SOCIAL IMPACT ASSESSMENT

THE BALAMA GRAPHITE MINE
CABO DELGADO PROVINCE
DISTRICT OF BALAMA

MOZAMBIQUE

August 2014

Prepared for:

SYRAH RESOURCES

Twigg Exploration & Mining Lda.

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In 2014, EOH Group of Companies acquired the shares in Coastal and Environmental Services (CES) (Pty) Ltd.

This report should be cited as follows: EOH CES, 2014_a. Social Impact Assessment: Balama Graphite Mine. (Unpublished). Maputo: EOH CES.

REVISIONS TRACK TABLE

Project Name: Balama Graphite Mine

File names	Compiled by	Reviewed/edited	Date
SIA Draft 1	J.A. Hough	Prof Chris de Wet (Rhodes University, South Africa)	12/06/2013
SIA Draft 2		Proponent	22/07/2013
SIA Draft 3		Project Manager	26/07/2013
SIA Draft 4		Dr Ted Avis	18/08/2014

LIST OF ACRONYMS

AfDB	African Development Bank
AoI	Area of Influence
BID	Background Information Document
CDP	Community Development Plan
CES	Coastal & Environmental Services
Clgf	Commonwealth Local Government Forum
DESR	Draft Environmental Scoping Report
DFI	Development Funding Institution
DNPOT	National Directorate for Land-Use Planning*
DUAT	*Direitos de Uso e Aproveitamento da Terra'***
EDM	*Electricidade de Moçambique***
EHS	and Environmental Health and Safety
EIA	Environmental Impact Assessment
EPFI	Equator Principles Financial Institutions
ESHIA	Environmental, Social and Health Impact Assessment
ESMS	Environmental and Social Management System
FAPIM	Forestry and Agriculture Programme in Mozambique
FRELIMO	Mozambique Liberation Front*
GDP	Gross Domestic Product
HDI	Human Development Index
IAIA	International Association of Impact Assessments
IFC	International Finance Corporation
ILO	International Labour Organisation
IMF	International Monetary Fund
LoM	Life of Mine
MICOA	Ministry of Environmental Coordination*
MoA	Ministry of Agriculture
MZN	Mozambican Meticais
N/A	Not applicable
NGO	Non-Governmental Organisation
GDP	Gross Domestic Product
GoM	Government of Mozambique
PARP	Poverty Reduction Action Plan
PAEI	Agricultural Policy and Implementation Strategy*
PEDSA	*Plano Estratégico para o Desenvolvimento do Sector da Agricultura***
PPE	Personal protective equipment
PPP	Public Participation Process
PRONASAR	National Water Supply and Rural Sanitation Programme*
PRS	Poverty Reduction Strategy
PS	Performance Standard
REN	National Electricity Network*
SEBS	Socio-Economic Baseline Study
SED	Socio-Economic Development
SIA	Social Impact Assessment
SMME	Small, Micro and Medium Enterprise
TA	Traditional Authority
TB	Tuberculosis
ToR	Terms of Reference
TpA	Tons per Annum
TSF	Tailings Storage Facility
TWG	Technical Working Group
UCT	University of Cape Town
UN	United Nations
US	United States

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** English term*
*** Portuguese term*

EXECUTIVE SUMMARY

Project Background

This Social Impact Assessment (SIA) was conducted of the Balama Graphite Mine (the project) for Syrah Resources Ltd. and Twigg Exploration and Mining Lda. (together referred to as the 'proponent'). The SIA is a specialist study that forms part of an Environmental, Social and Health Impact Assessment (ESHIA) being conducted by EOH CES. The study has been conducted with the available mine infrastructural layout plans available at the time of writing this report (June 2013). It should be noted that these plans have subsequently been amended as part of the ESHIA and Resettlement Action Plan (RAP) process. These layout plans are not included in this report, as these are referred to in the RAP, which was being finalised at the time of writing.

The mine is situated in the Balama District of the Cabo Delgado Province, about 265km west of the port town of Pemba and approximately 7km from the nearest town to its west, Balama. It is encircled by four villages which are considered to be the Project-Affected Communities (PACs). These include Nquide, Ntete, Maputo (formally called Mualia) and Pirira. The project is anticipated to have a significant impact on these villages and the people's livelihoods, especially since more than 200 farmland (or machambas) and some temporary structures on these machambas will be acquired. For this purposes, EOH CES is in the process of conducing a RAP for such economic displacement in accordance with the Mozambique Regulations on the Resettlement Process resulting from Economic Activities (Decree 31 of 2012), as well as international good practice, such as the Performance Standards (PSs) of the International Finance Corporation (IFC).

Apart from economic displacement, the project is also anticipated to have positive impacts on the PACs. According to the proponent, at full capacity, the mine should be able to provide employment opportunities to around 180 plant workers and approximately 50 general mining-related workers. Some workers will initially be qualified expats, although sufficient opportunities will be provided for the local population to become qualified to work on the mine. The proponent also wishes to support the PACs with agricultural training through a Farmers Development Programme (FDP). Moreover, economic project benefits will also include additional social development programmes, all of which still need to be planned. These plans will mostly be aimed at using the local labour force to produce products for and provide services to the mine.

Methodology

For this SIA, a site visit was undertaken between 6 and 15 March 2013 by two EOH CES social scientists. Apart from a face-to-face household-level Socio-Economic Baseline Study (SEBS) of the PACs with a 10% sample (using 14 locally recruited fieldworkers), eight focus group discussions and four meetings were held. The meetings were dually aimed at identifying any issues and/or concerns regarding the project, but also to obtain required data on the villages and their residents' socio-economic livelihoods and needs. The quantitative data was captured into a Microsoft Access database and statistically analysed. The qualitative discussions were analysed by analysing social trends and identifying socio-economic patterns. A second site visit was undertaken by the same social team from 8 to 12 July 2013 in order to study the cotton season and engage further with farmers. This data was also incorporated into the report.

National Context

Geography, Demographics and Governance

Mozambique is approximately 799,380km^2 in size and has a population of around 23 million. It is a democratic republic with a unicameral parliament. Local governance is restricted to only a portion of the country. Armando Guebuza has been Mozambique's president since 2005. The country is poor; ranked by the United Nation's (UN) Human Development Index (HDI) 185 out of 187 countries (187 being the lowest in terms of this HDI).

History

Mozambique experienced three wars, namely the colonial war (1964-1974), the Rhodesia War (1976-1980) and the Civil War (1981-1992). The first war resulted in a peace agreement which lead to the country's independence. The last war was fought between the Mozambique Liberation Front (FRELIMO) and Mozambican National Resistance (RENAMO), destroying the country's infrastructure and, amongst others, the educational and health systems. It is estimated that one million people were killed, whilst five million were replaced or made refugees in neighbouring countries. On 4 October 1992, a peace accord between RENAMO and the Government was signed.

Economy

Mozambique has seen significant economic recovery since the war. Its current per capita Gross Domestic Product (GDP) is estimated at US$458. In comparison, its per capita GDP stood at US$137 in 1993 just after the war. A growth rate of around 7.7% has been estimated up and until 2014.

Still, the country is renowned for its agricultural sector including its cotton, cashew nuts, sugar, citrus and coconuts. The agricultural sector accounts for around 31.8% of its exports, and is one of its strategic economic investment pillars. This sector employs an estimated 80% of the active working population. The country is also rich in large mineral deposits, like marble, bentonite, coal, gold, granite and gemstones. In consequence, several mining projects have been responsible for the country's GDP growth in recent years, implying that this sector can rejuvenate the economy and provide formal employment. Such economic growth is promoted in several economic reform programmes which have been initiated since the end of the civil war. These include the country's first Poverty Reduction Strategy (PRS) called the Poverty Reduction Action Plan (PARP I) for 2001 to 2005.

Land

Located in the Ministry of Environmental Coordination (MICOA), the National Directorate for Land-Use Planning (DNAPOT) holds the legal mandate for providing appropriate guidelines and advice concerning land-use planning activities. Land is primarily held by the state, which determines the conditions under which citizens may hold and enjoy land ownership. However, the state also grants land titles in recognition of traditional inheritance. The term '*Direitos de Uso e Aproveitamento da Terra'*, or 'DUAT', refers to a long-term land leasehold which can be granted by the state upon approval requested. Any DUAT acquired by an individual or group of people, either through traditional customary practices or good faith, is thereby fully recognised by the Land Law. Land under customary protection does not have to be registered to gain this status, and remains the principle way for people to obtain land rights. Under traditional authorities, a variety of land tenure systems also exist, which define land ownership amongst communities.

Socio-Economic Living Conditions

With an estimated 54% living below the poverty line of around US$1.25 per day, the population of Mozambique is poor. The current unemployment rate stands at 27.0%. By formal occupation, most people in the labour force are employed (either formally or informally) in the agricultural sector.

The country's population is largely rurally based. Households are extended and can comprise more than one family in one single house structure. The average household size is around 4-5 members in urban areas and 4 in rural regions.

In terms of social government provided services, Mozambique produces around 14.98 billion kilowatt/hour (kWh) of power and imports 3.436 billion kWh annually. Still, many rural areas are deprived of access to the National Electricity Network (REN). In 2010, access to water supply was 52%. It therefore makes sense for rural areas to be highly dependent on the provision of boreholes or wells with hand pumps. Access to sanitation services has also stagnated at 40% in rural areas.

Partly as a result of the war, decent education remains a challenge. The estimated literacy rate is 54%, although the recent census of 2007 did indicate an increase in school enrolment from 45% in 1998 to 97% in 2008. In terms of health, improving healthcare continues to be one of the country's primary objectives. The census of 2007 revealed that access to a health unit within 45 minutes' travel by foot increased from 55% to 65% between 2002 and 2009.

Overview of Project-Affected Communities

Villages, House Structures and Social Amenities

The smallest village is Pirira. According to its chief, the village's population is estimated at 285 people. The largest village is Ntete which, according to its chief, houses approximately 4,525 villagers. In terms of social amenities, all the villages have at least one well with a hand pump, their own graveyards and a primary school. Only Ntete has a clinic, whilst all the villages have a football field, except for Pirira.

Migrancy Patterns and Social Conflict

All the villagers hail from the Macua Tribe, with Macua as their first language. All villages are permanent and seem to have been established prior to the first Mozambique war. Most households have established independently with land obtained *via* the chiefs and elders. Little annual migrancy related or permanent social influx into these villages was recorded. However, based upon a focus group discussion with local farmers, it seems that there is a slight influx of farm workers originating from nearby towns in search of land to farm. For example, it would seem that households in towns such as Montepuez (for example) are in need of farmland. Consequently, some household members migrate in order to work on farms in the Balama area. This allows households in areas as far as Montepuez to have their own farm produce.

No form of social conflict was recorded amongst the villagers, although small crimes such as theft are always part of any rural community.

Demographics

The total population of these four villages can be estimated at 11,048. The figure was calculated based upon population estimates provided by the chiefs in June 2013. The overall male-to-female ratio for these villages was calculated at 1:1.0 (near similar to the census data). According to the Mozambique 2007 Census, 99.5% of the population in the Balama District is Black, followed by a minority of White, Coloured and India populations. The majority seem to be 18 years or younger, whilst about 29% are of school-going age (between seven and eighteen years). Very few people are above 90 years, whilst a large bulk of the population is within the working-age brackets of 18 and 65 years. Lastly, the unemployment rate (calculated as a percentage of the labour force, which here excludes self-employed farming members) can be estimated at around 21.7%.

Household Dynamics

The average household size comprises approximately 4-5 members. Male-headed households account for around 87% of all households. Although speculative, this data might indicate the extent to which these villages are patriarchal in their culture. The majority of the study population appears to be closely related family members consisting of parents and children within households.

Religion, Culture and Recreation

Most people are Christians, although each village has a church and a mosque. Many men practice polygamy, which is a system where men have more than one wife. Five sacred sites were recorded around the project area, although none of these sites will be affected by the mine. Such sites are used by villagers to pray for rain during drought and when there are problems and challenges facing the community. These are normally very sacred to a particular group, who uses such sites for traditional rituals and ceremonies aimed at strengthening their ties to their ancestors or 'sense of place' (*cf.* Huggins, 2005).

Socio-Economic Living Conditions

In terms of education, of those members above 18 years, a significant 55.8% do not have any education. Approximately 3% only completed primary school, whilst a near similar 4% completed some secondary school. Apart from Balama, a secondary school is also located in Montepuez.

Most villages in the district have centralised borehole water points, whilst all have constructed wells with hand pumps. Most villagers mentioned that the water is always drinkable. In addition, all villages have several boreholes without hand pumps. Consequently, less people use water tanks or river streams. The latter is mostly used for bathing and washing clothes.

In terms of sanitation and waste disposal, the bulk of the households use their own self-constructed pit latrines, whereas a vast majority burn their waste. Lastly, in terms of energy, there is no government-provided electricity. Most use lanterns, wood or charcoal. Few have batteries and solar panels.

Household Livelihood Strategies

Occupations

Most households are involved in subsistence farming, foraging and hunting. These strategies sustain many rural households who hardly have any economic means. Local agricultural production is the mainstay of the local informal economy, as it employs the bulk of the labour force. The few people who are formally employed are either absorbed in local construction work or in government-related sectors (teachers or health workers).

Incomes and expenditures

Most households receive an income from agricultural-related work. Such limited income includes crop and livestock sales, as well as income derived from households' economic trees (i.e. those trees which are planted, such as Mango or Banana trees). Some households also receive an income from charcoal trading, donations and lease incomes. In terms of expenditure, food, clothes and household material account for most of the households' monthly expenditures.

Agriculture, animal husbandry and productive trees

Agriculture is an integral part of the villages' livelihoods, and forms the backbone of the area and country's economy. Nearly all households practice rain-fed, rotational crop agriculture. Water is therefore not really used from the Chipembe Dam or local rivers, such as the Mehucua River. Many households practice shifting cultivation, which entails the clearing of new fields every five to 15 years as soil quality is said to reduce. Fields are intercropped with a number of traditional food crops, whilst the predominant agricultural activity in the region revolves around maize and cotton. The latter are planted at different times of the year, either on different machambas or the same ones after these have been cleared post-harvest. Cotton production is labour-intensive, and harvests are dependent on the locally available labour supply at the time. Maize and beans were the primary produce being planted and harvested in the area during the survey period in March 2013.

In terms of animal husbandry, more than 60% of the households studied have livestock. Although most of these households keep chicken and ducks, some also have goats, sheep and cattle. All livestock are primarily kept for subsistence and commercial purposes. Lastly, the largest categories of productive trees owned by households include Banana, Pawpaw, Mango and Orange trees. Produce from these trees are used for subsistence and commercial purposes.

Natural Resource-Use

Almost all households collect firewood, gather grasses and reeds for construction and collect wild plants. Many also collect medicinal plants. More significantly, nearly half of the households make charcoal from firewood, which is normally sold at local shops or next to the roads. Animals hunted include small antelopes, rabbits and wild pigs. In summary, such plant and animal resources provide a significant ecosystem service to these rural villagers who are truly dependent on these resources.

Impact Rating

In total, seven impacts and two separate issues were identified and assessed for the construction and operational phases of the project. Overall, the impacts for the project's construction phase were mostly positive in terms of employment provision, skills training and scholarships. However, issues related to an influx of job-seekers are highlighted as a LOW negative. In summary, it is still believed that the project should have an overall positive impact on its PACs from this perspective.

Five impacts relate to land acquisitions; impacts which were mostly negative, as the project will result in economic displacement of many machambas. Although the RAP further deals with the project's economic displacement, the impacts identified in this SIA highlighted the project's potential to limit agricultural land, increase local food insecurity levels, reduce access to natural resources and contribute to the loss of graves/graveyards and sacred areas. Most of the impacts, however, can be reduced significantly from HIGH negative to either MEDIUM or LOW negative should appropriate mitigation measures be in place. Most of these mitigation measures have been addressed in the RAP report.

Impact Assessment

The significance rating of the relevant impacts identified is presented in the table below:

IMPACT	Without mitigation					With mitigation	
	Temporal scale	Spatial scale	Risk or likelihood	Severity	Significance	Severity	Significance
Impact 1.1: Reduced Access to Agricultural Land							
Construction phase	Short-term	Study area	Probable	Very severe	**VERY HIGH -**	Severe	**MOD -**
Operational phase	No changes are expected, as land will only be acquired during the construction phase						
Impact 1.2: Increased Food Insecurity							
Construction phase	Permanent	Regional	May occur	Very severe	**HIGH -**	Slightly beneficial	**LOW +**
Operational phase	Permanent	Regional	May occur	Very severe	**HIGH -**	Slightly beneficial	**LOW +**
Impact 1.3: Reduced Access to Natural Resources							
Construction phase	Short-Term	Study area	Definite	Severe	**HIGH -**	Moderate	**MOD -**
Operational phase	Long-term	Study area	Definite	Severe	**HIGH -**	Moderate	**MOD -**
Impact 1.4: Loss of Sacred and Culturally Significant Sites							
Construction phase	Permanent	Study Area	Probable	Severe	**HIGH -**	Slight	**LOW -**
Operational phase	Permanent	Study Area	Probable	Severe	**HIGH -**	Slight	**LOW -**
Impact 1.5: Loss of Graveyards/Cemeteries							
Construction phase	Permanent	Study area	Probable	Very severe	**VERY HIGH -**	Moderate	**LOW -**
Operational phase	Permanent	Study area	Probable	Very severe	**VERY HIGH -**	Moderate	**LOW -**
Issue 2: Community Safety Risk							
Construction phase	Short-term	Study area	May occur	Severe	**MOD -**	No impact	
Operational phase	Long-term	Study area	May occur	Severe	**MOD -**	No impact	
Impact 3.1: Employment, Skills Training and Scholarships							
Construction phase	Short-term	Study area	Probable	Moderate beneficial	**MOD +**	Very beneficial	**HIGH +**
Operational phase	Long-term	Study area	Probable	Moderate severe	**MOD +**	Very beneficial	**HIGH +**
Impact 3.2: Temporary or Permanent In-Migration in Search of Job Opportunities							
Construction phase	Short-term	Study area	Probable	Very severe	**HIGH -**	Slight	**LOW -**
Operational phase	Long-term	Regional	Probable	Very severe	**HIGH -**	Slight	**LOW -**
Issue 4: Stakeholder Engagement and Community Engagement							
Construction phase	Short-term	Localised	Probable	Severe	**MOD -**	Beneficial	**MOD +**

IMPACT	Without mitigation					With mitigation	
	Temporal scale	Spatial scale	Risk or likelihood	Severity	Significance	Severity	Significance
Operational phase	Long-term	Localised	Probable	Severe	**MOD -**	Beneficial	**MOD +**

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1. INTRODUCTION

1.1 Overview

This report is one specialist study of a broader Environmental, Social and Health Impact Assessment (ESHIA) of the Balama Graphite Mine to be developed by Syrah Resources Ltd. and Twigg Exploration and Mining Lda. (together referred to as the 'proponent'). The mine is situated in the Balama District of the Cabo Delgado Province. It is being developed after the company acquired full ownership of this particular graphite resource from the Government of Mozambique (GoM) in 2011. Since this acquisition, the company has been prospecting this site (hereafter referred to as the project's Area of Influence, or AoI) for graphite resources, with a very strong potential to develop this area into a mining operation. The prospecting is carried out by the local subsidiary of Syrah, Twigg Exploration & Mining Ltd., a company which received a license for prospecting and exploring Graphite in this area.

By road, the project is about 265km west of the port town of Pemba and around 7km from the nearest town to its west, Balama (refer to Figure 1). To its east, the town of Montepuez is the area's central economic hub, which is around 45-50km from the project site. The road from the site to Montepuez is a tarmac road, in a general good condition, and is being maintained by the GoM. Closer to the site, the project is encircled by four villages which, in this SIA, are considered to be the direct Project-Affected Communities (PACs). These include Nquide, Ntete, Maputo (formerly known as Mualia) and Pirira. Most of the villagers are affiliated to the Macua Traditional Authority (TA). These villages and associated hamlets surrounding them (a household/s settling near such a village, but falling under the jurisdiction of that village's leadership) primarily engage in share-cropping[1], and slash-and-burn subsistence agriculture, as employment opportunities in the region are limited. It is for this reason that the project will have an impact on these villages and the people's livelihoods, not only since these villages are on the border of the site, but also as many use the area's natural resources and have productive farmland and associated structures inside the project's AoI. However, the project will also offer these residents employment opportunities, as well as additional social services. The project should create business opportunities, whilst stimulating the area's economy.

1.2 Report Rationale

The developer wishes to apply for funding from international Development Funding Institutions (DFIs), such as the International Finance Corporation (IFC), for which purposes an ESHIA is required. In 2013, EOH CES (*then* CES) was appointed to undertake this ESHIA process to meet international standards such as the IFC and applicable Mozambican legislation.

As with any mining development, one key aspect to remember is that a mine's lifecycle is not permanent. Many studies have shown how former communities had been transformed into so-called 'ghost towns' after mines closed (see, for example, Breuer and Farrell, 2005). Even though it is not suggested that this will become the case, this is an important factor to bear in mind, as the project at hand will affect land-use patterns in the area and introduce livelihood diversification strategies, especially through employment. Understanding the livelihood strategies of the local population is critical in order for the project to formulate appropriate strategies not only to mitigate possible negative effects on the populace, but most importantly, to create positive development strategies.

No involuntary resettlement of any houses will occur, although agricultural landholdings (machambas) will be lost. This requires a Resettlement Action Plan (RAP) for economic displacement as farmland will be expropriated and/or disturbed and future access to such land and

[1] Sharecropping is a term in the social sciences which refers to the phenomenon where households, in a mutually accepted social network of duties and obligations, assist each other with their farming practices. It refers to the practice where different parties contribute differently to the agricultural production process; e.g. one party provides the land, while the other provides the labour, and they share the crop.

natural resources will become restricted. This SIA therefore supports the further development of such a RAP, which is being developed by EOH CES in accordance with the Mozambique Regulations on the Resettlement Process resulting from Economic Activities (Decree 31 of 2012), as well as the IFC's Performance Standard (PS) 5 on Involuntary Resettlement (2012).

1.3 The Developer and Project Background

Syrah is an Australian resource company with its head office in Melbourne, Australia. It currently holds a 106km² prospecting license in the Cabo Delgado Province (Figure 1.1). The Balama Graphite Project (Balama) site covers an area of approximately 3,000ha, but the exact extent of the mining's area of influence is yet to be determined and will depend on the outcome of on-going resource determination through drilling, and more detailed planning. Graphite is currently the main resource of interest, although associated Vanadium might also be exploited in the future.

It is planned that conventional open pit mining will be used to extract the ore. A mining license application for a period of 25 years at a mining rate of 2m tonnes per annum will be submitted (an effective mine life of 23.5 years to allow for closure) with an option to extend for a further 25 years.

The two maps below depict the location of the site with the four surrounding villages (PACs), as well as the key infrastructure. This infrastructural layout was provided in June 2013, and has subsequently been amended. The amended layout plans are incorporated in the RAP.

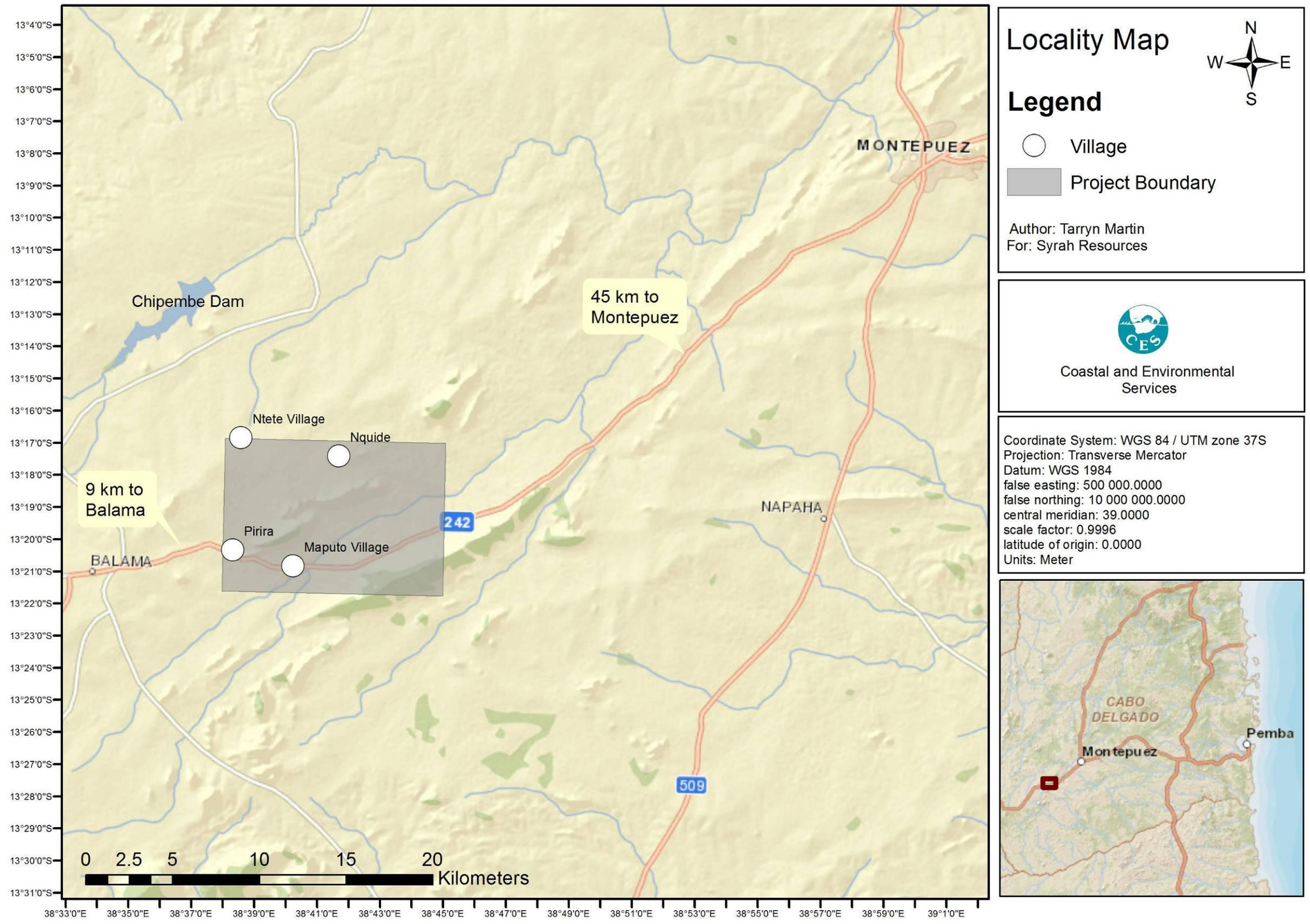


Figure 1.1: *Project site location*

Figure 1.2: *Locality of project key infrastructure (August 2014)*

1.4 Project Activities

The project's activities can be summarised in the table below:

Table 1.1: *Project details*

Developer	Syrah Resources Ltd. and Twigg Exploration and Mining Lda.
Project location	Cabo Delgado Province in the Balama District in northern Mozambique
Project activities	➢ Conventional open pit mining will be used to extract the ore; ➢ Water for this process will be acquired from the Chipembe Dam; ➢ Ore will be delivered from the mine onto stockpiles at the processing plant using haul trucks; ➢ Ore will then be fed into the crusher bin using front-end loaders; and ➢ Once the Graphite and possibly Vanadium concentrates have been produced, this will be transported by road to Nacala where a deep water port is located.
Project infrastructure	➢ A pipeline from the Chipembe Dam to the project site; ➢ Pump houses at the dam and project site; ➢ Water reservoirs at the project site; ➢ Offices and accommodation at the project site to accommodate 250 people; ➢ A diesel powered electricity generation plant; ➢ An ore processing plant; ➢ Additional infrastructure such as roads; and ➢ A Tailings Storage Facility (TSF) and a waste rock dump will be required.
Key product	➢ Graphite and possibly Vanadium

1.5 Employment Opportunities

According to information provided by the developer, at full capacity, the mine should be able to provide employment opportunities to around 180 plant workers and approximately 50 general mining-related workers. Of the plant workers, there will be some specialist roles that will require qualified local personnel to be trained over time. During the construction of the mine, wherever possible, local labour will be used. However, is should be noted that both the construction and operational phases of the mining development require skilled people who have prior knowledge with regard to mining operations.

