze and Mpika. Twelve of them formed the Sustainable Agricultural Development Association which has since evolved into the Akabangilile Multipurpose Cooperative with over 120 members. Close to the project site, the Zambia Agricultural Research Institute operates a Technology Assessment Site which, when full capacitated, will have facilities for soil survey, plant quarantine and seed control and certification, as well as an agro meteorological station.

Musakashi River Catchment area lies in what is broadly characterized as region 3, one of four agro-ecological regions in Zambia, as shown in Figure 3. Region 3 comprises the north and north western plateaux and is characterized by high rainfall of 1000-1500mm. There are 3 seasons, a cool dry season (April- August, a hot dry season (August to November) and a warm wet season (November to April). The soils in the region are mostly Haplic Acrisols and they are highly leached and acidic. However, an indicative soil survey may be required to better understand the soils available for irrigation in the project area and to refine the water requirements, inputs and other technical aspects.

Musakashi River Catchment consists of the upper reaches of Kamatete, Namumba, Lukoshi and Musakashi River which flow into Kafue River. The topography is a series of ridges between a number of streams that flow west to east towards the Kafue River just outside the boundary of the project area. One alternative plan for irrigation is to abstract water from the Kafue River. The upper Kafue River has lower constraints for small holder irrigation compared to the rest of the river catchment. However, the availability of water should be investigated further. Water rights will be required.

Main Social Issues

Social issues arising from the impacts of environmental pollution by NFCA include the following:-

- A Land issue, NFCA has claimed that the affected farmers are squatters in the mining area. The local administration, led by the District Commissioner, is consulting with all concerned parties to ensure a harmonious settlement of the land Issue. Another concern from titled land owners include the lack of clarity on whether NFCA would compensate for the loss of property due to the flooring caused by the poorly designed tailing dam.
- Involuntary resettlement. People will need to relocate to make space for building of tailing dams, pipe laying and the actual land to be irrigated. Some concerns raised by the community are the mode of compensation and the method of compensation in case of perennial crops/ fruit trees.
- Access to Clean Water. Access to water for various livelihood activities is becoming a big problem and result in conflict within Communities. Most of the source of clean safe water have been polluted by the effluent from the mining operations
- Stopping people from cultivating and other forms of livelihood has resulted increased crime and HIV/AIDS exposure.

- Distortion of the ecosystem has increase water borne diseases, for example increased skin and diarrhoea due to absence o clean and safe water.
- Livelihoods. Loss of livelihoods for some displaced families will deprive them from incomes that will enable the access some social services such as school for their children and health services, thereby increasing poverty.

Conclusions

ZIEM undertook a trip to the Chambishi last year in October 2011, when there was a community outcry on the level and amount of mine effluent which was discharged in to the Namumba stream which is a tributary to Musakashi River. The discharged effluent caused a serious floods, killed aquatic life (fish, flogs, snakes etc), terrestrial life (plants, insects, worms, birds), disturbed human settlement (houses collapsed, well were contaminated, household property was destroyed) and destroyed crops extensively. ZIEM visited randomly selected points in the Musakashi River catchment area which showed that, the discharged effluent had caused serious damage to the Musakashi River Catchment communities. The responsible mine NFCA did not warn or taken precaution to advise the community on the plans to discharge the effluent into Musakashi river. The action did not comply with the provision of Environmental management Act No.12 of 2011 on discharge and also their Environment Management Plan (EMP).

The rapid assessment indicated that, NFCA has the capacity to implement the environmental management plan and ensure sustainable production and consumption of natural resources. The environmental management plan indicated that NFCA has the capacity to adopt appropriate mine waste disposal technologies that would not arm the environmental. The situation on the ground does not represent the capabilities of NFCA in environmental management. NFCA has not been managing the tailing dam in the manner provided for in their EMP, environmental management Act 2011and international environmental management standards. The Tailing dam is smaller compared to their production capacity and can only accommodate 42% of tailings based on current production.

The river pollution rates are very high with some streams like Lukoshi, Namumba and Kamatete being filled with silt and slag (64%), dead (cannot support life any more) destroyed plant (fauna) and aquatic life and aquatic dependant lives along Musakashi river catchment (78%), flooded land (64%), crops failure (57%), and property destroyed (82%) and disturbed terrestrial life (80%).

On average, there is a 65% eco system disruption rate in the Musakashi River Catchment area. This gives a negative indication that the activities of NFCA are contributing negatively to sustainable development because its graph is extremely poor on environmental sustainability and achievement of sustainable production and consumption of natural resources.
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[i] In line with the provisions of Statutory Instrument (SI) No. 28 of 1997, the Consultant is expected to undertake an Environmental Project Brief (EPB). In undertaking the EPB, the Consultant shall consider the following

[ii] The right to a safe, healthy, productive, and sustainable environment for all, where "environment" is considered in its totality to include the ecological (biological), physical (natural and built), social, political, aesthetic, and economic environments.

[iii] THE Zambia Environmental Management Agency (ZEMA) has called for strong partnerships with all stakeholders, especially the public, in addressing environmental issues in the country. ZEMA acting director-general Joseph Sakala said the agency further recognizes that command and control approaches to ensuring environmental compliance can be amplified by co-operative efforts with stakeholders. Speaking during the 2013 environmental awards ceremony at Radisson Blu Hotel in Lusaka on Thursday, Mr Sakala said ZEMA is supplementing traditional strategies by providing appropriate forms of assistance to those it regulates. "In doing so, ZEMA values the integration of three elements – permitting, assistance and enforcement in order to maximise protection of public health and the environment," Mr Sakala said.

[iv] Dr Scott also warned that Government will not compromise on environmental protection and the resettlement of families who will be affected by NFCA's development of the South East Ore Body project. This was after NFCA Chambishi mine deputy chief executive officer Zhou Liang raised concerns that the Zambia Environmental Management Authority is delaying to approve the development of the environmental impact assessment for the project because Hybrid Poultry Farm is concerned that this will negatively affect its business.