The table below depicts some of the employment opportunities related to the operational phase of the mine (note that this is only a vague estimate at this stage):

Table 1.2: *Employment opportunities*

Workforce needed	Nr
Project management and support	28
Mining and geology	29
Machine operators	33
Concentrator	98
Maintenance - Mobile plant	14
Maintenance - Fixed plant	34
TOTAL	236

Although this is difficult to determine at this stage, the developer estimates that around 40.0% of the work can be executed by the local labour force. After around eight to ten years, however, around 80.0 to 90.0% of the work can be executed by local labour, provided that they are trained during this time with support provided by the company.

1.6 Socio-Economic Development

The RAP provides a Livelihood Restoration Programme (LRP), which includes an FDP. Through this FDP, the proponent envisions to support not only the affected farm-owners, but also interested community farmers with conservation farming through training modules and agricultural inputs. The RAP report should be referred to for more information.

1.7 Socio-Economic Context and Cumulative Development

The Balama District is 5,540km^2 in size (GoM, 2007). According to the Mozambique Census of 2007 (*ibid.*)[2], the district housed a population of around 124,100 in 2007, which is about 8.0% of the entire Cabo Delgado Province. Pemba is the district's largest city with around 138,716 people (*ibid.*). This is followed by Montepuez, which is the second largest town in the province with an estimated 56,433 people (*ibid.*).

Chapter 5 provides more detail with regard to the socio-economic context of the project and its PACs, however for introductory purposes, the project site falls under the ambit of the Macua TA. In total, the study's AoI is home to around 11,048 people who are predominantly living in the four villages enveloping the site (refer to Figure 1). This population is the *de facto* population, in other words the members who were present in the village at the time of the study. Of these residents, the male population slightly outnumbers its female counterparts at 50.4%. Just north of the site is the village of Ntete, whilst Nquide lies to the east. Both these villages will be affected by the project, most noticeably by employment provision, but also by land expropriation and the reduction in available natural resources. This is the case since some of the villagers have agricultural landholdings, or '*machambas*' as these are locally referred to, either inside the AoI, or on the edges of the Graphite ridges to be mined. The villages also have several scattered structures and/or dispersed mud and stick huts which have been built on some of the edges of the Graphite ridges.

Plate 1.1: A) *The villagers' machambas (predominantly maize and/or cotton fields, inter-cropped with beans); B) The road running from the project site to Montepeuz; and C) A village homestead in Ntete.*

To the south of Nquide lies the village of Maputo, and closest to the project site is the village of Pirira. Although Pirira is the smallest village (demographic details provided in Chapter 5), it is the most directly affected. Both Pirira and Maputo are situated alongside the R242 which runs to Balama and Pemba. After the name changed since Mozambique's independence in 1975, the village of Maputo is still locally remembered as Mualia (African History, 2013). Both these villages can be regarded as the most directly affected by the project, as villagers will lose machambas, some of which are located inside the AoI or on the edges of the Graphite ridges. In addition, both villages seem to have scattered homesteads and isolated structures that might be situated either inside the AoI, or near the edges of the ridges.

Most of the houses in these four villages are constructed with a combination of mud and sticks/poles, materials which are obtained from the surrounding environment (refer to Section 5.1).

[2] Census 2007 abstraction data

The average household consists of roughly four members, and all villagers are poor and have limited access to running water. Most villages have at least one well with a hand-pump (*cf.* Table 5.2). One was provided to Pirira, as well as to Maputo, by the proponent. Additional wells have been constructed for the villages by the GoM. The local surrounding villagers are highly dependent on the groundwater and natural rivers and streams - not just for drinking purposes, but also for daily household chores such as washing clothes, bathing and sanitation. Lastly, there is no electricity supply in the entire area, whilst the bush is indiscriminately used for sanitation purposes; most households also have their own, self-constructed pit latrines.

Apart from the four encroaching villages, the low-lying areas of the site are being planned in an area that is dominated by agricultural land, interspersed with pockets of woodland and scattered agricultural plots (called machambas) varying in sizes. In fact, most of the degraded land consists of machambas, predominantly inter-cropped with maize, cotton (depending on the season) and groundnuts and/or beans, but tomatoes and cabbages are also planted (*inter alia*). Apart from the fact that these farms support mainly a subsistence lifestyle, the agricultural sector continues to provide a source of on-farm, self-employment opportunities, although smallholder agricultural productivity and growth in the region is weak. Households also mutually support each other with their agricultural farming (*via* share-cropping), which means that the loss of one machamba field might have a profound impact on several households' economic livelihoods and income streams.

Lastly, as the developer has earmarked a total anticipated fulltime workforce of around 200 to 300 people once the mine is operational (refer to Table 1.2), the noticeable effects of employment on the PACs and local region cannot be overstated. Most residents are not participating in the formal economy, mostly as a result of limited industries and investment in the area. The only private employer in the region seems to be the construction company CMC, with sporadic operations. The cumulative development in the region does present a shift to more employment opportunities, especially in light of more mines which are being proposed in the Cabo Delgado Province by various international companies.

The mining sector is expanding in the region and will provide a range of employment opportunities in the future. Developers (especially mining houses) are increasingly investing in Mozambique; spurred on by the GoM's granting of more than 2.5 million ha of land for concession areas between 2004 and 2009 (CARE, 2013). Bolstering the future mining sector of the province, the president of Mozambique in 2013 entered into an agreement with Australia to develop the African mining sector (Cambell, 2013). Through this agreement, the two countries are committed to increase mining-related trade and investment in Mozambique, which will include the development of needed infrastructure for various regions such as Balama (*ibid.*). As a consequence, the Australian Triton Minerals is starting its first exploration phase at its Balama north Graphite site. Further to Montepuez, the company Gemfield also completed an acquisition with the GoM for a Ruby deposit (Esterhuizen, 2012). This large deposit of around 34,000ha is believed to be one of the largest privately owned Ruby concessions in the world, and it is believed that the project's exploration rights will bolster this industry to the entire province's benefit.

1.8 Terms of Reference

According to the International Association of Impact Assessments (IAIA), an SIA can be defined as:

> *"[…] the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions."* (IAIA, 2012:1).

Apart from the well-known negative impacts of developments (such as impoverishment risks, *cf.* Cernea, 2004), the project has the potential to provide the surrounding villages with an array of benefits, such as employment and Socio-Economic Development (SED). However, it is often the

little changes and adaption responses to people's livelihoods which are left unrecorded after a project's development. This is especially true for a project which affects natural resource-dependent communities who have few alternative livelihood strategies.

This SIA is embedded in a livelihood analysis approach, whereby the people's surrounding environment and livelihood strategies are recognised as important in shaping villagers' daily lives, as is their culture and practices. The assessment considers these villages and villagers as being from and connected across different social and economic strata, and that different motivators and barriers brought along by a development intervention influence livelihood responses (i.e. how people will adapt or cope to a changing socio-economic environment). The latter, in return, incorporates aspects such as behavioural intention and context, which means that a particular livelihood response or coping mechanism is influenced by factors such as assets, social norms, networks, gender, class, ethnic groups and perceptions.

The way in which people change or adapt their livelihoods in response to socio-environmental changes is often ill-considered in development projects. In social terms, concepts such as 'social adaption' or 'coping mechanisms' are often useful frameworks through which to conceptualise or predict changes in people's livelihoods in response to development (*cf.* Osbahr *et al.*, 2008). Any short or long-term change will bring about specific coping or adaption responses. Seeking to facilitate coping (often short-term) and/or adaption (normally long-term) responses, this SIA provides recommendations aimed at ensuring that the affected villagers have alternative livelihood options. Extreme shocks can trigger adverse and unsustainable coping behaviours, which can push households into lower or negative growth paths (Giesbert and Schindler, 2012). It is therefore the role of an SIA to ensure that, should a project affect rural livelihoods, the proponent considers alternative livelihood strategies by any means of intervention, such as training, agricultural extension services, employment or the provision of social basic services.

This SIA is foremost (but not exclusively) conducted in compliance with the IFC PS 1, which states that the client will, "[…] conduct a process of environmental and social assessment, and establish and maintain an [Environmental and Social Management System] ESMS appropriate to the nature and scale of the project and commensurate with the level of its environmental and social risks and impacts" (IFC, 2012:2). This report is vital to identify the direct social impacts that will affect the PACs, as defined in Chapter in 5, and to provide mitigation measures and recommend development options for the PACs to minimise impacts.

In keeping to the requirements of DFIs such as the IFC and World Bank, the following list presents the ToR which framed this SIA:

a) Describe the local social environment, with particular reference to the villages that will be directly affected by the project;
b) Determine the current land-use patterns of the development area and the areas outside of the development boundary that are likely to be affected;
c) Assess the significance of potential environmental and social impacts on the local populace and the district;
d) Evaluate how the project could contribute to community upliftment programmes;
e) Establish a baseline understanding of current state of livelihoods, income sources, education levels and food security;
f) Investigate possible effects on livelihoods, income levels, education levels, food security and other factors relevant to the affected communities;
g) Assess the project-related impacts on ecosystem services (natural resource-use);
h) Describe and investigate possible effects on traditional structures and cultural and religious customs;

i) Consultation with stakeholders should be done in such a way as to contribute to the formulation of a RAP; and
j) Develop a monitoring programme to ensure effective implementation of the recommended mitigation measures.

1.9 Report Structure

This report is structured as follows:

This report follows the following structure:

Chapter 1 highlights the project and its activities, followed by the rationale for conducting the SIA, and the Terms of Reference (ToR) of, this SIA. The study team for this SIA is also introduced;

Chapter 2 commences by outlining the social legislation, policies and guidelines that need to be assessed and followed by the proposed project;

Chapter 3 provides the methodology which was employed for this study, including assumptions that were made and limitations;

Chapter 4 includes contextual information pertaining to the history and economy of the country. The national and regional context in which the project is located is elaborated upon in more detail. This chapter includes basic demographic and socio-economic data, as well as household living standards. It should be noted, however, that this chapter is only an overview of Mozambique and the Balama District, and based upon secondary data available, including data obtained from the Mozambique 2007 Census. Relevant demographic and socio-economic data of the PACs is provided in the following findings chapter;

Chapter 5 is the findings chapter which introduces the PACs with applicable maps. This chapter provides and analyses the data obtained during the SEBS and focus group discussions. As appropriate, data is also correlated with the data of the Mozambique 2007 Census;

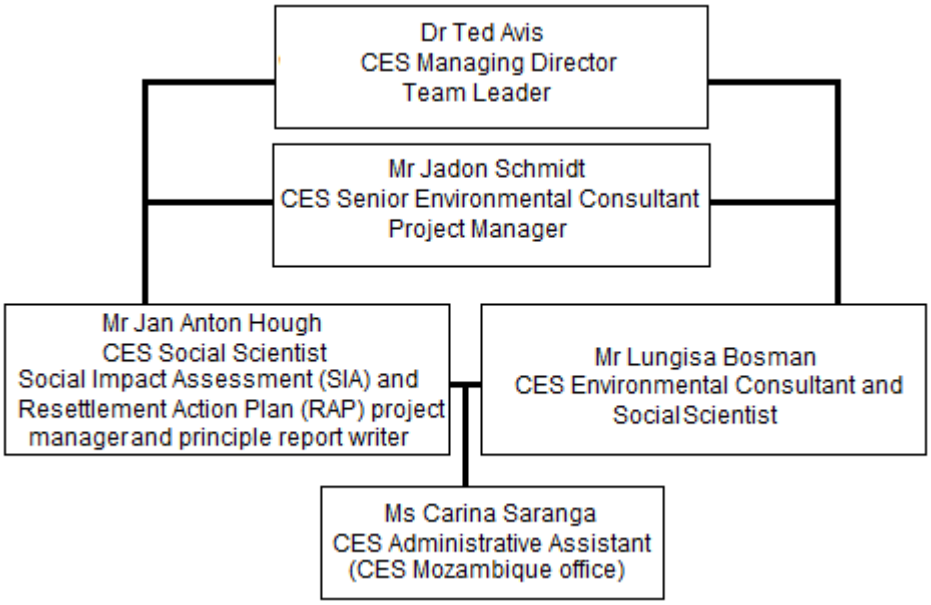
Chapter 6 assesses the potential social impacts of the project;

Chapter 7 consolidates all the recommendations into a Social Mitigation Plan; and lastly

Chapter 8 concludes the report.

1.10 The Study Team

The following members were part of the project team for this SIA:


Dr Ted Avis
CES Managing Director
Team Leader
Mr Jadon Schmidt
CES Senior Environmental Consultant
Project Manager
Mr Jan Anton Hough
CES Social Scientist
Social Impact Assessment (SIA) and
Resettlement Action Plan (RAP) project
manager and principle report writer
Mr Lungisa Bosman
CES Environmental Consultant and
Social Scientist
Ms Carina Saranga
CES Administrative Assistant
(CES Mozambique office)

2. LEGISLATIVE FRAMEWORK

2.1 Introduction

Of importance to consider in this project is the fact that the project will result in the loss of many agricultural fields; referred to as economically displacement. Many villagers will also loose temporary structures built on these machambas, for all of which a RAP is currently also being drafted by EOH CES. Losing access to farmland in this area is a significant impact as households are engaged in share-cropping, a practice whereby households which do not have land, assist households with land through the supply of labour and/or cattle for ploughing and/or equipment, and share the harvest.

To EOH CES' knowledge, no specific legislation and/or regulation exists that guides and frames the SIA process in Mozambique. Much of this process is framed by the EIA Regulations that do require socio-economic impacts to be considered in the ESHIA process.

The following Mozambique legislation and regulations are discussed in this chapter, as deemed important to this SIA:

Table 2.1: *Applicable Mozambique legislation*

Mozambique legislation	
Legislation and regulations	*Date of enactment*
Constitution of the Republic of Mozambique	Enacted in 2004
Labour Act	Law No. 23/2007
National Heritage Protection Law of 1988	Decree 10/1988
Mining Act	Law 13/2002
Mining Law Regulations	Ministerial Decree 28/2003
Forest and Wildlife Act	Law 10/1999
Land Act	Law 19/1997
Land Act Regulations	Decree 1/2003
The Fisheries Law	Law 3/1990

The following international guidelines are also considered in this chapter:

- The Equator Principles;
- International Finance Corporation**;**
- International Finance Corporation's Environmental Health and Safety Guidelines;
- International Finance Corporation's Sector-Specific Guidelines; and
- The African Development Bank.

2.2 Mozambican Legislation

2.2.1 Ministries of Mozambique

There are more than 20 ministries in Mozambique, all of which are created by the President, under the auspices of the Constitution. Relevant ministries for the project's social responsibilities and commitments are as follows (*cf.* Allo' Expat Mozambique, 2013):

- Ministry of Agriculture;
- Ministry of Culture;
- Ministry of Education;
- Ministry of Fisheries;
- Ministry of Health;
- Ministry of Industry & Trade; and

- Ministry of Justice;

2.2.2 Constitution of the Republic of Mozambique of 2004

After the civil war which lasted from 1980 to 1992, Mozambique adopted sound policies and laws that regulate the environment, forestry, wildlife and coastal resources. Such policies have provided a solid foundation for planning natural resource management, although the challenge remains to integrate such policies and regulations into practice. One key document which outlines the need for such policies and regulations is the Constitution of Mozambique (2004).

The Constitution of Mozambique embodies the new democratic rule of the country, and recognises its independence as well as the challenges it faces after the civil war. It lays down the structural parameters for the country's growth and modernisation, and reaffirms the participation of organisations to ensure and respect the fundamental rights and liberties of the country's citizens. Of particular importance to this SIA are Mozambicans' fundamental rights, duties and freedoms, as laid down by the Constitution. Here, each citizen's rights are promoted, but also the rights of communities, and especially children. The freedom of expression is also enshrined, which basically means that every person affected by the project has the right to oppose the development, and to voice his/her concern.

The Constitution also formulates principles of fair compensation if land is expropriated. On Economic, Social and Cultural Rights and Duties (Chapter V), the Constitution clearly elucidates that:

> *"The State shall recognise and guarantee the right of ownership of property", and "Expropriation may take place only for reasons of public necessity, utility, or interest, as defined in the terms of the law, and subject to payment of fair compensation"*
>
> (GoM, 1990: p.26)

Under Article 90 of Chapter V, the importance of protecting the environment and the rational use of natural resources are also highlighted. Alongside this clause is also the constitution's emphasis on the agricultural sector, which the GoM sees as the basis for the country's national development. In support of this, Article 106 of Chapter V also recognises the contribution of small-scale production to the national economy, which the country promotes and supports in order to develop its citizens.

2.2.3 The Labour Act (2007)

As the project will provide a local source of employment, the developer will be required to operate it under the Labour Act of 2007. This act specifically applies to mining work, and governs the legal relationship between employers and employees, the latter including both national and foreign labour. Some of the core principles interpreted by this act include the right to work, employment stability, changes in employment circumstances and non-discrimination on grounds related to sexual orientation, race or HIV/AIDs.

2.2.4 National Heritage Protection Law of 1988

The project might affect and/or disturb areas of cultural significance, as well as gravesites and tombs. Therefore, the National Heritage Law of 1988 is applicable. The Regulations on the Protection of Archaeological Heritage Property (1994) state that the ministry must be consulted in the event where archaeological material is found in the project's AoI.

2.2.5 Mining Act of 2002

The Mining Act of 2002 exercises rights and obligations with regard to the use of the country's minerals resources. The act takes into account the environment in such a way as to see to its rational utilisation for benefiting the national economy. Underwritten by the act are principles that govern safe mining practices, regulatory frameworks for monitoring environmental quality, as well as measures to enhance sustainable development in the long-term in light of exploring Mozambique's natural resources. Of particular importance is Article 18 under the Title Holder Obligations, which states that the project developer will compensate land users for "[…] any damage caused to the land and property as a result of the mining operations" (GoM, 2002: p.10).

2.2.6 Mining Law Regulations of 2003

The Mining Law Regulations of 2003 were established to regulate any mining activity that falls under the Mining Act of 2002. The regulations consider the granting of mining titles and permits and the demarcation of mining areas. Of importance to this SIA, the regulations also make allowance for any party to lay a claim against the mining development.

2.2.7 Forest and Wildlife Act No 10 of 1999

One of the main objectives of the law is to assist in conserving and utilising the forests and wildlife resources for the social, ecological and economic benefits of the future generations (Development Bank of Southern Africa, 2007). The law also identifies protected areas, including cultural and heritage sites.

The law is divided into nine chapters. Of relevance to this SIA are the following chapters:

- Chapter 2 on the Protection of Forest and Wildlife Resources; and
- Chapter 3 on Sustainable Forest Resources, Exploitation Regimes and Sustainable Wildlife Conservation Regimes.

2.2.8 The Land Act No 19/97 and Decree No 66/98

The PACs reside on customary land, which will be altered by the project. This means that the Land Act of 1997 is applicable. The law provides the legal framework for land ownership, as well as the control of land and natural resources in Mozambique. The process of determining land rights is also explained by this law.

The law was created with the intention of encouraging the use and benefit of land, such that it contributes to the development of the national economy. The law establishes the terms under which all activities - relating to the right of land-use and benefits - operate (Article 2). It provides the basis for defining people's land-use rights, and gives details on these rights based upon customary claims and the procedures for the acquisition of title for use and benefits by communities and individuals. The law recommends a consultation-based process that recognises customary rights as the means for identifying the claims of communities and individual members of communities without title.

Article 24 identifies that, in rural areas, local communities need to participate in:

a) The management of natural resources;
b) The resolution of conflicts;
c) The process of obtaining title as established in No. 3, of Article 13 of the Land Law; and
d) In the identification and definition of the boundaries of the land they occupy.

In the first two activities (a and b), local communities rely on, among others, customary practices.

The Land Law also defines that the right to use land may be acquired through occupation by Mozambican individuals who have been using the land in good faith for at least ten years. The law therefore recognises and protects the rights of individuals to land acquired through inheritance or occupation (customary tenure and good faith rights), except in legally defined reserves or areas where land has been legally transferred to another person or body. All citizens have equal rights and duties according to the law.

Existing rights to use land may be terminated through revocation of such rights for reasons of public interest, after the payment of fair compensation, in which case the non-removable improvements will revert to the state.

Foreign individuals or corporate persons may be holders of a right to land-use and benefit, provided they have an investment project that is approved under the investment legislation and they are established or registered under the GoM (Article 11). Total and partial protection zones are part of the public domain, and no right of land-use or benefit can be obtained in these areas (Articles 7 and 9). Total protection zones include those areas specifically intended for conservation or preservation activities, whilst partial protection zones require special licenses, which may be issued for specified activities.

For the purposes of economic activities, the right of land-use and benefit is subject to a maximum period of 50 years, which can be renewed for an additional 50 years (Article 17). The approval of an application for the right of land-use and benefit for economic activities does not preclude the need for licensing and authorisation required by:

a) The legislation relevant to the intended economic activity (e.g. tourism); and
b) Directives of land-use plans (Article 20).

Right to land-use and benefit applications are authorised by provincial governors for areas up to 1,000ha, by the Minister of Agriculture and Rural Development for areas between 1,000-10,000ha, and by the Council of Ministers for areas exceeding 10,000ha (Article 22).

Provisional authorisation is granted after the submission of application for land-use and benefit. This provisional authorisation is valid for a maximum of five years in the case of nationals, and two years in the case of foreigners (Article 25). Upon fulfilment of the exploitation plan within the provisional period, final authorisation will be given and the relevant title issued (Article 26).

2.2.9 Land Law Regulations (2003)

The Land Law Regulations (Decree 66/1998 of 8 December) apply to all areas outside of municipal jurisdiction. According to the regulations, the construction of any type of structure within the partial protection zone shall be licensed by the entities responsible for the management of inland and maritime waters (Article 8).

In accordance with Article 18, the right of land-use and benefit obtained for the fulfilment of an investment project shall have a maximum term of 50 years, renewable in accordance with the provisions of the Land Law and the terms of renewal of the authorisation. A titleholder is required to apply for renewal 12 months before the end of the term fixed in the title, demonstrating that the economic activity which the title was applied for is still being carried out.

Relevant aspects of the regulations include:

a) Where there is joint title, such title belongs to all the titleholders equally. When one of the titleholders dies, the other holders continue as the rightful titleholders;

b) Consultations between the applicants for land and the local community are mandatory before a decision to grant title use is made by the provincial governor or higher authority;
c) Good faith occupiers and local communities may apply for demarcation and title; and
d) Titleholders are required to pay a tax for authorisation of the right to use land, plus an annual tax. Family businesses and local communities are exempt from such taxes.

Article 24 states that, in order to acquire a right of land-use and benefit, an application under authorisation must be submitted including the following information:

a) Articles of association (in the case of a corporate person);
b) A sketch of the location of the land;
c) The descriptive report of the project;
d) An approximation of the nature and size (footprint) of the development the applicant proposes to undertake;
e) The opinion of the district administrator, after consultation with the local community;
f) A public notice, and verification that such a notice has been displayed in the headquarters of the relevant district and at the location itself, for a period of 30 days; and
g) A receipt of proof of payment of the provisional authorisation fee.

Additionally, where land is intended for economic activity, the application must also contain an exploitation plan and technical opinion thereof. In the case of private investment projects, the land is subject to prior identification, which must involve the Cadastre Services, the local administrative authorities, and the local community, and must be documented in the sketch and descriptive report (Article 25).

According to Article 28, in cases where the governor of the province is the competent authority, once the application process is complete, the Cadastre Services will submit the proposal to the governor of the province for a decision. In all other cases the application form will be sent to the central Cadastre Services after review by the governor of the province, who will submit it to the competent authority for decision. The authorisation granted here will be temporary, valid for five years in the case of Mozambican nationals, and two years in the case of foreigners.

Once the term of the provisional authorisation has expired, or at the request of the applicant, an inspection will be conducted to ascertain whether the proposed activity is in agreement with the approved schedule. Once this has been established, a definitive authorisation and accompanying title of the use and benefit of land will be issued (Article 31).

Lastly, Article 3 of the Technical Annex to the Land Law Regulations states that the delineation of areas occupied by local communities will not prevent economic or other activities from being conducted, provided that consent is obtained from the communities. It is essential that the local community be actively involved and consulted in the demarcation process. The Technical Annex also provides forms to be completed and submitted as part of this participatory demarcation process.

2.2.10 The Fisheries Law No 3 of 1990

As the local population use the local river streams for subsistence and commercial fishing purposes, the Fisheries Law of 1990 is also relevant to the project. As the proposed mine may affect local fish populations and the water quality of the rivers and local streams, it triggers the regulations under this law.

2.2.11 Regulations on the Resettlement Process resulting from Economic Activities

Mozambique's Regulations on the Resettlement Process resulting from Economic Activities (Decree 31 of 2012) consist of 28 articles which basically formulate the procedures for any resettlement in Mozambique, and especially articulate the assistance required from government during a resettlement process. As the project will economically displace machambas, these regulations bear high relevance not only to this SIA, but also the RAP.

2.3 International Legislation and Guidelines

2.3.1 The International Finance Corporation

The IFC is a member of the World Bank Group, and one of the largest development financing institutions that focuses exclusively on the private sector in developing countries (IFC, 2012). The IFC was established in 1956 and works in developing countries to create employment opportunities, generate tax revenue, improve corporate governance and to ensure that projects contribute to the upliftment of its countries' local communities. In respect of the latter, it is also the IFC's vision for people to be presented with an opportunity to escape their poverty and improve their lives.

The IFC published its PS on Environmental and Social Sustainability in April 2006, and published comprehensive Guidance Notes (GNs) in July 2007. The PS and Guidance Notes have been revised in 2012 (*cf.* IFC, 2012). Relevant PS to this SIA are as follows:

PS 1: Assessment and management of environmental and social risks and impacts (1-36)
PS 2: Labour and Working Conditions (1-29)
PS 4: Community Health, Safety and Security (1-14)
PS 5: Land Acquisition and Involuntary Resettlement (1-32)
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources (1-30)
PS 7: Indigenous Peoples (1-22)
PS 8: Cultural Heritage (1-16)

The main objectives of each PS are provided in the table below:

Table 4.1: *International Finance Corporation Performance Standard objectives*

Performance Standard	Main objectives
PS 1: Assessment and management of environmental and social risks and impacts	➢ Identify and assess social and environment impacts, both adverse and beneficial, in the project's area of influence; ➢ Avoid, or where avoidance is not possible, minimise, mitigate or compensate for adverse impacts on workers, PACs and the environment; ➢ Ensure that PACs are appropriately engaged on issues that could potentially affect them; and ➢ Promote improved social and environmental performance of companies through the effective use of management systems.
PS 2: Labour and Working Conditions	➢ Establish, maintain, and improve the worker/management relationship; ➢ Promote the fair treatment, non-discrimination and equal opportunity of workers, and compliance with national labour and employment laws; ➢ Protect the workforce by addressing child labour and forced labour; ➢ Promote safe and healthy working conditions; and ➢ Protect and promote the health of workers.
PS 4: Community Health, Safety and Security	➢ Avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities; and ➢ Promote the reduction of emissions that contribute to climate change.
PS 5: Land Acquisition and Involuntary Resettlement	➢ Avoid or at least minimise involuntary resettlement wherever feasible by exploring alternative project designs and layouts; ➢ Mitigate adverse social and economic impacts from land requisition or restrictions on affected persons' use of land by: (i) Providing compensation for loss of assets at replacement cost; and (ii) Ensuring that resettlement activities are implemented with appropriate disclosure of information,

Performance Standard	Main objectives
	consultation and the informed participation of those affected; ➢ Improve or at least restore the livelihoods and standards of living of displaced persons; and ➢ Improve living conditions among displaced persons through provision of adequate housing with security of tenure at resettlement sites.
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	➢ Protect and conserve biodiversity; and ➢ Promote the sustainable management and use of natural resources through the adoption of practices that integrate conservation needs and development priorities.
PS 7: Indigenous Peoples	➢ Ensure that the development process fosters full respect for the dignity, human rights, aspirations, cultures and natural resource-based livelihoods of Indigenous Peoples; ➢ Avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not feasible, to minimise, mitigate, or compensate for such impacts, and to provide opportunities for development benefits, in a culturally appropriate manner; ➢ Establish and maintain an ongoing relationship with the Indigenous Peoples affected by a project throughout the life of the project; ➢ Foster good faith negotiation with and informed participation of Indigenous Peoples when projects are to be located on traditional or customary lands under use by the Indigenous Peoples; and ➢ Respect and preserve the culture, knowledge and practices of Indigenous Peoples.
PS 8: Cultural Heritage	➢ Protect cultural heritage from adverse impacts of project activities and support its preservation; and ➢ Promote the equitable sharing of benefits from the use of cultural heritage in business activities.

2.3.2 World Bank

The World Bank's Operational Procedure (OP) 4.12 on Involuntary Resettlement has been revised in April 2013 (cf. World Bank, 2013). The guidelines pertained therein are deemed highly important to this project, such as the bank's emphases on developing those affected communities, as opposed to simply mitigating negative project-induced and resettlement-related impacts: "Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs" (*ibid.*: 1).

3. METHODOLOGY

3.1 Overview

The site visit for the SIA was combined with the scoping phase of the ESHIA. Consequently, planning arrangements and information were shared between the scoping phase, EPDA report and the SIA.

From 6 to 15 March, two EOH CES social scientists (Mr Hough and Mr Bosman) visited the project site to study the most directly affected PACs, namely Pirira, Ntete, Nquide and Maputo. In addition, a second site visit was also undertaken by Mr Hough, Mr Bosman and Ms Carina Saranga (CES) from 8 to 12 July 2013 in order to study the cotton season and to engage with some of the farmers. To CES' great appreciation, much assistance was provided on-site by the camp supervisors and project staff. The methodology employed was dually framed by the need to comply not only with the ToR, but also with the requirements of the IFC. Consequently, a form of triangulation was used by combining focus group discussions, key informant interviews and a SEBS of each village. The focus group discussions, interviews and SEBS formed the primary data, whilst secondary data was also collected for the literature review (Chapter 4). The SEBS covered a 10% sample, deemed sufficient for the purposes of this SIA, which necessitated extrapolation of data to the rest of the population.

This chapter details the SIA's methodology. It commences with discussing the planning arrangements and stakeholder engagement subsequent to the site visit, the focus group and SEBS methodologies, as well as the fieldwork arrangements and local fieldworkers used. Lastly, it concludes by elaborating upon the data analysis and some limitations of the study.

3.2 Planning and Preparation

Planning for the SIA commenced around two weeks prior to the site visit, with much-needed assistance of project staff. Foremost, as part of the inception of the scoping phase, a Portuguese language Background Information Document (BID) was drafted and hand-delivered to key governmental departments and NGOs in Pemba between 4 and 8 March 2013. During the same week, a radio advertisement was broadcast over the local radio and television stations, Radio Moçambique, Rádio Sem Fronteiras and Television of Mozambique (TVM). The latter message was broadcast in English and Portuguese, and notified the villages of the scoping study and specialists that would visit and assess the site. In particular, the message confirmed the presence of the social team, and also sensitised the villages of the baseline study and focus groups. For the BID, radio advertisement and meeting minutes and stakeholder engagement list, refer to the Public Participation Process (or PPP) Report (EOH CES, 2013).

Subsequent to the assessment and site visit, a subsequent radio advertisement was broadcast, which confirmed that a social assessment had been undertaken, and notified everybody of the future disclosure of the Draft Environmental Scoping Report (DESR), or, as it is referred to in Mozambique, the EPDA.

As regulated by Decree 45/2004 of the Environmental Impact Assessment (EIA) Regulation, affected parties need to be informed about public meetings related to the EIA process at least 15 days in advance. Community meetings and focus groups were organised through local and village-level authorities and chiefs from all the PACs. Consequently, measures were taken to inform the local authority structures, such as to request the permission of the District Administrator (Ms Redolfo), situated in Balama, before undertaking this study. General information on the SIA and ESHIA process was also broadcast on Rádio Moçambique, Rádio Sem Fronteiras and on television. Moreover, a meeting was conducted with chiefs and secretaries of all the affected villages prior to meeting with the general community on 2 March 2013. The purpose of this meeting was to inform them of the SIA and study, but also to agree on dates and times for the community meetings.

3.3 Data Collection

3.3.1 Village Information Sheet and Key Informant Interviews

Upon entering each village, a Samsung Android Tablet was used to obtain basic data on each village. This information was provided by means of key informant interviews with the village chiefs and, in some cases, village elders, representatives, pastors and/or school principals. The quantitative data obtained for each village included:

- The respective village's name;
- GPS location;
- Number of household structures;
- Number of households;
- Number of males and females;
- Number of working wells;
- Whether there is a clinic or primary school;
- The presence of a mosque or church;
- The presence of a football field (or related area of cultural significance); and lastly
- Whether there is a central graveyard (for which a GPS location was obtained).

In addition, a meeting was also held with a key informant of Plexus Cotton Ltd. in Montepuez on 11 July 2013. Plexus operates a large cotton out-growers scheme under a concession area in which the mining project is nestled. Cotton production is a significant income-stream for many local farmers who sell their cotton harvests to Plexus in exchange for assistance in terms of seeds and agricultural support. The meeting was aimed at informing the company about the mining project, as well as to gather any issues and/or concerns.

3.3.2 Meetings

As explained, meetings were held in all the villages to elaborate upon the ESHIA process and explain the purpose of the SIA to all concerned. The table below highlights the dates of these meetings, their locations, as well as the number of participants.

Table 3.1: *ESHI-related meetings held*

Group/affected party/village	Date	Venue	Nr of attendees
Nquide Village	4 March 2013	Nquide	150
Ntete Village	4 March 2013	Ntete	100
Maputo Village	5 March 2013	Maputo	80
Pirira Village	5 March 2013	Pirira	40

Plate 3.1: *Initial public participation meeting with the community of Nquide (left) and Pirira (right)*

During each focus group discussion, the chiefs informed the attending village representatives of the ESHIA process that was being undertaken by EOH CES on behalf of the proponent. Thereafter, Mr Bosman and a supporting project staff member made a brief project presentation and informed the attending villagers that this was only the initial process of consultation as part of the ESHIA. It was explained that the project was only in its development phase, and that more village-level consultation would follow after the project's basic infrastructure had been provided and mining plans finalised. Villagers were then provided with the opportunity to raise any issues and/or concerns on the project. All the meetings were well-attended, with around 100-150 people at each.

3.3.3 Focus Groups

In any research project, it is of paramount importance to request the permission from local authority structures before entering a respective village. Each village chief was consulted by EOH CES prior to undertaking the focus groups and interviews. Necessary support and translation were provided by a project staff members, such as Mr Napido and Ms Redolfo, as well as local secretaries in the villages who could speak English as their second language.

From 2 March to 15 March, eight focus groups and several additional informal key informant interviews were conducted by Mr Bosman. These meetings and discussions with the affected villagers were dually aimed at identifying any issues and/or concerns regarding the project to feed into the ESHIA's scoping phase reporting, but also to obtain required data on the villages and their socio-economic livelihoods for this SIA. The focus group questions used are attached as Appendix A, and included the following sub-sections:

- Village dynamics;
- Local socio-economic infrastructure;
- Land-use;
- Agriculture;
- Livelihoods;
- Natural resource-use;
- Cultural practices; and
- Issues and/or concerns relating to the project.

The table below outlines each focus group, the venue where it was held, as well as the total number of males and females attending each focus group. The duration of the focus groups ranged from one to two hours.

Table 3.2: *Focus groups held*

Group/affected party/village	Date	Venue	Nr of attendees
All the four chiefs of the affected villages	2 March 2013	Ntete	4
Nquide youth	6 March 2013	Nquide	40
Maputo women	11 March 2013	Maputo	40
Pirira women	11 March 2013	Pirira	30
Maputo youth	10 March 2013	Maputo	60
Pirira youth	12 March 2013	Pirira	30
Nquide school teachers	13 March 2013	Nquide Primary School	4
Traditional healers	13 March 2013	Nquide	5

After consulting with all the four male village chiefs and explaining the purpose of the study to them, a focus group was undertaken in Nquide, Maputo and Pirira. Focus groups were also held with youth members of Nquide, Maputo and Pirira. Aiming to obtain project perceptions, issues and/or concerns from women separately, a group of women was interviewed in Maputo and Pirira respectively. Teachers of the Nquide Primary School were also interviewed to obtain data on village literacy, the school system and challenges experienced. Lastly, in addition to these focus groups, an informal discussion was held with the local football club members of Ntete. No economic displacement or compensation issues were raised during the focus groups and meetings, as EOH CES did not want to raise any concern or create unrealistic expectations at this early stage.

Lastly, a focus group discussion was also held with 28 local farmers on 10 July 2013. The discussion centred on the villagers' farming practices, with a particular emphasis on issues pertaining to the different planting seasons, labour migrancy patterns, land and food security. The discussion was chaired by Mr Bosman and Mr Hough (in English) and Ms Carina Saranga from (Portuguese).

3.4 Face-to-Face Household Interviews

From 11 to 14 March 2013, a total number of 313 face-to-face, household-level interviews were conducted in the four PACs. Fourteen fieldworkers were trained to administer the questionnaire to each household using the Samsung Tablet. These fieldworkers predominantly hailed from Montepuez, whilst two fieldworkers lived in Balama.

Plate 3.2: *A) Selecting fieldworkers from the surrounding villages; B) Training 14 fieldworkers: C) The fieldworkers conducting the household surveys.*

A simple random sampling methodology was employed to select households in each village. Each village was sensitised a day prior to the survey by means of a brief visit to the village's chief, and household heads (HHs) were asked to be at their homesteads on the day when the village was surveyed. This allowed the fieldworkers to always speak with the HHs as the respondents. Of all 313 interviews, 273 HHs were men (i.e. 87.2%).

What this means is that around 12.8% of all HHs in the study area are female-headed. However, it should be noted that this is an extrapolation, as the study was conducted using a sample. In EOH CES' experience, female-headed households are far more commonplace. This percentage might, in fact, be considerably higher.

Although this percentage seems small, it is significant for the area, as female-headed HHs are vulnerable to project-induced impacts, especially since they tend to carry more burdens and household-related chores. This theme will receive further attention in this SIA.

These interviews represented approximately a 10% sample of all the households in the entire study area, as this was deemed sufficient for the purposes of this SIA. Based on the estimated number of households in each village (refer to Table 5.1 under Chapter 5), the table below provides the percentage interviewed in each village:

Table 3.3: *Percentage of households interviewed in each village*

Maputo		**Nquide**		**Ntete**		**Pirira**	
Nr of interviews	*% of total households*	*Nr of interviews*	*% of total households*	*Nr of interviews*	*% of total households*	*Nr of interviews*	*% of total households*
88	10%	98	15%	72	5%	56	100%

The questionnaire administered is included in Appendix B, and included the following sub-sections:

- General information about the respondent and his/her household;
- House ownership;
- A household composition table (including gender, age, education, occupation etc.);
- House permanent living structures and goods;
- Social amenities and infrastructure;
- Business activities;
- Agriculture; and
- Natural resource-use.

3.5 Data Analysis

The quantitative data obtained through the survey was captured into a Microsoft Access database and analysed using Microsoft Access queries and Microsoft Excel pivot tables. Tables of socio-economic baseline indicators and charts were created across a range of standard socio-economic dimensions. In terms of extrapolating and analysing this data, some information was also correlated with reference to the most accurate statistical data available of the country and district. Such data included the Mozambique Census of 2007 (amongst others).

A more qualitative approach was adopted to analyse the data obtained through the focus group discussions. This approach is fundamentally more unstructured, and is often used in the social sciences to construct social trends, and identify socio-economic patterns; relying on participant observation and field notes (Babbie and Mouton, 2007).

3.6 Limitations

Unfortunately, no research project is without its limitations. Working in rural villages is challenging and normally does not proceed according to rigid pre-planning arrangements. The list below provides some of the most serious limitations experienced:

- In each village, an effort was made to obtain village-level data, such as the number of house structures, households, men and women. However, obtaining this data was challenging, as the chiefs either did not really have this information about their villages, or tended to over-exaggerate in the hope of obtaining more benefits from the client. Therefore, care was taken in analysing this data and to rather concentrate on population trends and gender distributions in the villages; and
- A time constraint did not allow the team to conduct more than an approximate 10% sample for the SEBS. However, EOH CES is convinced that such a small sampling frame served the purposes of this SIA. However, care was taken with extrapolating the data, keeping an open mind to the fact that the villagers are large and heterogeneous. Household dynamics are also very difficult to generalise, as households are not static and function in a social system of change and variation. Specific care was therefore taken in analysing the data to bear in mind that the data is also, to some degree, open to change and different interpretations.

4. THE NATIONAL CONTEXT OF MOZAMBIQUE

4.1 Introduction

Mozambique has been shaped and influenced by the civil war, which lasted until 1992. Rich in mineral resources and fertile soils, the country has abundant arable land for agriculture and numerous resources for the extractive industries. Combined with the government's drive to foster pro-poor economic development through, amongst others, its Poverty Reduction Action Plan (abbreviated as 'PARP' in Portuguese) for 2011-2014 (IMF[3], 2011), investments are needed to provide employment to a growing population of rural unemployed. As will be explained in this chapter, poverty is aggravated by several socio-environmental factors, such as climate change, the collapse of local industries as a result of the war, limited economic opportunities and capital, and the lack of basic, rudimentary social services in much of the country.

Mozambique has a favourable landscape and climate for agriculture, and this has been the reason behind the country's wealth and trading history over the last few centuries. Trade has always been a key player in rural livelihoods, such as trading in coconut, cotton, oil seeds, sesame and ground nuts (Eriksen and Silva, 2009). However, past colonialists, the war and economic changes all altered this landscape and the livelihoods of its people in many ways. For example, although liberalisation (especially after the war) opened the economy to new emerging markets, liberalisation and economic reform policy also reduced land and natural resource-dependent rural communities' access to such land. This is compounded by the fact that poverty is worse felt in rural, land-dependent areas where basic social services are lacking, and agricultural support limited. Although economic development is highly needed to allow rural households to diversify their income-earning opportunities, the way in which such development is implemented needs to be regulated and monitored to ameliorate any negative effects on the local population.

Based upon secondary data sources, the chapter commences with an overview of the country's geography, governance system and demographics. After the agricultural sector is considered, the chapter deliberates on the socio-economic living conditions of the Mozambican population. The last section introduces the Balama District with some basic demographic data and the area's predominant economic and livelihood strategies. More detailed demographic data on the Balama District is provided in Chapter 5.

A large body of secondary literature sources was reviewed for this chapter, although the principle statistical data were obtained from the following sources:

Table 4.1: *Principle statistical data sources*

Date	Title	Source
2011	Republic of Mozambique: Poverty Reduction Strategy Paper	International Monetary Fund (IMF)
2013	Mozambique Economy Profile 2013	Indexmundi
2010	Republic of Mozambique: Strategic Plan for Agricultural Development: PEDSA 2010-2019.	Republic of Mozambique
2011	Republic of Mozambique: Country Strategy Paper 2011-2015	The African Development Bank

4.2 Geography, Governance and Basic Demographics

Mozambique spans approximately 799,380km^2 in size with a land border of 4,330km and a coastline of 2,400km (Republic of Mozambique, 2010). According to the Commonwealth Local Government Forum (Clgf), local governance is restricted to only a portion of the country, having 33 municipalities that cover 23 cities and ten of the 116 towns in its districts (Clgf, 2009). The country is a democratic republic with a unicameral parliament, also known as the Assembly of the Republic (*ibid*.). Since the end of the war, great strides have been made in terms of having several multi-

[3] International Monetary Fund

party elections since the peace agreement was signed in 1992. Leading the Mozambique Liberation Front (FRELIMO), Armando Guebuza has been Mozambique's president since 2005. The first democratic election was held in 1994.

Based upon 2013 estimates, Mozambique has a total population of around 23 million people and the city of Maputo serves as its capital (Rural Poverty Portal, 2013). The average land/person density is estimated at 29.7 persons/km^2 (CARE, 2013). This density is low in comparison to other African countries. For example, Malawi's population density is around 109 persons/km^2, whilst this is 39 persons/km^2 in South Africa (UNICEF, 2010). As already explained, the country's large rural population is significant, as it was estimated in 2010 at around 14 million (i.e. 61.1% of its entire population). The population is also fairly young. In 2006, half of the country's inhabitants were estimated to be below 30 years of age (UNICEF, 2010). Above all, Mozambique is a poor country. Using the United Nation's (UN) Human Development Index (HDI) for measuring long-term progress across a set of different dimensions of human development (such as education and standard of living) reveals that the country ranks at 185. This number is amongst those assigned to some of the lowest human development countries, with Niger ranked as the lowest country at 187 (UN, 2012).

4.3 Land

In much of Africa, land grabbing continues to discriminate against customary land tenure systems, which repeatedly results in local communities becoming alienated from their own land. Land is a highly valued livelihood asset, valued for its agricultural potential, with areas such as sandy soils, river zones, wetlands, grasslands and even deforested areas prized for this purpose. Land is often unequally distributed, especially amongst the rural poor who are dependent on such land. Years of civil war further marginalised the rural populations as land was taken and destroyed, in the process forcing many off their own ancestral land (i.e. land belonging to their families) (refer to Eriksen, Julie and Silva, 2009; and Unruh, Heynen and Hossler, 2003).

Located in the Ministry of Environmental Coordination (MICOA), the National Directorate for Land-Use Planning (DNPOT) holds the legal mandate for providing appropriate guidelines and advice concerning land-use planning activities in Mozambique, although physical land planning processes fall under the auspices of individual districts and municipalities (CARE, 2013). Land is primarily held by the state, which determines the conditions under which citizens may hold and enjoy land ownership (*ibid*). The legal framework for land rights and the acquisition thereof is underpinned by the country's constitution and the Land Law of 1997. Article 109 of Chapter V of the Constitution, for example, states that land cannot be sold, and that all land ownership eventually vests in the state (*ibid.*).

The GoM also provides rural households with different means to acquire rightful land ownership, particularly as encapsulated by Article 111 of the Land Law (1997), which deals with land rights acquired through inheritance. For example, the state grants land titles in recognition of traditional inheritance. Under this legislation, the term '*Direitos de Uso e Aproveitamento da Terra'*, or 'DUAT', refers to a long-term land leasehold which can be granted by the state upon approval requested. The term 'DUAT' is provided under statutory rights (i.e. the formal land system), but also for rights allocated to individuals or organisations by the state. In this way, a DUAT may also be acquired through an individual holding of land under traditional custom (*ibid.*). In the granting of land rights, both demarcation and 'delimitation' are used by the state (*ibid.*). The former refers to a process where titled land is physically demarcated, whilst the latter refers to the issuance of a certificate *in lieu* of a title. Under traditional authorities, a variety of land tenure systems also exist which define land ownership amongst communities. In illustration, land can be borrowed or rented from traditional authorities or land-owning families (Landy and Chirwa, 2011).

Any DUAT acquired by an individual or group of people, either through traditional customary practices or good faith, is thereby fully recognised by the Land Law. Land under customary

protection does not have to be registered to gain this status, and remains the principle way for local people to obtain land rights. Stated differently, any lack of legal registration does not affect occupancy rights. The law requires any DUAT applicant to consult with the local people who are resident in the affected area, to determine the conditions under which an investor will be held accountable for acquiring a community's DUAT. The rationale behind this is to formalise the participation of the local population in land and natural resource management. However, the system is easily exploited and rural villagers have suffered traumatic evictions from their own land, mostly as the traditional land tenure system sometimes fails to be commensurate with the formal land system and the issuing of titles, especially under land delimitation.

Land delimitation, as explained, is a very flexible, yet participatory mechanism for local communities to define their own land ownership and land claiming and occupancy rights (CARE, 2013). Delimitation can be applied to traditional units, clans and chieftainships, extended families or even just a group of people, resulting in a map of the DUAT which is registered in the Cadastral Atlas after a certificate of delimitation is issued in the name of the entity (CARE, 2013). Yet, this system can easily be exploited by developers as many past relocation and land grab issues have prevailed in Mozambique. For instance, rural access to such common property is often reduced amidst increasing developments and concession agreements, reducing local people's income base and nutrition.

A key difficulty with development is that, often, areas of land which have culturally understood significance and associated rights of access and use, such as forests or river zones, are developed without understanding how such intervention reduces local people's access to food or livelihood materials, such as wood. In Mozambique, many cases have been documented where local people were deprived of their land and forests, which used to harbour and nurture their livelihood and cultural practices (*cf.* Lauriciano and Norfolk, 2013; as cited by CARE, 2013). It is also evident from studies that land deprivation and poverty have a direct correlation, as rural households who cultivate more land are less poor (Landy and Chirwa, 2011).

Land security, coupled with natural resource management, is a major concern in much of Africa, as it threads through, and influences, entire economies. Land tenure insecurity is known to discourage longer- term investment in agriculture in, inter alia, perennial crops and irrigation (CARE, 2013). Land insecurity can encourage what is often referred to as 'short-termism', which means that land is only developed for the short-term. Moreover, land insecurity in Mozambique (as is the case in much of Africa) is worsened by gender inequalities, such as men's rights concerning household roles, responsibilities, but most importantly, the economic status of a household. This engenders different coping strategies for men and women. This is an important issue to consider, especially since the project will economically displace machambas. In order to meet household nutritional needs, female-headed households are vulnerable to land insecurity, as it continues to be difficult for women to assert and acquire land ownership to protect themselves from future land loss in a patriarchal society.

4.4 Economy

4.4.1 A Brief History of Mozambique

The Mozambican economy and its people endured three wars spanning over three decades. These wars included the colonial war (1964-1974), the Rhodesia War (1976-1980) and the Civil War (1981-1992) (Hanlon and Keynes, 2010). Much of the colonial war (or liberation war) began as a result of the *then* Portuguese colony which refused to decolonise around this period. This war resulted in a peace agreement signed in 1974, which lead to the country's independence. Soon thereafter, another war broke out as former Rhodesian Government (today Zimbabwe) attacked Mozambique in 1976, who in turn imposed sanctions on Rhodesia which was ruled by a white minority government. Peace was only brought in 1980 following the independence of Zimbabwe, although this peace only lasted for one year.

4.4.2 Economic Growth and the Country's Gross Domestic Product

Despite the crippling war, the country's economy has recovered in the last 20 years. The government made such great strides in reviving its economy that Mozambique was the fastest growing non-oil economy in Sub-Saharan Africa from 1993 to 2009 (World Bank, 2011). Much of this recovery is owed to a series of government-initiated macroeconomic reform policies which have been designed to stabilise its economy (Indexmundi, 2013b). Such policies, coupled with international donor support and multi-party elections since 1994, led to significant economic recovery. In illustration, according to the UN's Children's Fund (UNICEF, 2010), the country experienced a 131% real growth between 1992 and 2004, whilst its real Gross Domestic Product (GDP) surpassed its pre-independence level in 2001 (*ibid*.).

According to figures provided by the World Bank, Mozambique's per capita GDP in 2010 was estimated at around US$458 (World Bank, 2011). Comparing this to levels just after the war, the country's per capita GDP stood at US$137 in 1993. In 2007, the country's GDP's growth rate was estimated by the IMF at 4.7%, whilst its annual growth rate averaged at 7.6% between 2005 and 2009 (IMF, 2011). In 2010, the growth in Mozambique's economy stood at around 6.5% (*ibid.*), whilst in 2012, its growth rate was estimated at 7.5% (Indexmundi, 2013a). A growth rate of around 7.7% has been estimated up and until 2014.

4.4.3 Mozambique's Development Agendas

The government has made great strides in reviving its economy after the civil war, which was compounded by socialist mismanagement and corruption (Indexmundi, 2013b). Several development agendas and strategic action plans have come to shape and influence the country's economic growth path.

The country remains dependant on international support for more than half of its annual budget. With such international assistance, several economic reform programmes have been initiated since the end of the civil war, which contributed to its economic recovery. One of these include the country's first Poverty Reduction Strategy (PRS) called the Poverty Reduction Action Plan (PARP I) for 2001 to 2005 (Republic of Mozambique, 2010). The strategy was aimed at institutional reform and at providing a conductive environment for investments in the private and public sectors. Human capital growth and the provision of productive infrastructure were also cornerstones of this strategy, in order to facilitate economic growth after the war. The strategy was implemented across, and aimed at, a wide range of sectors, such as macroeconomic financial management, education, health, agriculture, rural development, basic infrastructure and good governance.

The Government 5-Year Plan 2010-2014 is another strategy aimed at combating poverty in order to improve the living standards of the people of Mozambique. It is premised on the goals of peace, harmony and stability (Republic of Mozambique, 2010). Amongst its several objectives are those of ensuring food security, raising the productivity of farming activities, encouraging sustainable land-use and developing human capital and institutional capacity, especially for the agricultural sector. This plan was preceded by a previous 5-year programme for 2005-2009 which was similarly aimed at increasing the production of food and introducing cash crops to ensure food security and surpluses for local export (*ibid.*). This plan was partly galvanised by the Green Revolution Strategy (approved in 2007), which was a government instrument to promote the 5-year plan of 2005-2009.

The most recent PRS for 2011-2014, termed PARP II, is primarily aimed at reducing poverty in the country (IMF, 2011). This strategy is built on the premise that economic activities are geared at stimulating broad-based economic developments amongst the poor to alleviate poverty. Some of the most important cross-cutting issues being addressed by this strategy include stimulating inclusive economic growth, enhancing the agricultural sector and farmers' outputs (including exports), as well as creating employment and stimulating human and social development (*ibid.*).

With over 300,000 young people entering the labour market each year (IMF, 2011), it has become a priority for the GoM to stimulate the economic sector and to encourage more employment opportunities. Under the PARP II, the first government priority is the stimulation of employment opportunities, by providing an environment that is favourable to the establishment of Small, Micro and Medium Enterprises (SMMEs). By attracting labour-intensive domestic and foreign investment into the country (such as by liberalising the market and signing concession agreements with industries), the government aims over time to strengthen the role of SMMEs in the economy. Stated differently, by attracting large industries, it is hoped that economic growth will 'trigger-down' to local entrepreneurs and businesses.

Lastly, Mozambique's Agenda 2025 has also been influential in fast-tracking the country's economic growth. The agenda has a strong thrust towards social development and social inclusion, and aims to fight poverty and illiteracy, and to overcome economic underdevelopment. It outlines some of the following strategic objectives (*cf.* World Bank, 2011):

- Cultivating human capital through the improvement of basic living conditions;
- Cultivating social capital through national cohesion, peace and stability;
- Promoting social justice;
- Accelerating access and ownership to land by local communities;
- Creating incentives for the effective participation of women and youth in the country's economy
- Rural development; and
- Supporting entrepreneurial sectors.

4.4.4 Economic Sectors

Even though the war influenced many of Mozambique's traditional economic sectors, the country is still renowned for its agricultural sector, including its cotton, cashew nuts, sugar, citrus and coconuts (Trading Economics, 2013). Traditional exports include cashew nuts, shrimp, sugar and cotton. The agricultural sector accounts for around 31.8% of the country's exports, and is rightfully one of the country's strategic economic investment pillars (Indexmundi, 2013b). According to the GoM (Republic of Mozambique, 2010), this sector contributed approximately 24.0% of the country's GDP in 2009. It is therefore not surprising that the sector employs an estimated 80.0% of the active working population (*ibid.*). The potential for agricultural production remains significant, especially since food crop production has a direct impact on food security and malnutrition. The government therefore encourages growth in this sector to diversify the economy and aims, in the process, to create jobs, to stimulate local economics and to galvanise the development of SMMEs.

Apart from agriculture (which will be discussed hereafter) Mozambique's natural resources and extractive industries have been very significant in the recovery of its economy. According to a report by the African Economic Outlook (2011), several coal mining projects have been responsible for the country's GDP growth in recent years, implying that this sector can rejuvenate the economy and provide real employment. The World Bank argues that natural resource exports have been largely responsible for increasing the country's trade, with aluminium, electricity and gas as some of the main resources (World Bank, 2011). The country is also rich in large mineral deposits such as marble, bentonite, coal, gold, granite and gemstones. Aluminium, however, remains the most important export product (Trading Economics, 2013).

The industrial sector contributes around 24.6% of the country's GDP. Amongst the industries partly responsible for this growth are those related to the extraction and production of aluminium, petroleum products, chemicals, textiles, cement, glass, asbestos, tobacco, food and beverages (Indexmundi, 2013b). Considering exports, around 28.9% of the country's exports are exported to its partners in South Africa, Belgium, Italy, Spain and China (*ibid.*). It is also anticipated that the extractive industry will galvanise the economy of the country in the next few years, especially with

regard to mining developments which, according to the World Bank (2011), are expected to increase as more coal investments will become operational.

Lastly, the services sector is also significant as it accounted for about 43.6% of the country's economy in 2012 (Indexmundi, 2013b). Growth is also anticipated in the electricity, water and sanitation sectors, following the implementation of the National Water Supply and Rural Sanitation Programme (PRONASAR). Supported by the AfDB, the programme aims, *inter alia,* to provide 3.8 million rural inhabitants with access to improved water and sanitation services (AfDB, 2010).

4.5 Agriculture

Agriculture is a very central livelihood strategy in Mozambique, with around 36 million ha of arable land suitable for agriculture (World Bank, 2010). According to the World Bank, this sector is one of the country's main economic pillars. In 2009, for example, it contributed 24.0% of the country's GDP, and employs around 80.0% of the country's active population (Republic of Mozambique, 2010). The World Bank estimates that 97.0% of agricultural production comes from 3.2 million subsistence farms, with farms averaging around 1.2 ha in size. According to CARE (2013), approximately 72.0% of farms are less than 2ha in size. Women play a significant role in farm productions, as it is estimated that around 24.1% of farms (or smallholdings) are headed by women (Republic of Mozambique, 2010). This data illustrates the importance of this sector, not only for the country' economy, but primarily as a livelihood and food security strategy for the rural majority. In consequence, the importance of sufficient land for household food production cannot be over-estimated.

Situated amongst rich river soils and degraded forested areas, the vast majority of farmers inter-crop their fields with a variety of produce. This is an important strategy in the absence of using fertilisers, as it preserves and promotes the soil's fertility. Inter-cropping is also a labour-saving technique, as it reduces the amount of labour needed to cultivate lands. Crops that are widely planted in rural areas include cassava, beans, sweat potatoes, maize, a selection of fruit and nuts (Osbahr *et al.,* 2003). These are often referred to as 'insurance crops' or 'basic food crops', although irrigated lowlands are also planted with vegetables and rice for commercial potential. More than 80.0% of the total cultivated land areas are used for rain-fed production of these crops (Republic of Mozambique, 2010). Maize and cassava remain the dominant crops throughout the country, although households in the north also cultivate sorghum, cotton, sesame and sometimes tobacco (such as in Tete Province). Large portions of northern Mozambique are utilised for cashew production for the export market. Livestock and poultry husbandry, is mainly practiced by small to medium households, with raising of chickens being prominent. Cattle breeding is also significant, especially in the south and centre of the country (*ibid.*).

Although imperative to the economy, agricultural production continues to be practiced mainly for subsistence (i.e. for a household's self-consumption), and is frequently characterised by low yields and modest returns (Republic of Mozambique, 2010). One reason for this is inadequate/ lack of agricultural extension services in rural areas. Food insecurity is often the most prevalent challenge amongst the rural poor. Poor yields are aggravated by limited use of fertilisers and pesticides, as well as of agricultural technology (CARE, 2013). Subsequently, the GoM has emphasised the need to stabilise domestic agricultural production (Republic of Liberia, 2010). Realising this aim, the Agricultural Policy and Implementation Strategy (PAEI) was approved by the government in 1996, and is still in force. The policy is based on expanding productive capacity and rests on objectives such as (*amongst others.*):

- Increased access to land and to planning and developing its use;
- Increasing the production of self-sufficient food security;
- Developing agricultural training, research and extension services; and
- Infrastructural development (*ibid*).

Keeping abreast of a number of 'new' threats to agricultural production (such as climate change), the GoM approved its most recent agricultural sector strategy (*Plano Estratégico para o Desenvolvimento do Sector da Agricultura*, or PEDSA), which is anchored in Mozambique's Green Revolution Strategy (2008) (World Bank, 2010). Not only does PEDSA envision to galvanise food production, it also intends to generate sufficient food surplus for people to market such produce at regional level; promoting sustainable natural resource-use. PEDSA is a 10-year perspective, and is operational between 2010 and 2019 (*ibid.*).

4.6 Socio-Economic Living Conditions

4.6.1 Household Dynamics and Social Services

Within a household context, defining and measuring the severity of poverty depends on multiple interrelated variables. Analysing household dynamics with such variables provides a useful indicator of the poverty context of a particular area. Some poverty indicators that can be measured include a household's standard of living, monthly consumption rates, income and expenditure, economic efficiency, access to credit, and general inequalities (to name a few).

As already explained, the Mozambican population is largely rurally based. Households are extended and can comprise more than one family in one single house structure (or homestead). In many cases, a healthy household population also signposts a wealthy household, especially since more members can be farm labourers contributing to a household's food security and income-earning capacity. It is therefore not surprising that, as estimated by UNICEF (2010), the average household size is around 4.7 members in urban areas and 4.2 in rural regions (*de facto* population). To put this data in perspective, this is akin to the average household size of a similar country of the same HDI status (in terms of multidimensional poverty), such as Niger. The average household size in Niger, for example, comprises around 5.2 members (*cf.* the Republic of Nigeria, 2003).

Poverty studies have shown a positive correlation between the intensity of poverty and household sizes, especially if extended households have a large number of inactive adults (Asogwa *et al.*, 2012): "[…] the larger the number of less active adults […] and children in a household, the heavier the burden of the active members in meeting the cost of minimum household nutrition and, hence, the higher the probability or intensity of poverty, and vice versa" (*ibid.*:173). More household members also increase dependency ratios, as heavier burdens are placed upon active working members to meet the household's nutritional requirements.

Considering electricity supply, based upon 2008 estimates, Mozambique produces around 14.98 billion kWh of power and imports 3.436 billion kWh annually (Indexmundi, 2013c). Electricidade de Moçambique (EDM) is a 100% Mozambican-owned company, responsible for generating, transporting, distributing and commercialising electricity throughout the country (Republic of Mozambique, 2013). Still, many rural areas are deprived of access to the National Electricity Network (REN). According to the IMF (2011), the proportion of the population which uses electricity, a generator or a solar energy for lighting purposes stands around 13.3%.

In terms of water supply, the World Bank (2011) estimated that access to water supply in rural areas in 2010 stagnated at 52.0%. This is in contrast to urban areas where access to water improved from 50.0% to 60.0%. Rural areas are highly dependent on the provision of boreholes or wells with hand pumps; many of which have been installed by international donors. Water supply, however, remains, unreliable during the dry season as the water table retreats. This situation is compounded by weak and many non-operational water points. Access to sanitation services has also stagnated at 40.0% in rural areas, whilst urban region populations have enjoyed improved sanitation services from 50.0% to 64.0% (*ibid.*).

The need for intervention in the water sector is a high priority of the GoM, underpinned by Priority Nr 3 of its PRS. This priority aims to expand access to, and the use of, safe water supply and

sanitation services in rural areas. Under its PRS, the government is serious about rehabilitating water sources that are located in rural areas, whilst easing household access to such water points.

4.6.2 Education and Health

Although great strides have been made since the civil war, decent education remains a challenge, especially in rural areas. The educational system also suffered tremendously during the war years, as schools were one of the main targets for undermining FRELIMO's popularity (Hanlon and Keynes, 2010). At an estimated 54.0%, the current literacy rate is still well below the African standard of around 64.8% in 2008 (World Bank, 2011). Encouraging though, according to the Word Bank (*ibid.*), was that the net enrolment rate in primary education was around 96.0% in 2008. Compared to 45.0% in 1998, the data depicts a significant improvement in school enrolment. The data can be accrued to the provision of schools, as access to schooling rose from around 30.8% in 2002/3 to 37.3% in 2008/9 (IMF, 2011). This finding is overshadowed by the fact that about 80.0% of the labour force has not completed upper primary education, whilst a significantly low 13.0% of the labour force has completed secondary school (*ibid*.).

Improving healthcare continues to be one of the country's primary objectives. As estimated by the IMF (2011), access to a health unit within 45 minutes' travel by foot increased from 55.0% to 65.0% between 2002 and 2008/9. The greatest gain seems to have been made in rural areas (and especially in northern Mozambique), although services provided remain, in many rural areas, generally rudimentary. Although progress has been made in the provision of clinics and health services, the under-five infant mortality rate stagnated at a high 138 per 1,000 live births in 2008 (World Bank, 2011). Stated differently, an estimated one child dies for 7.3 children born. This figure is significantly higher in comparison to a country such a Niger located at a HDI level (89.7 deaths per 1,000 live births) (Indexmundi, 2013d). This may be compared to a developed country, such as Australia's, infant mortality rate of around 4.6 deaths per 1,000 live births (Indexmundi, 2013e). Even though this rate is high for Mozambique, it reduced from 144 per 1,000 live births in 1996, which is reflective of the improvements, particularly in public childcare treatment and the availability thereof.

Prevailing health-related concerns include high infection rates of tuberculosis, malaria and HIV/AIDs, which especially impact on the demography of rural villages. In 2005, the Ministry of Health estimated that approximately 16.2% of people between 15 and 49 years have HIV/AIDs (Ministry of Health, 2005). The reality of this disease is that it reduces life expectancy at birth, which is currently estimated to be around 37.1 years (*ibid.*).

4.6.3 Household Income-Earning Opportunities and Livelihoods

The population of Mozambique is poor, with an estimated 54.0% living below the poverty line of around US$1.25 per day (Indexmundi, 2013b). Apart from larger cities such as Maputo and Pemba, employment opportunities are limited. In 1997, for example, the official unemployment rate of the country (accounting for the active working population) stood around 21.0%, whilst this figure increased to 27.0% in 2011 (African Economic Outlook, 2011). The labour force stands at around 10.1 million (2012 estimate), whilst women comprise more than half of this force [*cf.* Indexmundi (2013b) and Rural Poverty Portal (2013)]. By occupation, most people in the labour force are employed (either formally or informally) in the agricultural sector (around 81.0%) (Indexmundi, 2013b).

With such high poverty, rural households are forced to diversify their income-earning and resource-dependent livelihoods in order to survive. As is the case in many other African countries, natural resource-use is part and parcel of many households' daily livelihood practices, where resources are collected, processed and even marketed for selling or bartering. Many rural Mozambicans also rely extensively on firewood, not only for cooking and energy, but also for making charcoal. Selling charcoal is sometimes the only income a household receives, especially for villages located next to busy transporting routes. In addition, bush meat, honey, clay, plant roots, thatch and other building materials and medicinal plants are widely used by many on a daily basis. The collection of such

resources sustains a large number of villagers and, as an activity, is also embedded in many cultural practices and rituals.

The importance of employment opportunities, especially to land and resource-dependent rural households cannot be over-stated. Although most rural households are self-employed farmers, off-farm labour market opportunities are often important for mitigating the effects of a drought (Giesbert and Schindler, 2012). Alternative income-earning opportunities can also allow poor households to overcome short-term food insecurity. According to Osbahr *et al.* (2008), many rural Mozambican households are reliant on off-farm migrant work, for which household members are willing to migrate for piece jobs or regular wage employment. In recent years, some parts of Mozambique have seen a decline in the local industries such as, for example, the cashew industry, which contributed to unreliable migrant work; this decline has seen an increase in rural unemployment and a dependency on temporary, local work.

4.6.4 Culture and Religion

Mozambique is a culturally diverse country with a variety of traditional groups who speak around 40 different languages (Our Africa, 2013). Some of the local groups include the *Macua, Thonga, Shona/Ndau, Sena, Nyungwe* and *Yao* (ibid.). Considering language, Portuguese remains the country's official language, although a number of Bantu languages are also indigenous, such as *Swahili, Makhuwa, Sena* and *Ndau*.

Such a rich variety of groups also produces many diverse local customs and cultures. Many of the traditional customs are deeply rooted in the cultures of each local group, which are passed down from generation to generation (Our Africa, 2013). Amongst the many traditions, songs and dances are practiced in almost every culture, which involve and shape religious beliefs, healing methods and rites of passage for young men and women alike. Dances are performed in spectacular fashions, such as the famous 'hopping' dance of the *Macua* men, moving around on tall stilts, as well as the *Nyanga* Dance of the Tete Tribe (*ibid.*). A traditional dance which has also become a part of the northern Mozambican population's traditional repertoire is the *Mapiko* Dance, where men cloak themselves with cloth and cover their faces with carved wooden masks. Many of these dances are borne out of traditional beliefs, some, for example, to embody the spirits of ancestors, others as attempts to challenge male dominance over women.

In terms of religions of non-African origin, on the other hand, according to the 1997 census, almost a third of Mozambicans are Christians (28.4%), with Roman Catholicism as the major denomination (Indexmundi, 2013e). A lower 17.9% are believed to be Muslims. According to data obtained by the 2007 Mozambique National Census, the vast majority of the northern population seems to be Islamic, whilst the second largest religious group in the Balama region is Christians (63.7% and 34.1% in the Balama District respectively) (Republic of Mozambique, 2007).

4.7 An Introduction to the Balama District

4.7.1 Basic Demographics

The Balama District covers a landmass of 5,540km^2 and, according to the 2007 census, is home to about 124,100 people (Republic of Mozambique, 2007). According to this census, approximately 51.9% of the population are comprised of females, with an estimated male-to-female ratio of 1:1.1. In terms of household sizes, according to the Vaccine Coverage Survey conducted in 2010 in the Cabo Delgade Province, the average household size consists of around 6.5 people (VillageReach, 2010), higher than the average for rural areas in Mozambique (4.2) (UNICEF, 2010). The reason for this remains largely unknown. It is possible that this average might be lower as the study was conducted with a sample population.

The 2007 census estimated that about 31.2% of rural households are female-headed. Female-headed households have also been shown to carry more economic burdens in rural areas, which can add to a household's poverty context in terms of living standard indexes (Rajaram, 2009). Moreover, as women are primarily responsible for everyday household chores (such as washing, collecting wood, cooking and looking after the children), female-headed households tend to have to work harder than their male counterparts. It is for these reasons that female-headed households can be seen as vulnerable to any project-induced impact; a theme which will receive more attention in the following chapter.

In terms of a population age breakdown, the majority of the area's population seems to be young. Approximately 54.7% of the population are between 0-18 years, with 30.0% younger than 7 years (Republic of Mozambique, 2007). A significant 49.2% can be classified as being of the working-age group [defined by the International Labour Organisation (ILO) as those members who are between the ages of 15 and 65]. A small minority of 2.2% are above the working-age population of 65. Considering language, although Portuguese is Mozambique's focal language, a surprising 95.0% of the Balama District's population, in fact, speak a local Bantu language called *Emakhuwa* as their mother language (*ibid.*).

4.7.2 Predominant Economic Sectors and Key Livelihood Strategies

Of the district's total labour force, the bulk of the population identified themselves in the 2007 census as subsistence and/or commercial farmers (94.5%) (Republic of Mozambique, 2007). This is followed by local traders (1.6%) and manufacturers (0.6%), amongst others.

As is the case in the rest of the country, the agricultural sector is also the economy's backbone. This is evident by the significant number of farmlands owned by households in the area. The 2010 Vaccine Coverage Survey estimated that 88.6% of families in the province are farmers with farmland (VillageReach, 2010). Most households use their land predominantly for subsistence purposes, as many are constrained from having market access, improved agricultural technology or capital investments. Yet, money derived from agricultural produce is often households' only source of cash income. In illustration, a study conducted by Strasberg and Kloeck-Jenson (2002) in the Cabo Delgado and some adjacent provinces found that food crops such as cotton and cashew nuts accounted for around 70.0% of all the income generated by households interviewed in the province throughout the year. Farms also serve a very important purpose of providing local employment in the district, as farms are labour-intensive and rely on manual labour. Labour-related income can be an important revenue stream for households, sending their labour to work on other farms or for even larger smallholders. Sometimes, exchanging labour is often more a reciprocal obligation between households (i.e. exchanging labour without monetary payment), casting light on the social cohesion that tends to exist amongst many rural households and villagers.

According to the study conducted by Strasberg and Kloeck-Jenson (2002), cotton production is the area's main economic income, especially in the Montepuez area (around 45km from the project site). Income derived from such production is significant, and in some cases, the most important revenue for households in the area. Although Mozambique is renowned for its cashew industry, cashew yields in the area seem to be low (*ibid.*). The afore-mentioned study found that, in the adjacent Nampula Province, smallholders have, on average, between 21 and 38 cashew trees, whilst this tree provides only about three to six percent of households' average incomes in this region.

Animal husbandry is only practiced by a few households, with a small number of households owning chickens, pigs and goats. Cattle production is also limited to a few households, mainly as a result of the high prevalence of pests in the province, such as the tse-tse fly (Republic of Mozambique, 2010). However, the Cabo Delgado Province is believed to be less affected by this pest, and cattle are being re-introduced through various development programmes (*ibid.*).

Additional economic activities of the district include the collection and selling of firewood and charcoal (the latter which is locally made from wood collected), as well as a range of forestry products such as cutting wooden poles for house-building (Republic of Mozambique, 2010). Hunting is also significant not only for subsistence, but also for income.

Increasingly, as areas are being developed, land pressure forces many households to broaden their livelihood strategies beyond agriculture. This not only adds strain to households who do not have land security in terms of land titles or certificates, it even leads to the eviction of households from their own ancestral land. Alternative economic sectors are still limited in the district, which means that households continue to be dependent on land for their survival. With few economic livelihood alternatives, pressure on land can have serious food security ramifications, as well as change micro-level livelihood determinants, such as the culture of agriculture which is coupled with a tradition of social cohesion and intra-household support.

5. FINDINGS

5.1 Introduction

The following chapter describes the data obtained during the SEBS, focus group discussions and key informant interviews. The first section presents an overview of the four affected villages and migrancy patterns, basic village and house structures and social amenities. This is followed by a household demographic overview, with the household as the primary unit of analysis. As far as possible, the data is correlated with the data of the Mozambique Census 2007 (Republic of Mozambique, 2007). Household dynamics, which include home ownership, decision-making and social roles (including gender roles), are also covered.

The next section considers households' socio-economic living conditions, where after their livelihood strategies are elaborated upon, such as members' occupations, business activities as well as agricultural practices. Agriculture is a major economic activity of the area, and more exhaustive and comprehensive data on agricultural practices and related livelihood strategies will form part of the RAP. Agriculture is thus only briefly considered in this SIA, as it is a complex system involving different harvest seasons and labour practices, which need much more consideration and study. The IFC PS 6 requires projects to assess the impacts of ecosystem services on the affected population. Such services include a magnitude of natural resources and naturally occurring process that the local population are dependent upon, such as water, land and animals (amongst others). Consequently, a small section is devoted to ecosystem services which pools together data from different sections of the chapter to illustrate how dependent the affected villagers are on particular ecosystem services. A following section delves into religion and cultural resources, whilst the concluding section considers project-related concerns and issues.

5.2 The Project-Affected Communities

5.2.1 Overview

As explained in Section 1.6, the PACs include Ntete, Nquide, Pirira and Maputo. These villages are depicted in the four maps overleaf. The table below indicates each village's estimated population, as well as their male-to-female ratios:

Table 5.1: *Village demographics*[4]

Village	Estimated population	Male-to-female ratio
Ntete	4,525	1:1.73
Nquide	2,543	1:0.97
Pirira	285	1:1.01
Maputo	3,695	1:1.19
TOTAL	11,048	1:1.0 (average)

Three villages are relatively large, with the largest being Ntete (approximately 4,525 people). The smallest village is Pirira with around 285 people. The total population of all these villages can be estimated at 11,048 people (*de facto* population). The census of 2007 estimates the population of the Balama District at 124,100, which means that these four villages represent 8.9% of the entire district's population. Considering the gender ratio, it is apparent that females out-number males slightly, with the exception of Nquide, where women represent 49.2% of the village's gender make-up. Generally, with an average male-to-female ratio of around 1:1.0, the data is similar to the data of the district (also with a ratio of 1:1.0). The following four figures (figures 5.1-5.4) depict each village, in addition to its key infrastructure.

[4] The information displayed in Table 5.1 was provided by the chiefs. Although data was also collected on the number of households in each village, the validity of the data was questioned, and hence excluded from the analysis.

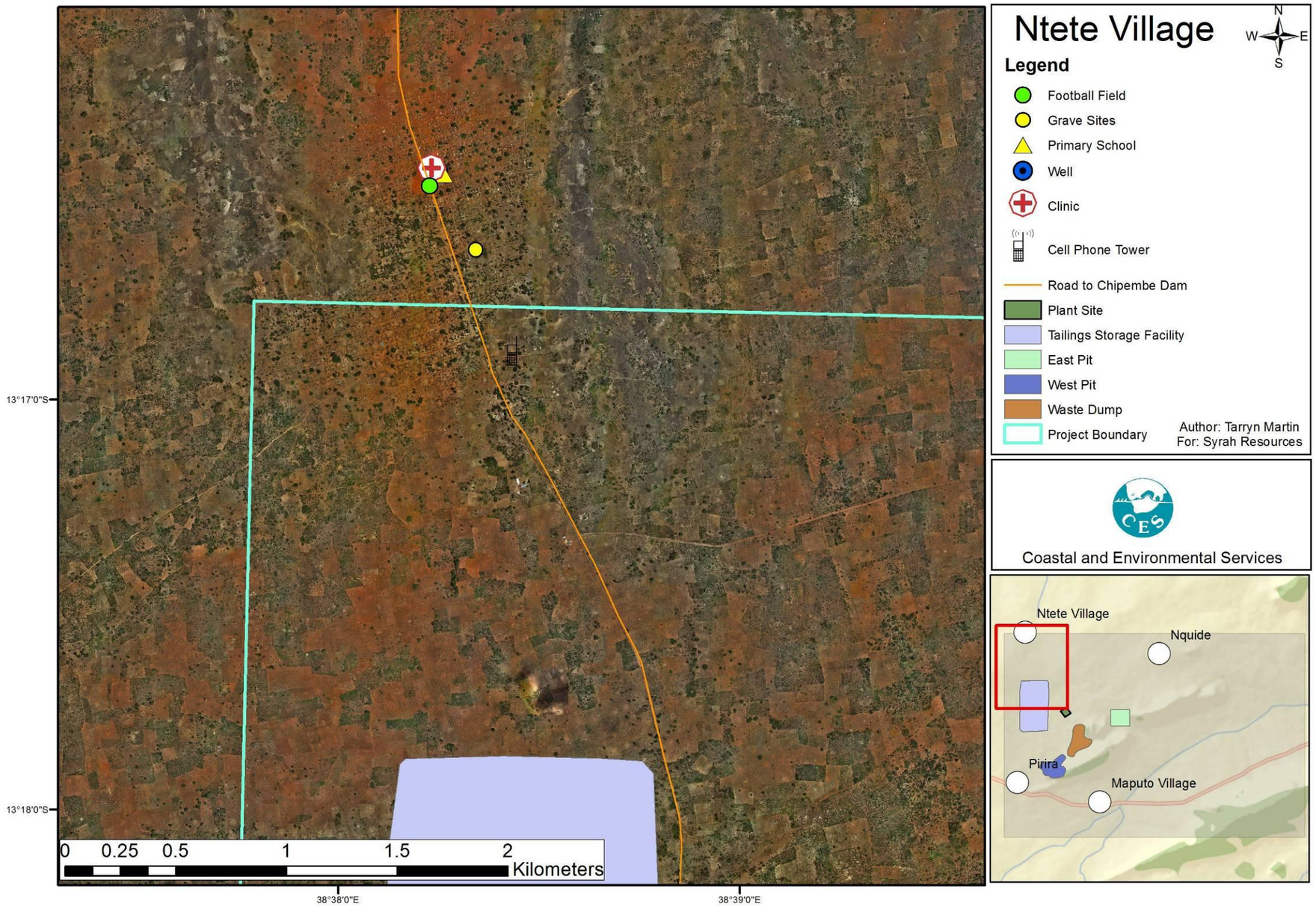


Figure 5.1: *Ntete Village (Mine infrastructural layout date: June 2013. Note that layout has subsequently changed). Refer to Figure 1.2 for a more recent layout.*

The light blue line defines the project site boundary. A large southern section of the Ntete Village will be affected by the project, whilst many machambas are either very close to, or inside, the project boundary and vicinity of the TSF. Since many machambas will be lost and/or affected, economic displacement is therefore triggered by the project, which will require a full RAP to be conducted in compliance with the IFC and World Bank's OP 4.12 on Involuntary Resettlement (2013). In terms of infrastructure (*cf.* Table 5.2), the village has one working well with a hand pump, in addition to several other wells without any pump systems. There is one primary school, a clinic, seven small graveyards, as well as a football field.

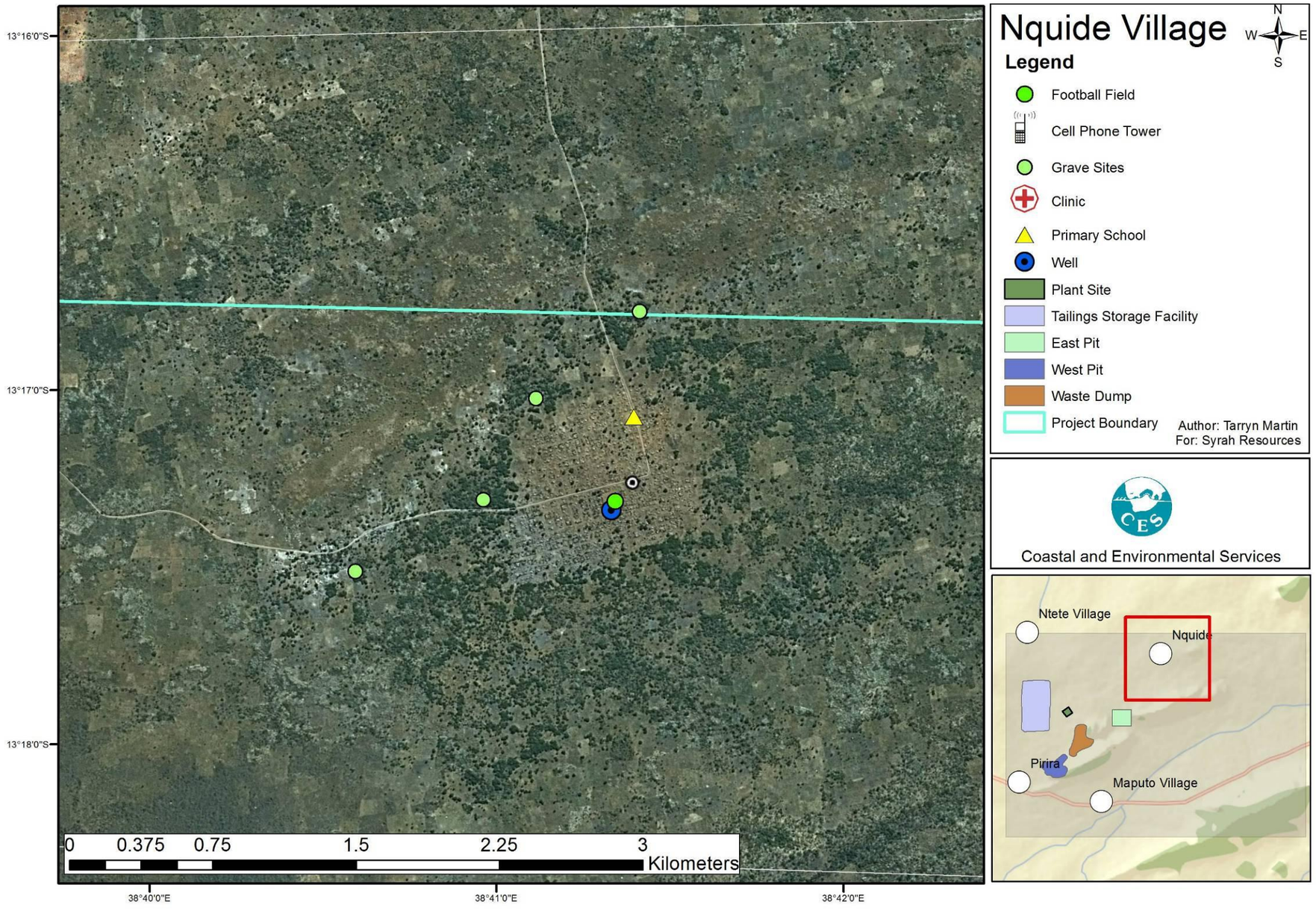


Figure 5.2: *Nquide Village*

As indicated above, Nquide Village is located within the project's AoI. Although not directly affected by any infrastructure, many machambas will have to be economically displaced, and additional farmland will have to be provided for future food security. Considering the village's infrastructure, one working well with a hand pump was recorded in addition to a number of smaller wells without hand pumps. In addition, there is one primary school, four graveyards and one football field.

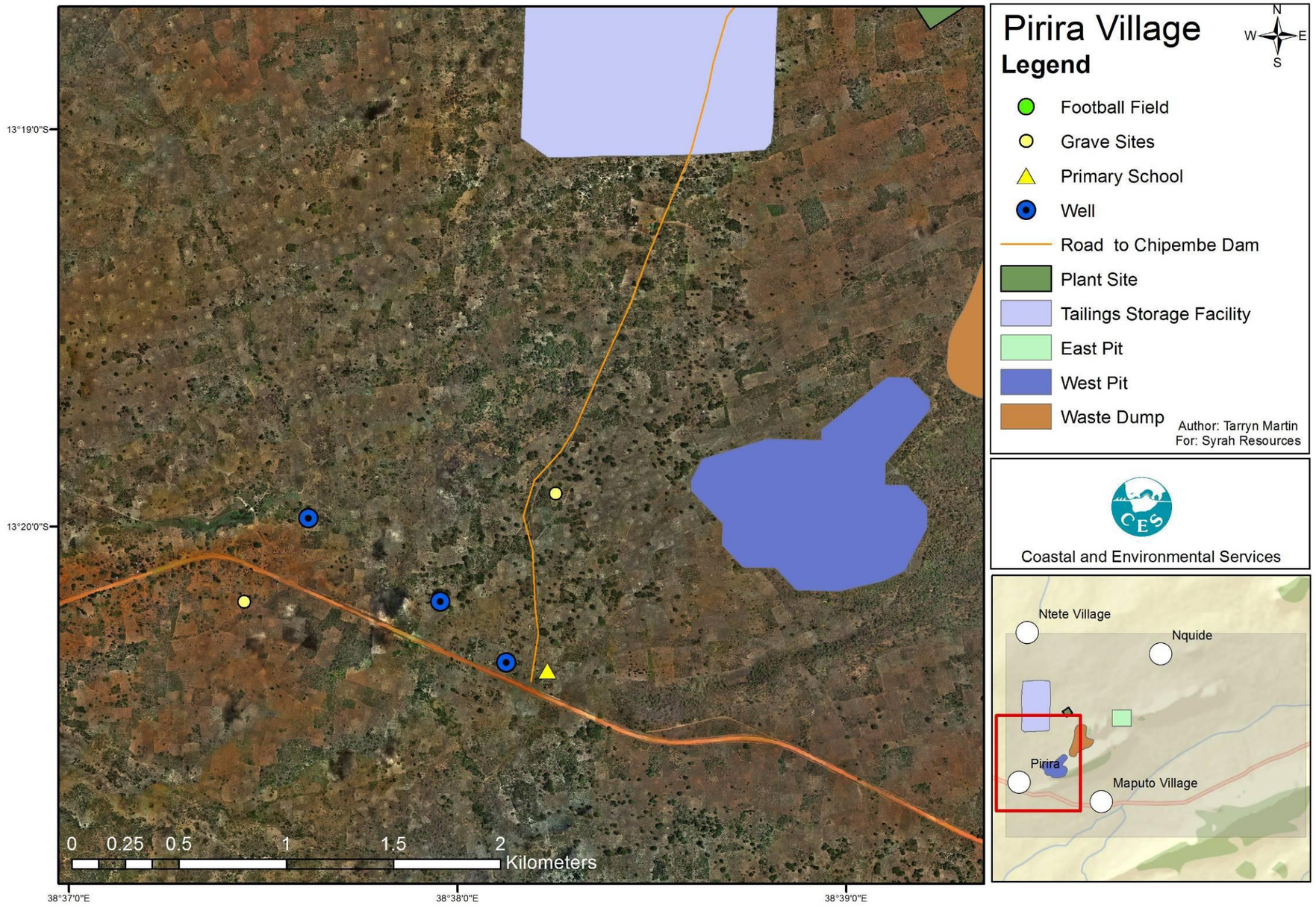


Figure 5.3: *Pirira Village (Mine infrastructural layout date: June 2013. Note that layout has subsequently changed). Refer to Figure 1.2 for a more recent layout.*

Pirira Village is the most directly affected village as it borders one of the pits and TSFs. A significant number of farmlands will be affected and lost by the project's infrastructural developments. Although this village is the smallest, it will most definitely become a central hub around the mining project with the expectation of a significant influx of people. At present, there are two wells with hand pumps which have been provided by the client, a primary school next to the road (R242) and two graveyards; one which might be affected (or even in need of relocation) by the development of the west pit.

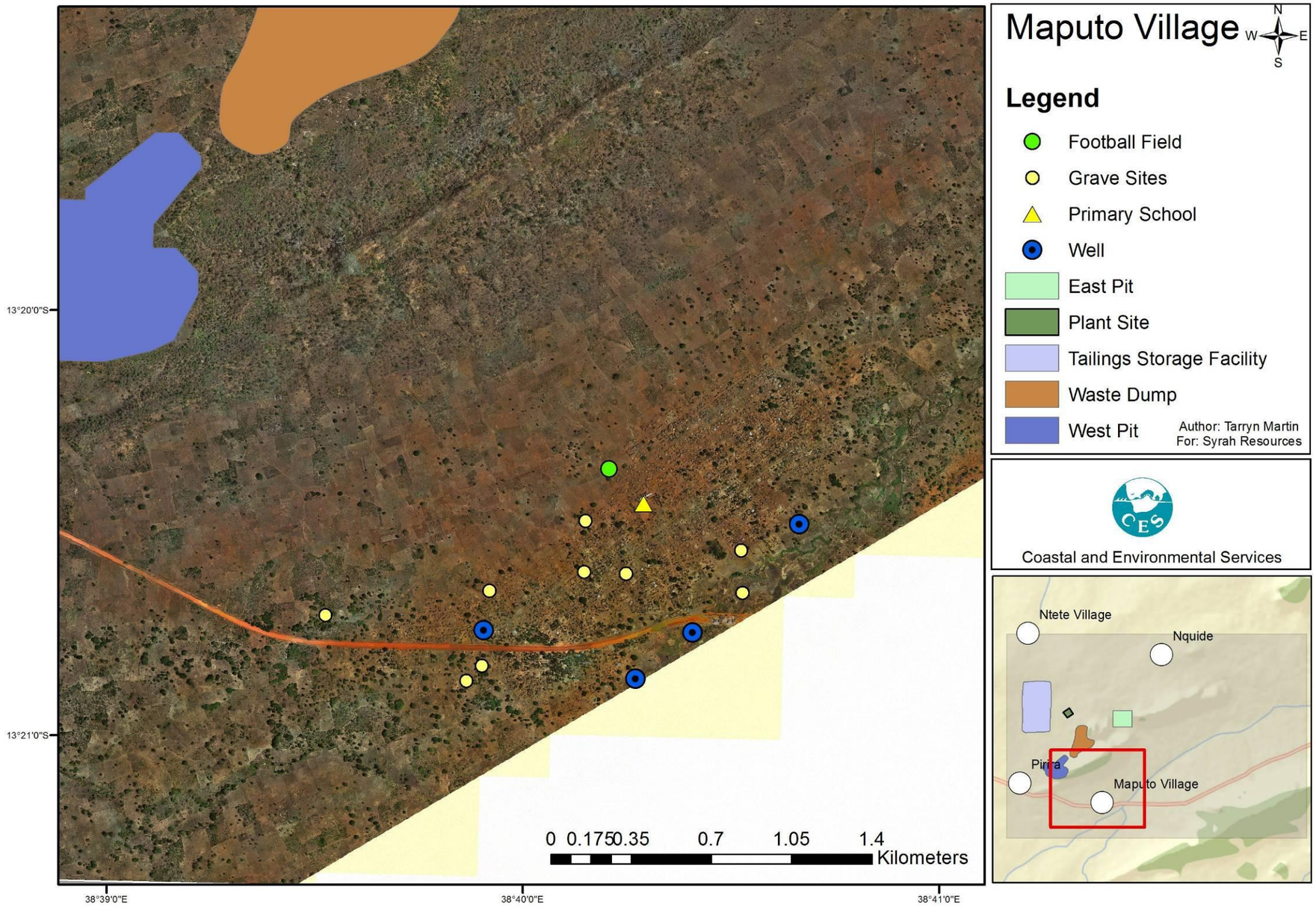


Figure 5.4: *Maputo Village (Mine infrastructural layout date: June 2013. Note that layout has subsequently changed). Refer to Figure 1.2 for a more recent layout.*

Maputo Village is also located inside the project's AoI. Farmland will be affected, which triggers economic displacement. The village is quite linearly developed in a north-eastern direction couched amongst many adjacent machambas. It has four wells with hand pumps, whilst there are several additional ones without pumps. There is one primary school, a football field and nine graveyards.

5.2.2 House Structures

No house has been recorded that is leased, as most seem to be privately owned by individual families under the jurisdiction of the Macua Tribe and chieftancy system. Most house structures (71.7%) have between one and three rooms, 17.0% between four and six, whilst few have more than six rooms (11.3%).

The SEBS was conducted on a sampled 311 households in all four villages. Around 275 of these households (i.e. 88.4%) have between one and two house structures, whilst 116 (37.3%) have between three and four structures. Around 20 (6.4%) have more than four structures (with one household having nine structures). Most buildings are constructed with a combination of mud and sticks, whilst thatch is predominantly used for roof structures. As a natural, sustainable resource, the locally occurring bamboo is also widely used by most as building material.

The figure below illustrates the different usages of each house structure:

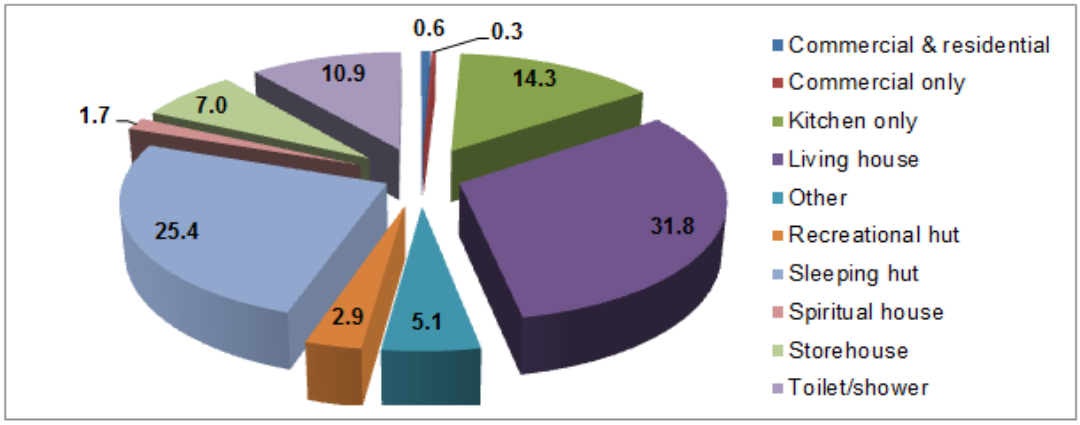


Figure 5.5: *House structure usages (%)*

It is clear from the figure above that around 57.2% of all house structures in these four villages are used as living and/or sleeping huts. This is followed by the third largest category of 14.3% allocated to kitchens, 10.9% to toilets/showers, with the fifth largest category, 7.0% assigned to agricultural storehouses (refer to Plate 5.1 overleaf).

5.2.3 Village Social Amenities and Basic Infrastructure

The table below indicates each village's social amenities, such as working wells with hand pumps, primary schools and clinics, as well as basic infrastructure such as graveyards and football fields. Most of the villages have churches and mosques. No village has any government- or NGO-constructed pit latrines, as each household has its own self-erected latrines with thatch and bamboo coverings.

Table 5.2: *Village Social Amenities and Basic Infrastructure*

Village	Wells	School	Clinic	Graveyards	Football fields
Ntete	1	Yes	Yes	7	Yes
Nquide	1	Yes	No	4	Yes
Pirira	2	Yes	No	2	No
Maputo	4	Yes	No	9	Yes

Plate 5.1: *Left to right: A borehole; A well with a hand pump; and a pit latrine.*

5.2.4 Land

Section 4.3 elaborated upon land issues in Mozambique. As explained, lLand is primarily held by the government, which also legally recognises the role of customary tenure systems. In the rural area studied, although land ultimately belongs to the state, the area is controlled by the chiefs and elders who regulate the land under the custodianship of the Macua Tribe. The tribe does not have legal title to or a certificate for the land (nor does any household seem to have). For the most part, the government's responsibility in terms of land provision revolves around land registration and surveying. The chiefs, elders and men, on the other hand, are responsible for local land allocation.

5.2.5 Migrancy Patterns

All the villagers hail from the Macua Tribe, with Macua as their first language. All the studied villages are permanent and have been well-established even prior to the first Mozambique war. For example, some residents in Pirira recall that their village was established around the 1960s. Most villagers have obtained their land from their respective villagers' chiefs through land which is held under a traditional land tenure system (tribal land).

Most households have been established in the area independently with land obtained *via* the chiefs and elders. A large majority of the households appear to have been established in these villages during the last ten years (62.1%), whilst the remaining households have enjoyed residency in the area as early as the 1960s. Although the physical villages are relatively old, the data reveals that the villages have seen significant growth in the last decade. The war undoubtedly left many households fleeing to the northern Mozambican border, which might explain why so many families returned to these rural areas after 1992.

Little annual migrancy related or permanent social influx into these villages was recorded, although some people in Pirira did mention some minor annual influx of people from different villages around the area. Although no villager elaborated upon migrancy patterns when prompted during the focus group discussion, rural villages are seldom isolated from cumulative development and the broader socio-economic environment.

When farmers were prompted to elaborate upon migrant farm labour during a focus group discussion, some explained that many households in areas such as Montepuez are always looking for farmland in areas such as around Balama with more abundant land available. In consequence, some households in Montepuez (for example) repeatedly send their members to work on farms around the Balama area. Such migrant patterns are not limited to Montepuez, as some farmers mentioned that farm labour is even sent from areas such as Tete Province. This system appears to ensure that households in more urbanised settings remain supplied with agricultural produce. The latter form of farm labour migrancy is most noticeable in the production of cotton, as insufficient land is available in urban areas for households to engage in this industry. Migrant farm labourers are remunerated with money, although clothes and food supplies are also used in exchange for labour. Migrants are normally housed in rural villages without having to pay for accommodation.

5.2.6 Social Conflict

No form of social conflict was recorded amongst the villagers, although small crimes such as theft are always part of any rural community. With the expansion of the area and enlargement of some of the villages, crime might increase. Migrant labour is also expected with the mining development, which might juxtapose with new forms of social conflict or crime, especially since such migrancy patterns tend to produce poverty gaps within communities (some people earning more than others). Any social conflict or crime is usually referred to the chiefs or elders within the studied villages, whilst the nearest police station is located in Balama Town.

5.3 Household Demographics

The table below provides the different age categories for the studied villages, cross-referenced with the district data obtained by the census:

Table 5.3: *Age breakdown*

Age categories	SEBS		2007 Census	
	Nr	%	Nr	%
0-6	371	27.2	37278	30.0
7-18	400	29.3	30597	24.7
19-29	227	16.6	20439	16.5
30-65	326	23.9	32982	26.6
66-90	31	2.3	2739	2.2
91 +	10	0.7	65	0.1
TOTAL	1365	100.0	124100	100.0

What can be deduced from the table above, is that a majority (56.5%) of the four villages' members seem to be 18 years or younger. This corresponds favourably with the census data for this age category (54.7%). About 29.3% of the villages' population are of school-going age (between seven and eighteen years), very similar in relation to the census data (24.7%). Very few people are above 90 years, whilst a large bulk of the population can be categorised, based upon the SEBS and census data, within the working-age brackets of roughly 18 and 65 years (40.5 and 41.1% respectively). This means that employment opportunities are needed to sustain a large unemployed (not accounting for self-employment), working-age group, as well as a significant youth population.

5.4 Household Dynamics

5.4.1 Membership

The study calculated the average household size at approximately 4.4 members per household (*de facto* population). This figure is aligned with the data obtained by the census, indicating that around 50.0% of the households in the district have between four and six members. Such large household sizes are suggestive of the extent of area's poverty, especially since it is known that employment opportunities are limited in the area. As determined later in this chapter (Section 5.6.1), the unemployment rate (calculated as a percentage of the labour force), which here excludes self-employed farming members, can be estimated at around 21.7%. Although agriculture generates the largest bulk of the income received, this high poverty rate (only considering unemployment here, which is, in fact, a narrow definition of poverty) still reveals high inter- and intra-household dependency ratios, as the unemployed labour force places a much heavier burden on the actively employed members in terms of meeting daily costs associated with nutrition, healthcare or education (*inter alia*).

Although the number of males and females is nearly equal, household roles are not equally distributed. The SEBS revealed that male-headed households account for around 87.1% of all households. The 2007 census estimated that the district has around 68.8% male-headed households, which means that more households seem to be male-headed as opposed to female-headed around the project site. Although speculative, this data might indicate the extent to which these villages are patriarchal in their culture (refer to the next section), as well as the dominant role which men play in decision-making and leadership in the area.

The majority of the study population appears to be closely related family members consisting of parents and children within households. Approximately 277 of the 311 households assessed are married by traditional custom (i.e. 89.1%). This data makes sense as no significant in- or even out-migration has been recorded in these villagers in the last 10 years.

5.4.2 Decision-Making and Social Roles

In many rural African villages, gender and age-related variables play a central role in the distinction and delineation of social roles and responsibilities. Often, women bear the responsibilities of general household-related chores which involve cooking, daily wood and water collection, but also particular agricultural activities. Men, alternatively, are usually tasked with hunting, foraging, agriculture and decision-making. As a result of this, social exclusion (especially young women and girls) is known to persist, especially in rural areas where gender-related roles are strictly defined and culturally still implicitly enforced. As explained in Section 4.3, such differentiation is also strongly reinforced in land tenure systems, where African women are known to have little authority in land decision-making, acquisition or tenure (*cf.* Arndt, Benfica and Thurlow, 2011). Yet, women are largely responsible for household nutrition and food security. Personally spending a lot of time in African rural villages, the report writer has seen children call upon their mothers when they are hungry, often afraid to do so in front of their fathers. Women are therefore in the front lines when food insecurity affects a household.

Social roles are not only defined across gender lines, but also across age groups. During the focus groups, men and women were asked to list their daily tasks in an effort to ascertain gender and youth roles. From the discussions it is clear that agricultural-related work (brushing, ploughing and planting, for example) is largely shared between all household members, although onerous tasks, such as tree felling, tend to be performed by men. Women are predominantly responsible for working in machambas, cooking, washing and looking after the children. Girls also assist with child rearing and daily food preparation. Men are tasked with working in machambas and looking after livestock. Shelter-building is also a chore largely assigned to men. In addition to agricultural work, the youth are said to bear the responsibility of cleaning the villages, foraging and collecting fuel wood for selling. During the survey period, young men were also frequently seen hunting and foraging. Men tend to enjoy higher seniority and status (especially elder men), whilst they are also responsible for conflict and dispute resolution, as well as decision-making.

5.4.3 Vulnerability Assessment

5.4.3.1 Overview

In any particular community, certain sections of the population are more vulnerable to change, having to adapt or mitigate their livelihoods in response to a new environment. Development always brings about a changing environment, whether this is positive or negative, and forces communities to adapt or diversify their livelihoods to accommodate such changes. The World Bank defines vulnerable or disadvantaged groups as children, orphans, refugees, women, the disabled and/or the elderly. Although generalisations should not be made, such groups have been shown to be susceptible to vulnerability, as they have been traditionally ignored, side-lined or marginalised in past development initiatives. These groups also exhibit particular traits which make them more vulnerable when a particular socio-environment changes. Children, for example, lack sufficient coping mechanisms to allow them adapting to a changing environment. Similarly, due to their

generally lower status in rural communities, women are time often marginalised and negatively affected by projects.

Assessing the vulnerability context of a project's PACs has become increasingly important in SIAs, as special mitigation measures need to be in place to ensure that developers pay attention to the needs of these groups. Project guidelines should be provided in order to mitigate the negative impacts which are especially hard-felt by these groups. More importantly, as many of the studied households face economic displacement (i.e. the acquisition of their machambas by the project) and involuntarily resettlement, such groups may be unevenly affected. Three categories are briefly considered below, namely the elderly, women and children, and the disabled.

5.4.3.2 The Elderly

Table 5.3 indicated that around 3.0% of the population are above the age of 65. Although in the minority, these citizens should be considered as vulnerable for several reasons. In the rural context of the study site, households headed by people over the age of 55 could be regarded as vulnerable, due to poor health and nutrition. One reason is that the elderly normally require additional healthcare services, especially in consideration of the poverty stricken circumstances these residents live in. Any project-related impact should thus consider the older community members. Moreover, the older generation in these areas suffer from joint pains and additional ailments, all which impede their ability to react swiftly in response to increased traffic. Another reason is that the elderly enjoy high status in their culture, and continue to provide leadership and make key decisions. Any project-induced impact, therefore, will be directly felt by the elders, who are usually responsible for decision-making and, especially, conflict resolution. In EOH CES' experience, development projects, particularly resettlement, can significantly undermine the authority and leadership effectiveness of the older generation of leadership.

In addition, due to the lack of hospices and state services for senior citizens in the area, families typically assist their elderly relatives. Given the strong social fabric and cohesion in the area (and a culture of respect for one's elders), during the focus group discussions, most acknowledged that senior citizens rely on family members for assistance and old-age care. No support is provided by the state. Consequently, especially for the RAP, specific attention will be paid to ensure that the elderly are not negatively affected by the project.

5.4.3.3 Women

The SEBS revealed that the male and female populations are nearly equal, whilst a significant 12.9% of the households are female-headed. Although this might be a speculative statement, there is room to argue that these villages are still patriarchal, based upon the role men have in terms of dealing with the finances. Female-headed households are especially vulnerable to any project-induced impact, especially resettlement or economic displacement, for the following reasons:

- In addition to heading the household, women are also responsible for everyday household chores, such as washing clothes, collecting wood, cooking and looking after the children. This means that females who head households have to work harder; and
- Therefore, this added responsibility compounds the poverty burdens experienced by female-headed households, as they are then also responsible for chores normally considered male predominant tasks, such as household finances, agriculture, decision-making and homestead maintenance (replacing cracked walls and thatch roofs etc.).

Such vulnerability (related to added responsibilities) is compounded by land insecurity in Mozambique, where women are typically not afforded the opportunity to own land, and risk being deprived of their central income-generating source. This risk in the project area is high, as most households practice subsistence agriculture. Land provides the primary source of income, but above all, food. Women are normally the first to have to deal with food insecurity and malnourished

children [see, for example, Gladwin *et al.* (2001) on the role of African food security and livelihood strategies of rural farmers].

5.4.3.4 Children and the Disabled

In Mozambique, youth can be defined as those between the age cohorts of 15 and 30 years (CASE, 2002). Using this definition, the SEBS estimated the youth population at around 25.8% of the population of the villages. It is to be expected that such youth would be actively seeking employment opportunities. Youth members might demand employment opportunities as an income diversification strategy. A lack in proper government supported education and healthcare services expose the majority of the children in the study area to a host of vulnerabilities, such as illnesses and non-literacy. Moreover, children are often called upon to contribute to household incomes, such as to sell agricultural produce.

In the region, children, notably young girls, are vulnerable to sexual exploitation, especially since some migrant male workers can be expected to influx some of the villagers either seasonally or permanently. Such children are known to be more vulnerable to the spread of HIV/AIDS, where infection rates might be higher.

Lastly, approximately 50 disabled household members have been recorded, which converts to around 3.7% of the entire study population. Such disability could be a direct consequence of the war, such as amputation or blindness, but can also engender other forms of disability, such as deafness, paralysis or mental illness. Based on the 2007 census alone (herewith for the entire Balama District), the figure below lists the recorded as disabled in the district in these afore-mentioned categories:

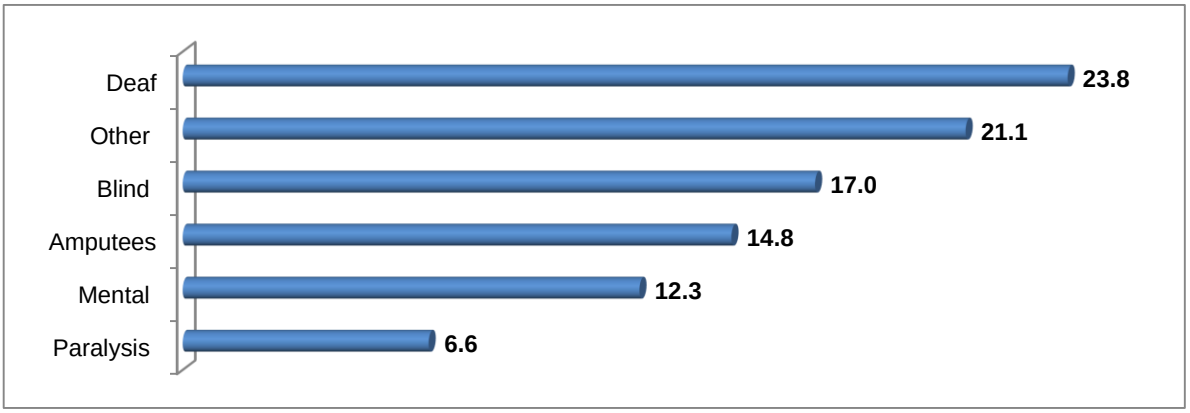


Figure 5.6: *Balama District disability analysis* (%)*
**Source: 2007 census (Republic of Mozambique, 2007)*

5.5 Socio-Economic Living Conditions

5.5.1 Education

As indicated in Table 5.2, a primary school is located in each of the villages. The table below shows each school, the number of enrolled children, as well as the number of teachers:

Table 5.4: *Primary schools*

Village	Nr of enrolled children	Nr of teachers
Ntete	753	14
Nquide	556	6
Pirira	250	3
Maputo	601	12

The schooling system in Mozambique consists of primary and secondary school. Primary school encompasses grades one to seven, whilst enrolment commences at the age of six. Children are enrolled in secondary school (grades 8-12) at around 12 or 13 years of age. According to some of the principals in the study area, although children are enrolled, the attendance rate is low as enforcement is slack. One reason for this might be the fact that the greatest majority of children have to walk to school. The educational status of the village members above the ages of 18 years is provided in the table and figure below:

Table 5.5: *Educational status (above 18 years of age)*

Education	*N*	%
None	339	55.8
Some primary school	223	36.7
Completed primary school	20	3.3
Some secondary school	22	3.6
Completed secondary school	3	0.5
TOTAL	607	100.0

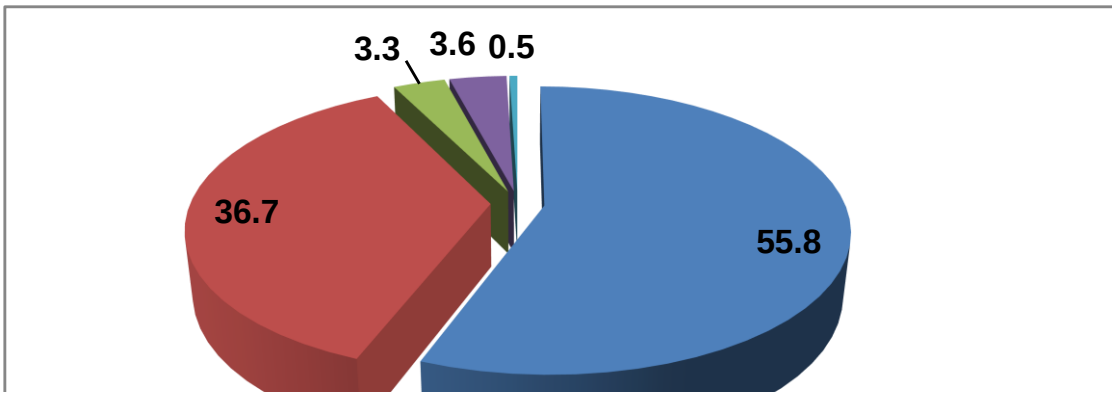


Figure 5.7: *Village educational status (% of those above 18 years of age)*

As can be deduced from the figure and table above, data from the SEBS indicate that, of those members above 18 years, a significant 55.8% do not have any education. Approximately 3.3% only completed primary school, whilst a near similar 3.6% completed some secondary school. Yet, around 36.0% of the households indicated that their children will be send to Balama for secondary schooling. Apart from Balama, a secondary school is also located in Montepeuz. In the absence of a public school bus system, a serious constraint in attending secondary school is the distance to Balama and Montepeuz, as few households can afford transport. This might explain why only 36.0% affirmed that their households' children will be sent to secondary school; with most mentioning the school in Balama.

Respondents were asked to elaborate upon each household member's occupational status in an effort to determine which children are actually attending school. Reinforcing the principals' concern that school attendance is slack, a significant 44.3% of household members within the age cohort of six and 18 have not been identified as school-going, but rather as contributing to general household chores, such as farming (amongst others). It should be noted, however, that this percentage might be lower, as respondents might have neglected to mention that their households' children are attending school. Respondents were also asked whether, in general, children attend school in their area. To this question, a low 73 of the 311 interviewed households (i.e. 39.5%) were affirmative.

The data from the 2007 census points out that around 15,957 district children between six and 18 years are not attending school (i.e. 27.7% of this district age bracket). Of these 15,957 children,

9,144 are young boys, which accounts for 57.3% of those members who are not attending school. The finding that few children, especially young boys, are attending school, is strikingly significant, as many young boys are sometimes withheld from school to assist on the machambas, or herding cattle and goats.

5.5.2 Water, Sanitation and Waste Disposal

Although project information suggests that water will mainly be extracted from the Chipembe Dam, several factors should still be discussed in the event where water might also be extracted from the surrounding area (especially during the project's construction phase).

Factors to consider here include the local rivers which are used by the villagers, as well as the well and borehole locations and depths. Most villages in the district have centralised borehole water points, whilst many have constructed wells with hand pumps. Through water committees, villagers are often involved in the management of these water points, with the provision of training in water point maintenance. Such village-level committees have been shown to increase the prevalence of functional water at such points throughout the year (CARE, 2012). Moreover, empowering women to act on such committees has also been shown to increase water prevalence at designated points by up to 41.0% (*ibid*.), presumably as women are traditionally the water collectors and carriers.

Wells with hand pumps have been constructed in all the villagers. In addition, all villages have several boreholes without hand pumps. These wells with hand pumps are depicted in Figure 5.8 overleaf. The table below provides the coordinates of each well with a hand pump:

Table 5.6: *Well with hand pumps coordinates*

Village	Latitude	Longitude
Ntete	13°16'25.40"S	38°38'12.01"E
Nquide	13°17'18.54"S	38°41'17.88"E
Pirira	13°19'58.02"S	38°37'35.39"E
	13°20'10.36"S	38°37'56.02"E
	13°20'19.38"S	38°38'6.33"E
Maputo	13°20'28.24"S	38°40'38.34"E
	13°20'43.70"S	38°40'23.09"E
	13°20'50.44"S	38°40'15.16"E
	13°20'43.94"S	38°39'53.23"E

Respondents were asked to indicate which water source their household uses. This data is depicted in the figure below:

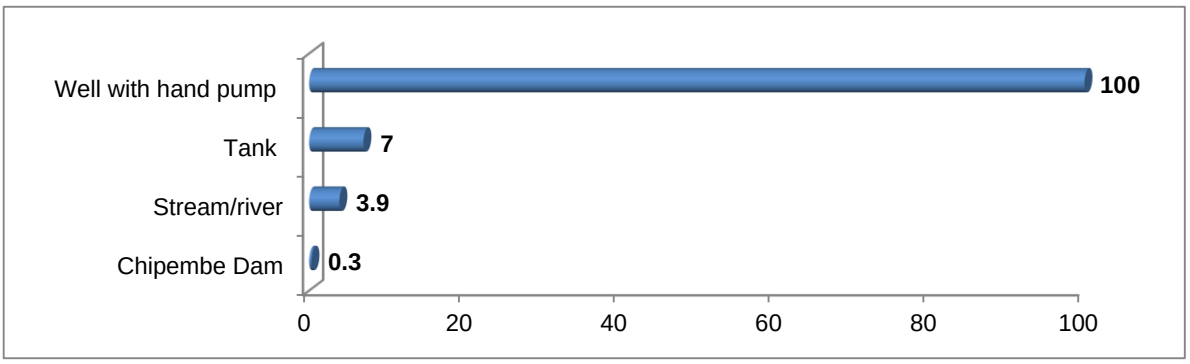


Figure 5.9: *Village water access and usage (%)*

As depicted, all households make use of the wells with hand pumps, whilst less utilise tank water (7.0%), smaller river streams (3.9%) which are more used for bathing and washing clothes) or the Chipembe Dam (0.3%). Being located relatively far from the villages (about 6km from Ntete, refer to Figure 1.1), the Chipembe Dam is not really used by any households, although some nearer to the dam might use the water for their machambas and livestock.

When asked about the quality of the water from the wells, 89.4% of the households remarked that the water is always drinkable. However, during the focus group discussions, many expressed concerns regarding future water availability and the quality thereof. Many villagers requested the developer to construct more wells, as some claim that water access is unreliable during the dry season. Figure 5.15 provides all the identified wells and hand pumps.

Lastly, in terms of sanitation and waste disposal, the bulk of the households use their own self-constructed pit latrines (84.6%), whereas a vast majority burn their waste (66.9%). Some also bury their waste, whilst a few use such waste to feed their livestock.

5.5.3 Energy

There is no government-provided electricity in the area. The only form of electricity is from generators or solar panels, lanterns, wood or charcoal. Access to energy sources is indicated in the figure below:

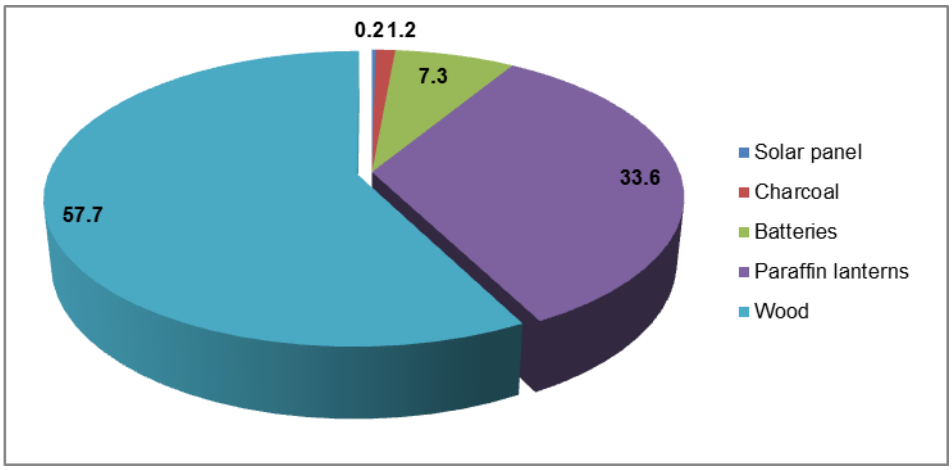


Figure 5.10: *Village access to energy sources (% of all sources listed)*

As illustrated above, of all the sources listed, the usage of wood as an energy source was listed by most households (57.7%). This means that wood and, ultimately, forested areas provide important ecosystem service to these rural villagers. In this capacity, many trees are used from the surrounding Graphite inselbergs, which provide fertile land for the trees to grow. Therefore, the mining project will have a significant impact on this ecosystem service, as a substantial amount of trees will be felled on the Nassilila and Corongo mountains Using wood for energy is followed by paraffin lanterns (33.6% of all the sources listed), whilst other energy forms, such as batteries or charcoal, are limited. Charcoal is rarely used by households themselves, as it is a significant income source for many who sell this via/as street vendors next to the road.

The dependence of wood from trees for household energy sources is substantial, and confirms villagers' dependence on natural resource-use. Some of the local trees harvested for wood include the locally named Mbekela, Mrepe, Nkerara, Titibe or Miko trees. The rate at which locally occurring trees have been reduced in the area is noteworthy, mostly from eye-witness accounts. To a large extent, the area's flora and forests have largely been stripped by local resource-use, leaving only mountain remnants of landscapes covered in the past. Yet, some trees are not felled as they either have cultural significance, or have been introduced in the area for economic purposes (such as the Cashew).

5.5.4 Communication, Markets and Transport

As part of the survey, respondents were asked to elaborate upon the means used to receive or convey important information or news. The radio is predominantly used for this means, whilst the elders and/or chiefs are important information bearers. The local radio station is called Mpharama, with broadcasts in Portuguese, Emakwua and Makonde. As depicted in Figure 5.1, a cell phone tower is located in Ntete, with network coverage of the entire area. In terms of markets, most villages have their own shops. Items sold or bartered vary from food items and agricultural produce to charcoal, medicine and general equipment. For a wider range or bulk grocery items, most villagers frequently travel to Balama, mainly on a monthly basis. Men and women seem to share this duty, although women are primarily responsible for obtaining food-related items.

Plate 5.2: *Local village shops*

The primary mode of transport is bicycles (51.0% of households use bicycles), whilst walking is still the predominant means of mobility. Some also use local taxi services, although this is an expense few can afford. Even though regularly graded, the gravel roads, such as the main R242 and smaller village-feeder roads, are frequently in a deplorable state, especially after heavy rains during the wet season (December-March). It is therefore unsurprising that, during the focus group discussions, most attendees requested road upgrades, drawing attention to the bad road conditions.

As most villagers do not have access to vehicles, most walk alongside or in the road. In addition, house structures and machambas are very close to the roads, which increases the risk of road accidents or farmland disturbance. Regularly seen alongside the road are also young herdsmen with flocks of goats or sometimes cattle. A major concern here is children playing in the streets or walking to and from school. For these reasons, under the impact assessment chapter (Chapter 6), increased road accidents, health impacts and related socio-economic disturbance have all been flagged as significant potential impacts of the project

5.6 Household Livelihood Strategies

5.6.1 Occupation

During the focus group discussions, most attendees pointed to the fact that there are no formal employment opportunities in the area. For this reason, many village members, especially the youth, are forced to search for work in areas such as Montepeuz or Pemba, where some eventually migrate to in search of work.

Using the data from the survey as a baseline, the strict unemployment rate can be calculated. This rate is expressed as a percentage of those who are employed (i.e. earning a salary from formal or informal work) in the labour force. The labour force, on the other hand, constitutes village members in the working-age group (internationally accepted as between the ages of 15 and 65), who are capable or willing to work (this excludes home seekers or people who are self-employed, on-farm workers not earning a salary). Using this definition, the unemployment rate can be calculated at roughly 21.7%. The unemployment rate in Mozambique in 2012 was estimated around 27.0%, with most employed people living in urban areas (Macauhub, 2012). The unemployment rate is

therefore high, demonstrating the limited employment opportunities in the area and degree to which subsistence farming forms the principal livelihood strategy.

The table below depicts the employment sectors of the Balama District:

Table 5.7: *Balama District employment sectors**

Sector	*n*	% (of total *n*)
Agriculture, forestry and fishing	50091	95.4
Trade, finance	1000	1.9
Other services	486	0.9
Manufacturing industry	382	0.7
Administrative services	264	0.5
Construction	167	0.3
Unknown	58	0.1
Extraction of mines	28	0.1
Transport and communication	23	0.0
Energy	7	0.0
TOTAL	52506	100.0

**Source: Census 2007 (Republic of Mozambique, 2007)*

The table above illustrates that local agricultural production is the mainstay of the local economy, as it employs the bulk of the labour force. The data from the SEBS confirmed these district statistics, illustrating that a significant 306 of the 311 households interviewed (i.e. 98.4%) practice agriculture. As already mentioned, very few households have employed members (only 12 employed people have been counted). This number might be slightly more, as informal piece-jobs, such as drivers or some construction-related work, might be under-reported. Those who are employed are either absorbed in local construction work (such as road upgrading projects in the area, for example), or render their services to government-related sectors, such as the educational or health sectors.

5.6.2 Income and Expenditure

During the survey, respondents were asked to indicate how much income their households receive from a variety of sources. The table below portrays the types of income received against the number of household members who indicated each type of income source:

Table 5.8: *Household incomes*

Household incomes	*n* of households	% (of total households)	Average monthly income (MZN)	Average income (US$)
Lease payments	8	2.6	204	6.9
Donations and remittances	19	6.1	605	20.5
Charcoal	22	7.1	402	13.6
Farm labour	36	11.6	170	5.8
Employment or local trading	38	12.2	1362	46.1
Other agricultural-related income	57	18.3	3556	120.3
Productive trees	103	33.1	1270	43.0
Livestock sales	105	33.8	660.2	22.3
Crop sales	139	44.7	3245	109.8

This data is also depicted in a pie chart below:

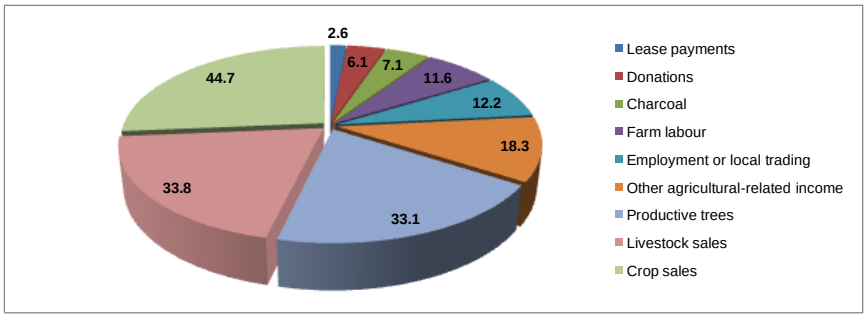


Figure 5.11: *Households incomes (% of households)*

The table and figure above indicate that most households receive an income from agricultural-related work. As a category, this source includes crop sales (44.7%), livestock sales (33.1%) and income derived from households' productive trees (33.1%). The remaining households receive incomes from charcoal (sold next to the roads or in Balama and Montepeuz), as well as employment and donations, whilst very few households receive lease income (when farmland is leased to households). Most households, however, are involved in subsistence farming, foraging and hunting. These livelihood strategies, as will be shown shortly, sustain many rural households who hardly have any economic means.

The average monthly incomes received for each category is also indicated in the table above. The largest income sources are from crop sales, other agriculture-related income (such as selling cotton or cashews to companies or on the streets), employment or local trading (mostly referring to informal trading and markets), selling produce from productive trees, donations and remittances, as well as from charcoal production.

With around 11.6% of all households receiving income from exchanging their households' farm labour, the average income of US$5.8 (for selling labour) might seem insignificant. Yet, the practice of labour exchange (not necessarily for money, but also moral obligation) cuts deep into the cultural practices of Mozambique's rural villages - as has been documented by many social studies. A study conducted by Osbahr *et al.* (2008) in the Gaza Province of southern Mozambique recorded that farm labour is often exchanged between households to cope with labour shortages. Such exchanges are often practiced in group arrangements, whilst food can be used as an exchange for household labour as well. Commonly, labour is exchanged under acceptable reciprocal obligations. The exchange of labour through such obligations has been noted especially in times of economic stress (Osbahr *et al.,* 2008).

Lastly, in terms of expenditure, food, clothes and household material account for most of the households' monthly expenditures. However, expenses related to traditional ceremonial practices and funerals are also significant.

5.6.3 Agriculture and Food Security

5.6.3.1 Overview

Agriculture is an integral part of the villages' livelihoods, and forms the backbone of the area and country's economy. In many cases, poverty and hunger are coupled with villages' yearly agricultural calendars, which means that one year's agricultural harvest can influence poverty and hunger cycles. In illustration, during the wet season (this normally lasts between December and March), households have to plant their produce and wait for harvest, which may only be during the

dry season. Moreover, wet months tend to juxtapose with a spike in waterborne diseases, which means that these months are often those during which households suffer extreme hardship and hunger.

As indicated, a significant 98.4% of the households practice rain-fed, rotational crop agriculture. Water is therefore not really used from the Chipembe Dam or local rivers, such as the Namiticu River, for this purpose. This form of agriculture is practiced in those areas where ample land is still available. The practice is unsustainable, however, in areas where population numbers are increasing and pressure on the natural environment is escalating. Of all the households studied, approximately 306 (i.e. 98.4%) have machambas, whilst most also have smaller food gardens around their homesteads (refer to Plate 5.3 overleaf). Of those 306 households which have machambas and/or food gardens, the largest majority of them (77.5%) have between two and four machambas, followed by 19.0% of these households who only have one machamba, and 0.3% who have five or more.

5.6.3.2 Machambas

Agricultural land (machambas) is mostly independently owned and obtained through the chiefs and local traditional structure. Many inherit their land, whilst a few (around 0.7% of those who have farms) seem to have bought the land from the government. Most machambas are relatively large, with most at least larger than 1ha (this will be confirmed during the RAP). The bulk of the fields are within close proximity to households (between one to minutes' walk), although some fields are more scattered and even up to an hour or two's walk. Agricultural land does not seem to be rented by any household or rented out to out any household either, meaning that farmers have their own machambas. Most households practice shifting cultivation, which entails the clearing of new fields every five to 15 years as soil quality reduces.

5.6.3.3 Agricultural Produce and Exchange

Fields are intercropped with a number of traditional crops, whilst the predominant agricultural activity in the region revolves around maize and cotton production.

Maize and cotton are planted at different times of the year, either on different machambas or the same ones after these have been cleared post-harvest. Cotton production is labour-intensive, and harvests are dependent on the locally available labour supply at the time. Seeds for maize and cotton are frequently distributed by the government through the Ministry of Agriculture (MoA), but also local companies such as cotton producers (Plexus Cotton Ltd.; explained shortly).

Plate 5.3: A) *Ground nuts planted around a homestead; B) Maize intercropped with ground nuts around a homestead; C) A maize food garden; D) Large machambas planted with maize in the background and to the right; and E) A small grain storage structure.*

The table below identifies all the crops that were planted during the time of the survey. This table includes crops that are planted either in machambas or smaller food gardens around homesteads. It should be noted that more than one crop is planted in machambas (intercropped):

Table 5.9: *Agricultural crops*

Crop planted	Nr of surveyed households	% (of all mentioned crops)
Cotton	10	1.8
Millet	12	2.2
Pumpkin	16	2.9
Cabbage	17	3.1
Peas	19	3.5
Cassava	21	3.8
Other	23	4.2
Vegetables	23	4.2
Ground nuts	25	4.6
Tomatoes	43	7.8
Beans	145	26.5
Maize	194	35.4

Clearly noticeable from the table above is the fact that maize and beans were the primary produce being planted and harvested in the area during the survey period in March (61.9% of all the crops listed). Although impossible to predict with certainty, most households seem to cultivate maize (which is seasonal) from around November to February, after which land is prepared for cotton fields from around May to July. Beans are typically intercropped and planted throughout the year. This is followed by tomatoes (7.8% of crops mentioned), nearly equal percentages of vegetables and ground nuts (4.6% and 4.2% respectively), cabbage, peas and cassava (3.1%, 3.5% and 3.8% in this order). Cassava is a versatile and attractive crop to plant in rural areas, as it tends to assist households with overcoming periods of food insecurity, especially during the hunger season (normally the wet season). In this way, producing cassava is a way to supplement or even replace other food sources (*cf.* Prudencio and Ai-Hassan, 1994). Some pumpkin and millet are also harvested. The 'other' row refers to insignificant harvests of rice, pepper, tobacco and yams, for example.

Nearly all (90.0%) the fields identified have been under cultivation in the past year (mostly using hoes). An insignificant 0.6% use commercial fertilisers, which might be the few commercial cotton or cashew producers who sell their cotton and cashews to companies as part of out-grower schemes.

When respondents were asked to explain how they used their previous harvests, more than half of those who have gardens or machambas said that they did so primarily for self-consumption (57.2%). The remaining households use this produce to obtain a small income. Although this is very difficult to ascertain, maize is usually sold for around 5MZN ($0.7)/kg bag. Such prices are also highly dependent on a variety of factors, such as different annual rainfalls, market prices and demands. Harvests are typically sold in Balama or in the villages' own informal shops (normally next to the roads). Cotton is usually sold in large bags to Plexus (a cotton producer) which has an extensively out-growers' scheme concession area around the Balama area. In return, Plexus offers agricultural assistance and provides registered farmers with cotton seeds. At the time this report for compiled, the prices paid to local cotton producers by Plexus was set at 11.5MZN ($0.38)/kg. This price is regulated by the GoM.

Harvests also serve an important function in terms of informal exchanges and bartering. For example, cassava, beans, maize and vegetables are often used for informal exchange between households. This practice is widely adopted in many rural areas where people are accustomed to

barter with agricultural produce *in lieu* of money. The reason for this is that, often, in remote and rural areas, money has a limited function in the absence of large markets and informal trading centres. Agricultural produce and livestock, alternatively, can be used as food supplies, for selling or for cultural purposes. It therefore makes sense that many household rely on agriculture also as a means of informal exchange.

5.6.3.4 Agricultural Calendar

Different crops are planted and harvested during different time intervals throughout the year. This activity seems to be performed by both men and women. The table below roughly identifies different planting and harvest seasons for the most common crops planted:

Table 5.10: *Agricultural crops seasons*

Crop	Start of planting season	Start of harvest season
Cotton	November/December	July
Maize	November	April
Beans	December	March
Cassava	December	July-August
Sesame	January	June

The table above is a generalisation. It should be noted that most crops are actually harvested on an *ad hoc* basis throughout the year. For example, although the estimated harvest season for Maize is said to be around April, entire maize fields are not harvested at once. Cassava is another point in case, as this crop is actually harvested throughout the year.

Information on this 'agricultural calendar' is important for the developer to take note off, especially in order to understand how the mining project will affect the villages during particular periods of the year.

Although it is very difficult to generalise, it seems that November to April are the crop planting seasons, which coincides with the rainy months. For the most part, the majority of rural households in the area plant their maize in November and harvest it from April. The dry months are normally associated with harvesting and selling produce.

5.6.3.5 Economic Trees

Apart from agricultural produce, households are also reliant on productive trees, which many tend to grow in or around their homesteads. Income from such fruit can be significant, and a major economic contributor during poverty cycles and hunger months (Table 5.7 indicated that 33.1% of households obtain an income from productive trees). The figure below depicts the percentage of households who have different types of productive trees:

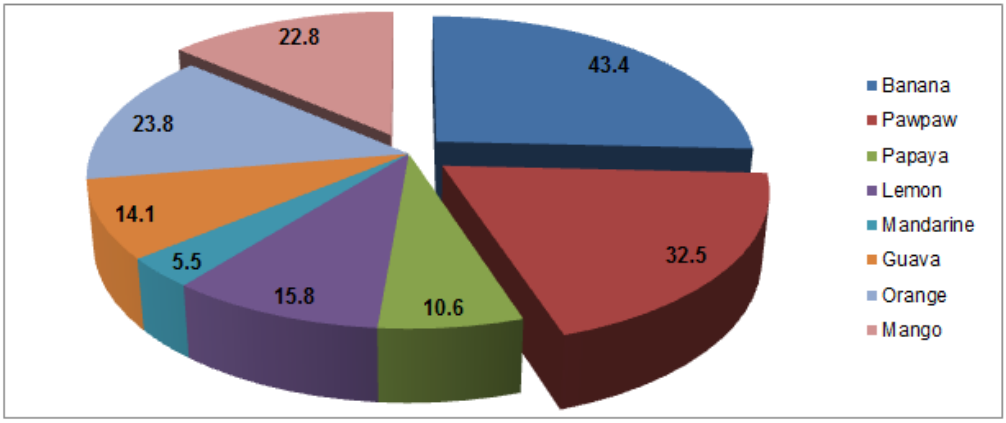


Figure 5.12: *Productive trees (% of households)*

As can be seen from the figure above, the largest categories of productive trees owned by households include banana (43.4%), pawpaw (32.5%), mango (22.8%) and orange trees (23.8%). Considering these four largest categories, around half of those who have pawpaw trees own one, for banana trees more than half have between one and 20, for orange trees this is between one and two, and between one and three mango trees are owned by more than half of those who have such trees.

Few households own guava, papaya, lemon and mandarine trees. Productive trees are usually planted close to homesteads and are used for subsistence and commercial purposes. Most of these fruits are sold individually for anything around one to five Mozambican Meticals (MZN), or between US$0.03-US$0.17.

5.6.3.6 Animal Husbandry

Rural households diversify their income-earning activities, as part of a coping mechanism with regard to a particular socio-economic shock (or condition); be that drought, a poor yield or inaccessibility of markets (*cf.* Barrett, Reardon and Webb, 2001). With the development of the mine, it should be expected that households might rearrange their income-earning activities to respond to the changing socio-economic conditions. However, the cultural value of livestock is also significant in rural Mozambique villages. For example, not only is livestock such as chickens or goats used for bartering purposes, goats and cattle in particular are culturally valued and used in a variety of traditional ceremonies and for bridewealth[5].

In many parts of Mozambique, having a reliable source of disposable assets such as livestock (goats, for example), is often an essential strategy for households to cope with serious socio-environmental disturbances (*cf.* Osbahr *et al.,* 2008). Animal husbandry is widely practiced in Mozambican rural villages. Livestock provides a vital household economic and food security asset, especially in times of economic stress. However, as noted by Osbahr *et al.* (2008), the Mozambique war affected this practice dramatically, as heavy cattle losses have been documented, compounded by the 1983 drought (*ibid.*). Even today, many households are struggling to retain the number of cattle which they once had.

Table 5.8 indicates that approximately 33.8% of households obtain an income from livestock sales of some sort, whilst the average income derived from this is around US$22.3 per month. Clearly, animal husbandry forms an integral part of these villagers' livelihoods, which needs to be factored into the project design, due to possible impacts.

The SEBS identified 198 households which were engaged in livestock farming. This represents 63.7% of all the households studied. The figure below displays the different livestock raised as a percentage of *these* 198 households:

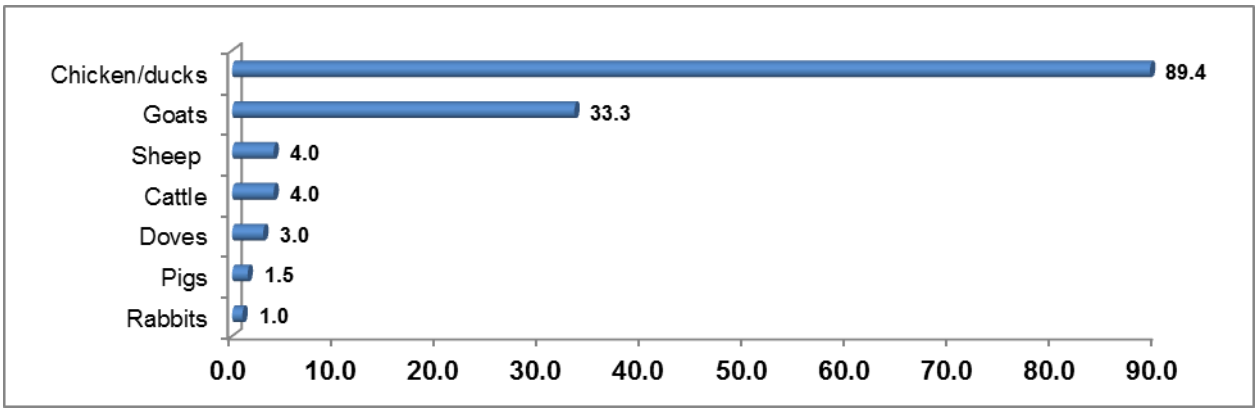


Figure 5.13: *Livestock raised (% of households who are engaged in livestock production)*

[5] Bridewealth is a traditional system where women are paid (normally with cattle) for their hand in marriage.

Plate 5.4: *A) Doves kept as poultry in Ntete; B) A flock of goats being herded by young boys in Maputo alongside the R242 to Balama; C) A bull being guided by young men in Ntete; and D) A goat enclosure in Maputo.*

At approximately 89.4% of those households who are engaged in livestock production, chickens and/or ducks are kept by an overall majority. This is followed by a third of these households who own goats, followed by similar percentages for sheep and cattle. Some households also have doves, whilst one or two keep pigs and rabbits.

Chickens and ducks are largely kept for subsistence and commercial purposes, which explain why the average number of chickens/ducks raised is 6.2. Goats are also raised for self-consumption and local bartering, which again explains why so many are kept by households (on average around 4.9). Lastly, some sheep are usually kept for selling and making wool products, whilst owning cattle is largely for economic reasons, but also for cultural practices, such as bridewealth.

No household in the area indicated that their cattle or goats have specific grazing grounds or large enclosures outside the parameters of homesteads.

5.6.3.7 Food Security

In terms of food security, in rural areas, selling agricultural produce is always an attractive and often tempting means to obtain needed income. However, the reality of selling such produce is that food security always remains a challenge; a situation which is most prevalent during the rainy season when fields are not ready for harvesting. It is impossible to estimate the degree of food security amongst the households without a nutritional study. However, instead, households were asked to list the months which bear the highest potential for food insecurity. To this question, most indicated the months from January to March, which are the wettest months just before the dry period sets in. This finding makes sense, since few households are able to harvest during the wet season. Many respondents also referred to floods which were experienced in the last few years; intense rainfall which affects harvests significantly. In this view, many stressed that they are, in fact, food insecure, as families struggle to obtain sufficient harvests to sustain their households.

As most of the farms are rain-fed, any climatic variability or change in water availability will directly affect these households' food security. For example, some farmers noted that the last few years have become drier in comparison to previous ones. Such changes are hardest felt and experienced by poor villagers, who are often ill-equipped to diversify their livelihoods amidst external changing forces, whilst many also do not have the means or agricultural equipment to alter their production regimes. Coupled with land acquisition and accompanied agricultural land-loss, many villagers might be forced to broaden or change their livelihood strategies significantly. While the project may well provide local employment, with positive results, this may also reduce the number of households who used to be self-employed on-farm workers, or reduce the local farm labour pool. The farming system is labour intensive (especially the cotton and maize productions). Therefore, the developer will need to consider supporting the villagers' primary agricultural-related livelihood strategies to ensure that food insecurity does not become a reality.

5.6.3.8 Plexus

As explained in the literature study, cotton production is a significant industry in Mozambique. Several companies are engaged in cotton production with associated out-grower schemes to assist the local villagers with their own cotton production. Of several cotton producers in the Cabo Delgado District, Plexus Cotton Ltd. has cotton concession areas in the district (as well as in the Nampula Province). The company works with around 70,000 local farmers, and is one of the biggest single employers and commercial enterprises in the region (Plexus Cotton Mozambique, 2013).

A meeting was held with a representative of Plexus on 11 July 2013. According to the informant, the company supports local farmers in the Balama District. The process involves farmers who need to register with Plexus through a *Chef de Produção.* These are chief producers elected in each village by the villagers. These producers can be seen as the liaison agents between the villagers and Plexus, and register the farmers. Above these agents, the Balama area also has two supervisors who oversee the process and monitor cotton fields. The price for cotton is set by the

GoM who regulates this price in accordance with international market value. During the harvest season, registered farmers are supplied with bags which they fill themselves. These bags are then weighted by company workers who collect these bags next to the roads. A credit system has also been incorporated into the company's operational procedures, especially if registered farmers need fertilisers or additional support and seeds.

The informant was asked how much cotton was produced this year by each of the affected villages. According to data from Plexus, at the time of compiling this report, Pirira Village produced no cotton, Ntete produced a combined 157.075kg, Nquide 109.775kg and Maputo 71.200kg. No income has been received by farmers from Plexus this year, as fields were still being harvested at the time. This data should be used for future monitoring purposes to establish whether the villages' cotton production declined subsequent to the loss of machambas as a result of the mine.

Supporting women producers is also high on the company's agenda. According to the informant, the company always attempts to involve more women, supporting them especially to register with Plexus. To date, involving women has been rewarding, as more women seem to be taking ownership of their own cotton farms.

5.6.3.9 Agricultural Challenges

During a focus group discussion with farmers on 10 July 2013, farmers were asked to explain some of the challenges which they are experiencing with their farming. To this question, most mentioned that their current mode of cultivation (i.e. using hand tools such as spades, hand axes and ploughs) debilitates them from engaging and being more competitive in the larger agricultural market. Several additional challenges, such as rats, mice and insects are also pestering fields and harvests; pests which are said to be difficult to control. It is therefore unsurprising that most farmers particularly asked for agricultural support, such as better equipment, fertilisers and irrigation.

5.7 Natural Resource-Use and Ecosystem Services

The terms 'ecosystem services' is used to distinguish between an array of resources and processes supplied by the natural environment (or ecosystem) that are used by people. For the project at hand, 'ecosystem services' refers to the following:

- The usage of natural water from rivers and boreholes;
- Using and planting fertile lands for agricultural production (through shifting and rotational crop cultivation practices);
- Natural resource-use, such as plants (for cultural, subsistence, commercial and/or medicinal purposes) and wood (for energy or selling, such as to make charcoal); and
- Culturally significant sites that are normally associated with particular forested areas, hills or naturally occurring trees and plants.

The figure below collates all the natural resource-use activities which the villagers are engaged in. It is evident that most households are engaged in collecting firewood (97.1%), gathering grasses and reeds for house roofs (92.0%), collecting wild vegetables (74.3%) and using medicinal plants from the surrounding woodland forests (47.3%). Apart from this, nearly half of the households (47.3%) are engaged in making charcoal, which is normally sold at local shops or next to the roads. Slightly less than half of the households are engaged in hunting (44.4%), which is primarily a subsistence strategy. Animals hunted include antelopes, rabbits, bush goats and wild pigs, although some did mention larger species such as Hippopotamus (probably a rare and highly prized occurrence). In summary, such plant and animal resources provide a significant ecosystem service to these rural villagers, who are dependent on these resources.

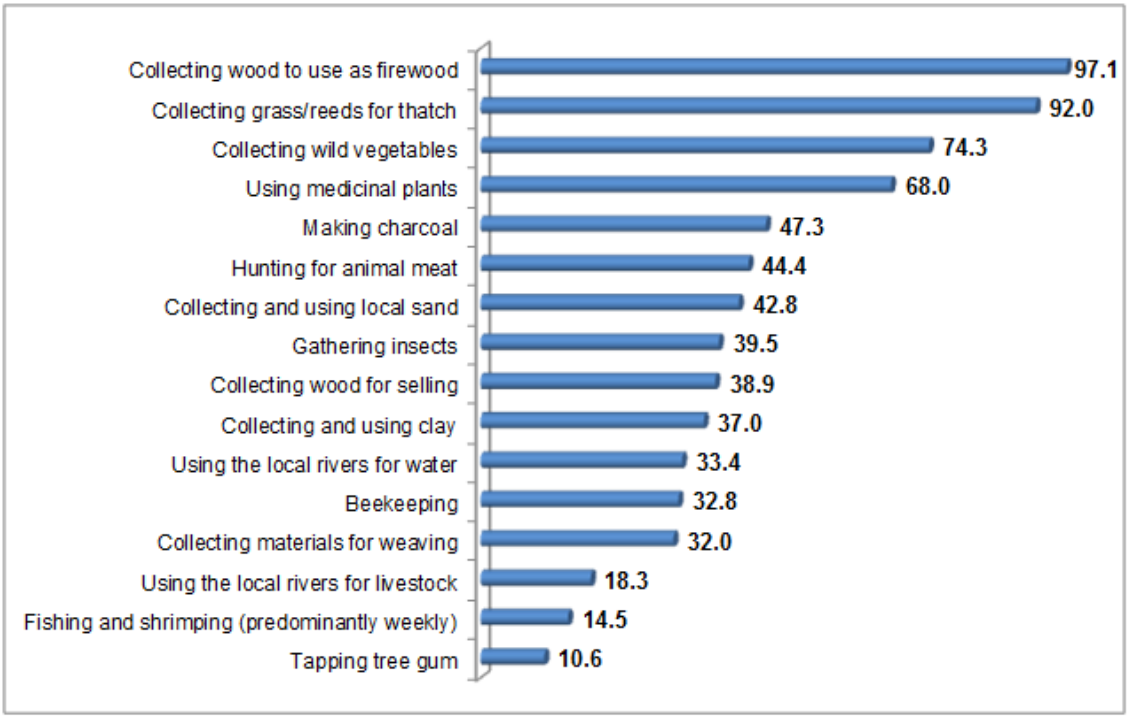


Figure 5.14: *Natural resource-use (% of households)*

Also significant is the fact that 38.9% of households sell wood. Few people expressed concern that the natural resources are reducing. Some households claim to have noticed increasing soil erosion in the area owing to a reduction in the natural resources, expressing a concern that added soil and air pollution will further degrade the environment which they are dependent on. With the mining development, access to wood will certainly become further restricted, as the Graphite inselbergs to be mined are used for wood gathering. Particular wild plant species also provide an important ecosystem service in terms of medicinal, food or commercial purposes. Particular plant species are used for very specific reasons. Certain trees which are used for their timber potential include the local Chanfuta, Umbila, Jambire and Moco tree species. The local Mphacala Tree is apparently a very good wood for charcoal-making, whilst some trees are specifically harvested for their firewood potential, such as the Mphacala, Mpari, Chanfuta and Jambire tree species. In terms of gender roles, the bulk of the natural resource-use activities listed above are performed by men (especially young men). However, particular tasks are practiced by women, and particularly girls, such as fishing and shrimping, collecting grasses and reeds for thatch, as well as gathering wood.

5.8 Religion, Culture and Recreation

Whilst men practise polygamy, there are no secret societies in the study area. Only one secret site was mentioned as being present in the area. The site is used by the communities to pray for rain during drought and when there are problems and challenges facing the community. The site is located in the mining area and will therefore be affected or even lost. If such sites are to be affected by the project, villagers need to be engaged and provided with alternative areas for practising this tradition. Christianity and Muslim are the two main religions practised. The majority of the people are Christians. In each village there is a church and a mosque. In most instances, the structures are in poor conditions as can be seen in the Plate 5.5 below (a Mosque in Pirira).

In terms of recreational activities, most villages have footballs fields which attract many youth members who seem to enjoy the sport. The current challenge facing all football teams in the area is playing gear. In all the meetings we had with youth groups it was clearly mentioned that the youth expect the mine to support the local teams with equipment. At the time of the site visit two soccer balls were bought for the Ntete and Ncuide soccer teams and two more were being

organised for Pirira and Maputo. In addition, local dance ceremonies are also performed by village members as recreational activities.

Plate 5.5: *A mosque in Pirira*

Lastly, four sacred sites (one which constitutes two sites) have been demarcated which are all located within the proximity of the mine infrastructural layout. In many rural African traditions, sacred sites constitute specific areas that are normally marked either by special (and culturally valued) trees, rocks or gravesites (*inter alia*). Such sites are normally very sacred to a particular group, who uses such sites for traditional rituals and ceremonies aimed at strengthening their ties to their ancestors or 'sense of place' (*cf.* Huggins, 2005). The cultural value of particular livestock, such as goats, cows and sheep is also heavily reinforced during such ceremonies, during which such animals are slaughtered, sacrificed and eaten as part of acknowledging their ancestors and/or forefathers.

Although this is context dependant, village representatives informed CES that compensation or even relocation of these sites is not on the discussion table. This means that alternative site layout plans might need to be considered to avoid these areas.

The coordinates of these four sacred sites are provided in the table below:

Table 5.11: *Agricultural calendar*

Sacred site	Latitude	Longitude
Site 1	13°17'57.51"S	38°38'49.78"E
Site 2	13°18'37.66"S	38°38'43.77"E
Site 3a	13°19'5.52"S	38°39'32.16"E
Site 3b	13°19'5.57"S	38°39'34.00"E
Site 4	13°18'26.37"S	38°41'4.30"E

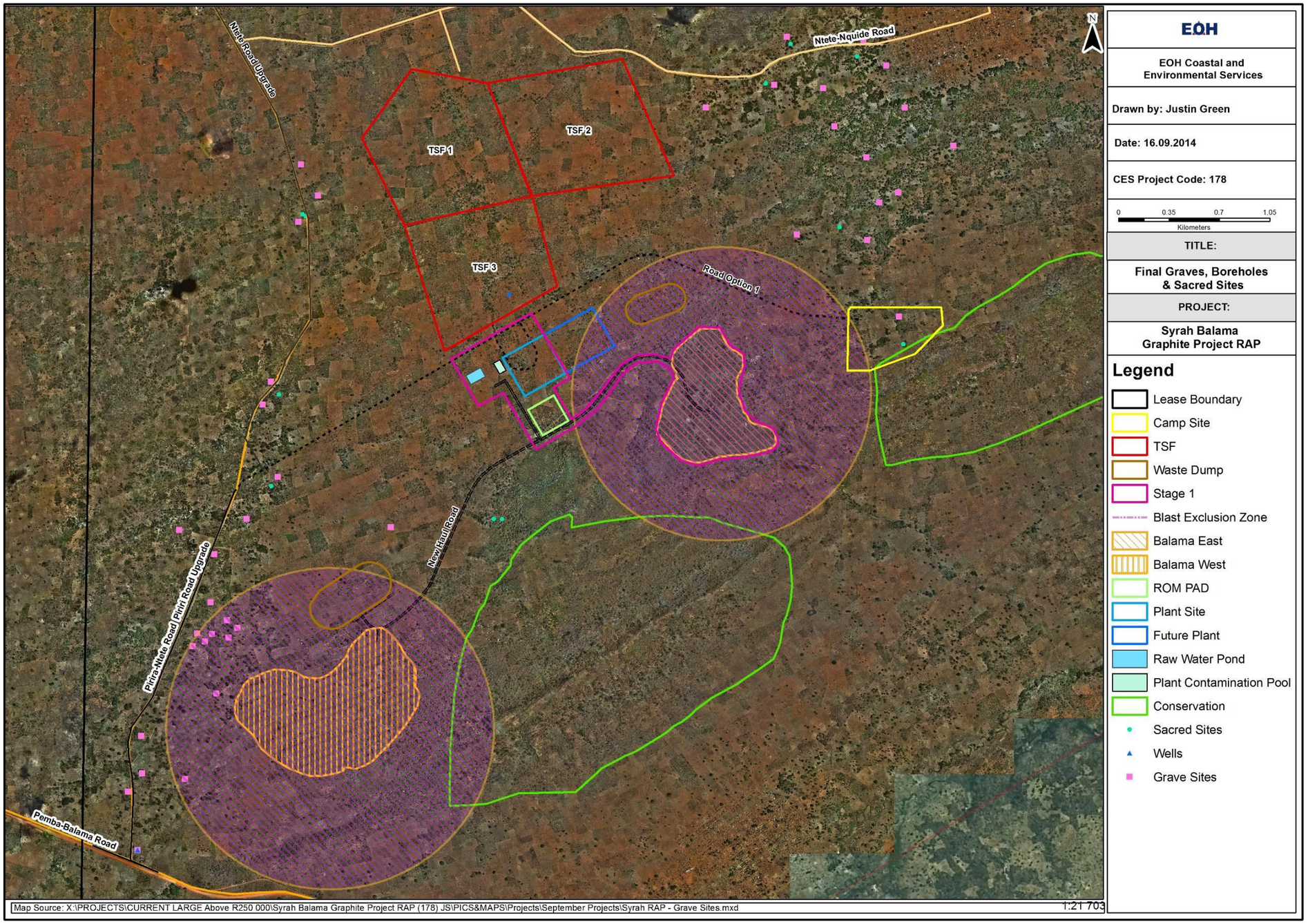


Figure 5.15: *Identified grave, borehole and sacred sites*

5.9 Socio-Economic Development Needs

Of importance to this SIA was to establish the social needs of the PACs and to identify how the proposed project can contribute to community upliftment programmes. The following list provides the key SED needs of the villages studied:

- Providing employment preference to the local population;
- Providing scholarships and skills training, especially for the large group of youth;
- Ensuring that the project acts as a catalyst for broader development in the area (such as sourcing not only labour, but also materials and additional services from the surrounding villages);
- Upgrading, improving or providing support to the primary schools in the villages (such as providing desks, chairs, books, solar panels etc.);
- Building (or supporting) a community health clinic (the ideal location for a new clinic would be either in Pirira or Maputo);
- Providing more wells and upgrading existing ones; and
- Support for local football activities.

For future food security considerations, apart from compensation measures for disturbed and/or lost machambas, food gardens and/or productive trees and houses, the developer needs to engage with the affected villagers to allocate alternative agricultural land with at least the same productive value. Such negotiations will form part of the RAP. In addition, the developer could also consider investing in the villages' agricultural sector. The following list provides several recommendations for the developer to consider:

- Providing agricultural training programmes (a programme is already been designed); and
- As part of the above-mentioned support, the client should assist those farmers who lost their machambas to re-establish new farms prior to losing their current land and harvests. This is a requirement of the IFC, a concept referred to as 'transitional support' (*cf.* PS 5). The rationale is for those who are economically displaced to have re-established new farms before their current farms are acquired: "Transitional support should be provided as necessary to all economically displaced persons […]" (IFC, 2012: 7). The proposed agricultural programme should be implemented during the course of the RAP period in order to assist eligible affected farmers and households to re-establish new farms before their current land is lost. Land should not be acquired by the client for any mine development prior to ensuring that the economically displaced have alternative, productive farmland (*cf.* IFC PS 5).

5.10 Perceptions about the Project

From the focus group discussions and SEBS, the following list has been compiled with the most important issues, concerns and perceptions expressed by villagers with regard to the project:

- The developer should make it a priority to provide employment preference to the people of these four villages;
- Clarity is needed with regard to the procedures which villagers need to follow in order to obtain employment at the mine;
- There is concern that the project might disturb and/or seize machamba land;
- There is a concern over limited water supply and long distances which have to be travelled in order to obtain clean drinking water in the area. Many fear that this situation might be aggravated with project-induced air, water and soil pollution;

- Concerns have been raised about the conditions of the roads which, with additional traffic flow (heavy vehicles) and operations in the area, might become a hazard to road-related accidents; and
- The need for on-going community and stakeholder engagement was emphasised during several meetings, as villagers expressed gratitude for the early engagements as part of the ESHIA and SIA.

It is clear from the SEBS and focus group discussions that the majority of the populace expressed gratitude for the project and desire employment. Many claim that there are currently no employment opportunities in the area, and that the mining development should provide employment preferences to the local population. Apart from employment, many also welcome and hope for training prospects, realising that the project might afford them with the opportunity to become skilled and more educated. Possible SED in the area, such as the upgrading of schools, provision of more wells and another clinic, are also driving these high hopes for the project to continue.

Land access and future food security are central themes which this SIA has outlined as significant. A focus on economic displacement should consider the area's cumulative mining developments in order to plan ahead and safeguard those affected by providing alternative land which will not be disturbed in the near future.

Concerns regarding land access issues were few and vague. People appeared reluctant to express concerns, believing that their apprehension might discourage the mining development and employment which most desire. This might be a concern as it illustrates the degree to which prospects of employment overshadow the realities of displacement and food security once productive machambas have been lost. It might also point to a lack in comprehension of what the displacement process will actually entail.

6. POTENTIAL IMPACTS ASSOCIATED WITH THE DEVELOPMENT

6.1 Introduction

This chapter identifies the potential impacts (both negative and positive) of the project on the PACs, as well as the broader district and region. It provides mitigation and/or enhancement measures for the proponent to reduce possible project-induced negative impacts, but also to enhance the positive ones. These impacts have been identified after consultation with the PACs through focus group discussions and the SEBS, as well as a study of secondary literature and data.

The impacts are listed in no particular order. Each has been aggregated into several issues. Each issue (as a heading) has a common theme and management strategy at its core. It should be noted that the assessment of socio-economic impacts differs from identifying environmental impacts in the following key ways:

- The social impacts of a project are not always measurable, and their assessment often involves a subjective dimension. Considering whether such an impact is positive or negative is also a value judgement in itself. Consequently, such impacts need to be informed by a clear understanding of the social processes and knowledge of the villages and communities under study;
- Social impacts are often cumulative and synergistic, i.e. often clustered and interdependent;
- Social impacts can change as community dynamics and social processes change. Thus, the project is one of a number of possible contributing factors to such on-going change, and hence cannot be viewed in isolation from the broader social and economic dynamics of the area. It is also a requirement of the IFC PS 1 to account for such cumulative factors, which in itself alludes to the fact that the project cannot be viewed in isolation. It is therefore often very difficult to attribute a particular impact entirely to the project itself. For example, potential health risks already exist, but it is possible for a project to compound (or indeed even reduce) these impacts; and
- Social impacts are often unintended and unavoidable, making these extremely difficult to mitigate. Therefore, in this study, mitigation strategies need to be conceptualised as strategies aimed at managing change, as opposed to a means to avoid such impacts entirely. It can also be the case that successful management of potentially negative impacts may even change the impacts from negative to positive.

6.2 Methodology

To ensure comparability between various ESHIA specialist studies, EOH CES uses a standard rating scale. This is necessary since impacts have a number of parameters that need to be assessed. Five factors need to be considered when assessing the significance of impacts, namely:

- Relationship of the impact to temporal scales: this defines the significance of the impact at various time scales, as an indication of the duration of the impact;
- Relationship of the impact to spatial scales: this defines the physical/spatial extent of the impact;
- The severity of the impact: the severity/beneficial scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on a particular affected party;
- The severity of impacts can be evaluated with and without mitigation in order to demonstrate how serious the impact is likely to be when nothing is done about it; and
- The likelihood of the impact occurring: the likelihood of impacts taking place as a result of project actions differs between potential impacts. Although some impacts may have a severe

effect, the likelihood of them occurring may affect their overall potential significance.

Each criterion is ranked with scores assigned as presented in Table 6.1 below, which determines the overall significance of an activity. The total scores recorded for the effect and likelihood are read off the matrix, presented to determine the overall significance of the impact, which is either negative or positive. The significance scale is an attempt to evaluate the importance of a particular impact. Cumulative impacts affect the significance ranking of an impact because they consider the impact in terms of both on-site and off-site sources. For example, pollution making its way into a river system from a development may be within acceptable national standards. Activities in the surrounding area may also create pollution which does not exceed these standards. However, if both on-site and off-site activities take place simultaneously, the total pollution level may exceed the standards, and hence the cumulative effect is greater. For this reason, it is important to consider impacts in terms of their cumulative nature, which is also a requirement of the IFC.

The table below provides CES' standard ranking of evaluation criteria:

Table 6.1: *Ranking of evaluation criteria*

EFFECT	**Temporal Scale**		
	Short-term	Less than 5 years	
	Medium-term	Between 5-20 years	
	Long-term	Between 20 and 40 years (a generation) and from a human perspective also permanent	
	Permanent	Over 40 years and resulting in a permanent and lasting change that will always be there	
	Spatial Scale		
	Localised	At localised scale and a few hectares in extent	
	Study Area	The proposed site and its immediate environs	
	Regional	District and Provincial level	
	National	Country	
	International	Internationally	
	Severity	**Severity***	**Benefit**
	Slight	Slight impacts on the affected system(s) or party(ies)	Slightly beneficial to the affected system(s) and party(ies)
	Moderate	Moderate impacts on the affected system(s) or party(ies)	Moderately beneficial to the affected system(s) and party(ies)
	Severe/ Beneficial	Severe impacts on the affected system(s) or party(ies)	A substantial benefit to the affected system(s) and party(ies)
	Very Severe/ Beneficial	Very severe change to the affected system(s) or party(ies)	A very substantial benefit to the affected system(s) and party(ies)
LIKELIHOOD	**Likelihood**		
	Unlikely	The likelihood of these impacts occurring is slight	
	May Occur	The likelihood of these impacts occurring is possible	
	Probable	The likelihood of these impacts occurring is probable	
	Definite	The likelihood is that this impact will definitely occur	

** This refers to the impact's intensity*

Table 6.2 provides the social significance of each impact:

Table 6.3: *Description of socio-environmental significance ratings and associated range of scores**

Significance rating	Description
Low	An acceptable impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in either positive or negative medium to short term effects on the social and/or natural environment.
Moderate	An important impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in either a positive or negative medium to long-term effect on the social and/or natural environment.
High	A serious impact, which if not mitigated, may prevent the implementation of the project (if it is a negative impact). These impacts would be considered by society as constituting a major and usually a long-term change to the (natural &/or social) environment and result in severe effects or beneficial effects.
Very High	A very serious impact which, if negative, may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are unmitigatable and usually result in very severe effects, or very beneficial effects.

** These tables have been formulated by EOH CES through years of experience with impact assessments*

6.3 A Summary of Impacts and Issues Identified

Listed in Table 6.4 below are four issues and seven impacts which are discussed in this section.

Table 6.4: *Impacts and issues identified*

Issue nr	Issue	Impact
1	Land Acquisition	1.1 Reduced Access to Agricultural Land
		1.2 Increased Food Insecurity
		1.3 Reduced Access to Natural Resources
		1.4 Loss of Sites for Cultural Practices
		1.5 Loss of Graveyards/Cemeteries
2	Community Safety Risk	
3	Employment Opportunities and the Stimulation of Economic Growth	3.1 Employment, Skills Training and Scholarships
		3.2 Temporary or Permanent In-Migration by Outsiders in Search of Job Opportunities
4	Stakeholder Engagement	

6.4 Impact Assessment

6.4.1 Issue 1: Land Acquisition

The project will be developed on land which is currently held under the Macua Tribe. The land belongs to many household farmers who are dependent on it not only for subsistence and commercial farming, but also for natural resource-use.

Although no physical resettlement is foreseen, such land acquisition will trigger economic displacement of many machambas (refer to the RAP report for more detail). For such displacement, a RAP is currently being finalised. If the RAP is properly managed and implemented by the proponent, it can become an opportunity to enhance the economic and social development of affected households, especially is appropriate livelihood restoration measures are adopted. For example, the current RAP includes an FDP which should assist affected, but also interested farmers with their agricultural practices. If such economic displacement is not planned and

implemented, studies have shown that it can have the tendency to leave displaced people worse-off than before (*cf.* Cernea 2008; de Wet 2006 and Scudder, 2005).

Five impacts are discussed which relate to the possible effect of land acquisition. These include:

- Reduced Access to Agricultural Land;
- Increased Food Insecurity;
- Reduced Access to Natural Resources;
- Loss of Sites for Cultural Purposes; and
- Loss of Graveyards/Cemeteries.

Impact 1.1: *Reduced Access to Agricultural Land*

Cause and Comment

The mine will acquire machambas and hence trigger economic displacement (refer to the RAP report for more detail). Coupled to such loss, there is a further concern that the mine might reduce land access.

Local farming practices require relatively large areas of land for farmers to shift their fields and obtain sufficient yields for their own households' food security. The loss of machambas is likely to be the impact of greatest concern. Access to land and the resources that flow from this land are of critical importance to sustaining livelihoods in villages that are extremely vulnerable as a result of poverty and their isolation from cash income-generating activities. Vulnerable households will be more significantly affected, such as female-headed households, or households with disabled and/or elder members.

Apart from compensation for crop, structures and tree losses, the Government (through the Mozambique Regulations for the Resettlement Process resulting from Economic Activities of 2012), as well as good international best practice (such as the IFC), require for alternative land of the same productive value to be provided to those households who have lost their land. As part of the RAP process, discussions are currently held with the affected farmers and Balama District Resettlement Commission to find such alternative land (refer to the RAP report for more detail).

Mitigation and Enhancement Measures

The following mitigation and enhancement measures will be implemented:

I. A RAP has already been drafted (and approved by the District Administrator in accordance to the Mozambique resettlement regulations) and is currently being implemented by the proponent. This RAP fully complies with the Mozambique Regulations for the Resettlement Process resulting from Economic Activities (2012), as well as IFC PS 5 and 6 (refer to the RAP report);

II. In accordance with the IFC PS 5, such a RAP needs to include a detailed agricultural valuation of all the affected farmlands and owners' possessions in order to develop appropriate compensation strategies and entitlement matrixes. This process has already been completed as part of the RAP report, which is currently being finalised;

III. Prior to acquiring land for the mine development, those farmers or households affected by the loss of farms will be assisted by the proponent and Government (through the Balama District Resettlement Commission) to obtain alternative farmland. This is a requirement of the IFC under its PS 5, which is called 'transitional support'. At the time of writing this SIA, the RAP process has already identified alternative land through the District Resettlement Commission. The RAP report should be referred to in this regard;

IV. A local group (referred to as the Balama Technical Working Group; TWG) has already been established as a linkage between the proponent, government and affected farm owners as a vehicle for engagements between these parties through the economic displacement process.

With Mitigation

Land loss is a significant issue which, even with mitigation measures, remains a serious concern to the livelihoods of rural villagers. Should mitigation and enhancement measures be implemented, the mine could still have a long-term negative effect on the farmers and their households of high significance. The reason for this relates to the number of farms that will be lost (possibly over 200 machambas; refer to the RAP report). With additional enhancement measures, such as an FDP and additional community development programmes, the negative effects will be further reduced to moderate negative. However, the reality is that such programmes are not always successful and require substantial capital investments.

No changes are expected during the operational phase, as land will only be acquired and possibly disturbed during the construction phase.

Without Mitigation

If no mitigation or enhancement measures are implemented, the significance of the project will be very high negative during the construction phase.

Significance Statement

Impact	Effect			Risk or likelihood	Significance
	Temporal scale	Spatial scale	Severity of impact		
Construction phase					
Without mitigation	Long-term	Study area	Very severe	Definite	**VERY HIGH -**
With mitigation	Long-term	Study area	Severe	Probable	**MOD -**
Operation phase					
Without mitigation	No changes are expected during the operational phase, as land will only be acquired during the construction phase				
With mitigation					
No-go					
General impact	No significant changes				

Impact 1.2: *Increased Food Insecurity*

Cause and Comment

Coupled to the issue of economic displacement and reduced farmland is the impact of food insecurity. As noted, nearly all the villagers are subsistence farmers. An insignificant number of household members are formally employed.

Food insecurity might become a serious issue for several reasons. One reason is that the mine will economically displace more than 200 machambas, whilst access to fertile land could become restricted in the future. Another reason is that erratic and changing weather conditions affect households' agricultural harvests. In this way, households could be forced to diversify (or change) their income-earning livelihoods. Even though some will benefit from employment on the mine, the reality is that farming is still the primary means of food security.

Mitigation and Enhancement Measures

The following mitigation and enhancement measures will be implemented:

I. The RAP will be strictly implemented;

II. Apart from compensation for crops, structures and economic trees to be lost, the Government and proponent will assist the affected farmers and their households not only with the provision of alternative farming land, but also with agricultural support during- and post-displacement. This should form part of an FDP, as further referred to in the RAP;

III. The affected villagers are being discouraged from discontinuing their agricultural practices, despite the possibility of employment opportunities. To assist farmers and community members beyond the transitional support to be provided through the FDP as part of the RAP process, the proponent will develop a Community Development Programme which could be structured around the FDP to incorporate additional projects aimed at food security. This could entail the following programmes which could be run through the FDM:

- Strengthening access to agricultural markets;
- School nutritional programmes;
- School food (vegetable) gardens and agricultural training modules; and
- Farming water provision.

IV. It is highly recommended that a food security/nutritional monitoring programme be implemented six months after economic displacement with a sample of affected farmers.

Without Mitigation

Without mitigation, food insecurity amongst the PACs will become a serious impact of the project and should be viewed in a very serious light. Food insecurity might also result in a strained relationship between the proponent and its PACs, and might even evoke violence.

With Mitigation

During the construction and operational phases, the villagers might benefit slightly from appropriate mitigation measures related specifically to an FDP and addition community projects aimed at strengthen households' agricultural practices and having access to water.

Significance Statement

Impact	Effect			Risk or likelihood	Significance
	Temporal scale	Spatial scale	Severity of impact		
Construction phase					
Without mitigation	Permanent	Regional	Very severe	May occur	**HIGH -**
With mitigation	Short-term	Regional	Slightly beneficial	Probable	**LOW +**
Operation phase					
Without mitigation	Permanent	Regional	Very severe	May occur	**HIGH -**
With mitigation	Long-term	Regional	Slightly beneficial	Probable	**LOW +**
No-go					
General impact	No significant changes				

Impact 1.3: *Reduced Access to Natural Resources*

Cause and Comment

One of the project's most significant impacts is likely to be the reduction in natural resources that are widely used as essential ecosystem services by a relatively large population. The data indicated that little cash income is actually received by households from such resources. However,

of the income received, charcoal and local trading (such as in bush meat, wood or wild plants) are substantial components of livelihood strategies. Even though the footprint of the mine's natural resource extraction will be limited, the biodiversity of these two mountains is very diverse and significant (refer to the Botanical Specialist Survey Report, 2013).

Mitigation and Enhancement Measures

The following mitigation and enhancement measures will be implemented:

I. As part of the RAP, villagers need to have future access to natural resources. Complying with this recommendation, two conservation areas have been proposed by the Ecological Impact Assessment and consequently incorporated into the mine layout designs. It is proposed for these two areas to be managed by the four PACs with support from the mine. Such support could entail occasional seedlings/plants (through an established, future nursery at the mine) to be replanted, or training community members in the need to protect these areas for future resource-use. In essence, such management needs to educate the villagers to use these resources sustainably;
II. The final mine infrastructural layout plans need to ensure that the four PACs have continued access to the aforementioned conservation areas, or any other natural resource which is left undisturbed by the project. Should particular fenced roads, for example, impede future access (although this is highly unlikely considering the project's small footprint), measures need to be adopted, such as to create regular crossing(s) with security gates; and
III. As part of a RAP, a grievance mechanism was established. This mechanism should also be used for villagers to engage with mine management or lodge complaints regarding impacts on natural resources;

Without Mitigation

The significance of this impact would be high negative if no mitigation measures are in place. Access to natural resources will become restricted, which will reduce the sustainability of villagers' livelihoods. A restriction in natural resources might also increase villagers' dependence on economic opportunities in the region (which are lacking), whilst food insecurity might also be an associated impact. It should be noted that, although the 'no-go' option will have a high positive significance on the local population (as they will be able to continue their livelihood practices without disturbance), this impact should not be viewed in isolation.

With Mitigation

Mitigation measures would be able to off-set this impact to one of moderate significance.

Significance Statement

Impact	Effect			Risk or likelihood	Significance
	Temporal scale	Spatial scale	Severity of impact		
Construction phase					
Without mitigation	Short-term	Study area	Severe	Definite	**HIGH -**
With mitigation	Short-term	Study area	Moderate	Probable	**MOD -**
Operation phase					
Without mitigation	Long-term	Study area	Severe	Definite	**HIGH -**
With mitigation	Long-term	Study area	Moderate	Probable	**MOD -**
No-go					
General impact	No significant changes				

Impact 1.4: *Loss of Sacred and Culturally Significant Sites*

Cause and Comment

The RAP recorded several sacred sites. These sites are clearly marked by the mine in order for the project, as far as possible, to avoid these areas (refer to the RAP report).

Mitigation Measures

The following mitigation measures will be implemented:

I. The RAP report will be strictly implemented, especially the Entitlement Framework (Chapter 7) which deals with the compensation methodology to be adopted should any sacred sites be affected and/or loss;

II. As part of the RAP, a Grievance Mechanism has already been established. This mechanism will be used for villagers to lodge any possible complaints regarding the disturbance and/or loss of sacred sites to mine management. The procedures of this mechanism (Chapter 4) should be followed meticulously; and

III. The developer will develop a Cultural Heritage Management Plan in consultation with the affected villages. This plan should:

- Protect the cultural heritage of the area;
- Identify all sacred sites in the area and propose ways to protect and/or relocate these sites; and
- Assist the developer to understand the cultural norms and values of the locals in the area.

Without Mitigation

If no mitigation measures are in place, villagers might permanently lose their sacred sites completely, or have only limited access to such sites in the future. This impact would be restricted to the study area, but would be severe. This could cause significant, and on-going, dissatisfaction among the affected people. These sites are highly intertwined with the cultural fabric of these villages, and culture should be protected.

Although land will only be acquired and/or disturbed during the construction phase, similar impacts are expected during the operational phase, as such areas might still be used regularly by villagers and hence affected by nuisance impacts such as dust and/or noise, for example.

With Mitigation

If appropriate measures are in place (such as to avoid mining in areas that are culturally significant), the affected villages' sacred sites might be protected and demarcated (which the mine has already done). This would therefore be a low negative impact, as sites might still be disturbed in terms of nuisance impacts even if such sites are not lost to the mine.

Significance Statement

Impact	Effect			Risk or likelihood	Significance
	Temporal scale	Spatial scale	Severity of impact		
Construction phase					
Without mitigation	Permanent	Study area	Severe	Probable	**HIGH -**
With mitigation	Permanent	Study area	Slight	Probable	**LOW -**
Operation phase					
Without mitigation	Permanent	Study area	Severe	Probable	**HIGH -**

With mitigation	Permanent	Study area	Slight	Probable	**LOW -**
No-go					
General impact	No significant changes				

Impact 1.5: Loss of Graveyards/Cemeteries

Cause and Comment

Several graves and cemeteries have been identified and clearly marked through the RAP process. As far as possible, the mine's layout will avoid these area. Still, there is the possibility that some graves and/or cemeteries might be affected/disturbed during the construction phase.

The RAP report should be referred to for this information.

Mitigation Measures

The following mitigation measures will be implemented:

I. The RAP report will be referred to and implemented (in particular Chapter 7 which details the entitlement frameworks for the possible disturbance of graves/cemeteries, such as exhumation and reburial procedures);
II. The established Grievance Mechanism will be used for members to lodge any complains with regard to the disturbance of graves/cemeteries to mine management. Corrective action will be taken, as described in the mechanism (refer to Chapter 7 of the RAP); and
III. A Cultural Heritage Management Plan will be drafted and implemented (as explained).

Without Mitigation

Graveyards and gravesites are central to African religious practices, as these embody the spirits of ancestors and represent physical places of sacred value. Removing such sites has permanent, far-reaching consequences, as it directly affects core values and patterns of relationships at the heart of these villagers' lives. Any disruption to these sites without adhering to the established and agreed upon protocol and relocation strategy will be seen as very serious.

With Mitigation

Any disruption of graves or gravesites should be avoided as far as possible. Even if the disruption of graves can be avoided, the impact is expected to be low negative as such areas (which are usually also sacred) could still be affected by nuisance impacts. However, mitigation should enable villagers to voice their concerns and have an input into the planning and implementation stages of the project. This should allow affected villagers to feel part of the project, and have a meaningfully contribution to how their graves might be removed and/or relocated.

Significance Statement

Impact	Effect			Risk or likelihood	Significance
	Temporal scale	Spatial scale	Severity of impact		
Construction phase					
Without mitigation	Permanent	Study area	Very severe	Probable	**VERY HIGH**
With mitigation	Permanent	Study area	Moderate	Unlikely	**LOW -**
Operation phase					
Without mitigation	Permanent	Study area	Very severe	Probable	**VERY HIGH**
	Permanent	Study area	Moderate	Unlikely	**LOW -**

With mitigation					
No-go					
General impact	No significant changes				

6.4.2 Issue 2: Community Safety Risk

Cause and Comment

Particular mine areas will be fenced for safety considerations. However, depending on the mine's final layout plans, routes such as the bypass road from the R242 to Ntete and the Chipembe Dam need to remain accessible to the local villagers who are dependent on these passageways. With the introduction of security personnel at any entrance gates, conflict sometimes arises between the security personnel and the local villagers. This may arise if security personnel are inadequately trained in using force, or abuse their position of power, in the process discriminating against or even harassing local villagers. This situation might be worsened if expats are used as security personnel.

Mitigation Measures

The IFC is very specific when it comes to mitigation measures related to project security personnel (*cf.* PS 4). Several measures will be implemented:

I. The proponent will sign an agreement with the private security company which should allow for the following:
   - *As far as possible, security personnel will be recruited from the surrounding communities;*
   - *Security personnel will be properly trained in the use of force and, most importantly, appropriate conduct towards farm-owners and farm labour;*
   - *There will be instant dismissal for any security personnel involved in theft or abuse;*
   - *A code of conduct will be developed for the security personnel;*
   - *The above-mentioned code of conduct will be consistent with the United Nation's (UN) Code of Conduct for Law Enforcement Officials, and the UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials; and*
   - *The PACs will be informed about the roles and responsibilities of the security personnel.*

I. The established Grievance Mechanism will be used for villagers to voice their concerns regarding security personnel and possible community safety risks;
II. Reported incidences will be assessed by the proponent, who will implement appropriate measures; and
III. All the PACs will be informed about the roles and responsibilities of the security personnel through community briefings.

Without Mitigation

This is potentially a serious impact, and failing to implement mitigation measures might result in fractious relationships between the proponent and the PACs. In the most serious case, villagers might even be subject to violent attacks from security guards. Without mitigation, this impact will have a moderately negative impact.

With Mitigation

The project should have no effect on the surrounding villagers if appropriate protocols are implemented.

Significance Statement

Impact	Effect			Risk or likelihood	Significance
	Temporal scale	Spatial scale	Severity of impact		
Construction phase					
Without mitigation	Short-term	Study area	Severe	May occur	**MOD -**
With mitigation	No impact				
Operation phase					
Without mitigation	Long-term	Study area	Severe	May occur	**MOD -**
With mitigation	No impact				
No-go					
General impact	No significant changes				

6.4.3 Issue 3: Employment Opportunities and the Stimulation of Economic Growth

The area has a significantly large youth population (Table 5.3 indicated that 56.5% of the population is 18 years or younger), who might demand local employment. The area also lacks real employment opportunities or economic growth, and the mining development could provide a much needed economic thrust in terms of sourcing material and services locally, stimulating the area's general economy.

Two impacts are discussed below related to this issue, namely:

- Employment, Skills Training and Scholarships; and
- Temporary or Permanent In-Migration by Outsiders in Search of Job Opportunities.

Impact 3.1: Employment, Skills Training and Scholarships

Cause and Comment

Section 1.5 and Table 1.2 elaborated upon employment opportunities. Although the mine will need some skilled workers with graduate degrees or experience in mine-related tasks, many tasks can be performed by local labour. The proponent is encouraged to increase such opportunities as far as reasonably possible, in accordance with local recruitment procedures. Should insufficient employment opportunities be provided to the local populace, some of the negative impacts of the project could entail a significant influx of labourers into the area, causing pressure on local resources and possibly conflicting with the local population. Another consequence might also be local resistance to the project, or even tension between the locals and the developer.

Mitigation and Enhancement Measures

The following enhancement measures will be implemented:

I. In addition to appropriate Human Resources (HR) policies and procedures, a labour desk/employment committee will be established to design and implement an Employment Enhancement Plan. This will nsure that recruitment is done in a fair and transparent way, and that job creation opportunities are maximised;
II. Provide scholarships and work apprenticeships to the local population (especially the youth);
III. Support the primary schools and, especially, learners who need financial support (such as bursaries) to enrol in higher education;
IV. The recommendations contained in IFC PS 2 (Labour and Working Conditions) will be adhered to in developing labour policy and operational guidelines. These include:

- Developing appropriate HR policies and procedures (Nr 8);
- Establishing appropriate working conditions (Nr 10);
- Ensuring non-discrimination and providing equal opportunities (Nr 15);
- Establishing a Grievance Mechanism for labour issues (Nr 20);
- Protecting the work force (Nr 21-22); and
- Occupational Health and Safety (Nr 23).

V. The following International Labour Organisation (ILO) conventions will be adhered to:
   - ILO Convention 87 on freedom of association and protection of the right to organise;
   - ILO Convention 98 on the right to organise and collective bargaining;
   - ILO Convention 29 on forced labour;
   - ILO Convention 105 on the abolition of forced labour;
   - ILO Convention 138 on the minimum age of employment;
   - ILO Convention 182 on child labour;
   - ILO Convention 100 on equal remuneration; and
   - ILO Convention 111 on discrimination.

VI. As far as possible, those labourers involved in the construction phase will be incorporated in the permanent staff for the operational phase;

VII. Attention will be provided to employment opportunities for women and disabled persons;

VIII. Differential treatment will be considered for villages which are differentially affected by the project. Directly affected residents should be given first priority in job offers and training opportunities; and

IX. Should this become necessary, a plan for gradual replacement of expats and outsiders by local people will be developed and implemented.

Without Mitigation and Enhancement

Should these mitigation and/or enhancement measures not be implemented, the significance of employment would only be moderate positive during the construction and operational phases.

With Mitigation and Enhancement

With employment opportunities, households can have a regular source of income. This could assist many households to diversity their income-earning opportunities, or even to buy the necessary equipment to bolster their farming practices. In addition, stimulating the economy of the area can have a permanent, sustainable impact on these villagers and the employment opportunities in the area. Consequently, the significance during the construction and operational phases would be highly positive.

Significance Statement

Impact	Effect			Risk or likelihood	Significance
	Temporal scale	Spatial scale	Severity of impact		
Construction phase					
Without mitigation	Short-term	Study area	Moderate Beneficial	Probable	**MODERATE +**
With mitigation	Short-term	Study area	Very beneficial	Definite	**HIGH +**
Operation phase					
Without mitigation	Long-term	Study area	Moderate Beneficial	Probable	**MODERATE +**
With mitigation	Long-term	Study area	Very beneficial	Definite	**HIGH +**

No-go	
General impact	No significant changes

Impact 3.2: *Temporary or Permanent In-Migration in Search of Job Opportunities*

Cause and Comment

The project will draw expats and migrant labour in search of employment opportunities. The studied villages are poor and uneducated, which means that some educated and skilled labour will be needed from areas such as Balama, Montepuez or even Pemba. Villagers in rural Mozambique are known to be migrators, and provided that mining operations are expanding in the district, a steady increase in migrants is foreseen. Such an influx can either cause some of these villages (especially Balama) to expand significantly, or cause a temporary increase in labour.

Although influx is considered outside the control of project developers, the IFC guidelines on project-induced in-migration suggest that influx can threaten 'project security' and that it should be managed as a project threat (*cf.* IFC, 2009). The direct and indirect impacts associated with an influx of labourers (outsiders) are likely to have several impacts on these villages, as it might result in many social, cultural, economic and political changes. Some of these include (but are not limited to):

- Creating tension and conflict between locals and migrants concerning natural resource-use, land and employment opportunities;
- Placing increased pressure on already limited social services;
- Increasing the incidence of social ills, including prostitution, alcohol abuse and crime;
- Increasing the prevalence of communicable diseases, such as diarrheal, vector-borne diseases such as malaria, and sexually transmitted infections;
- Increasing inequalities in terms of income and wealth accumulation between locals and migrants; and
- The creation of 'poverty gaps', such as inequalities in terms of income and wealth accumulation between locals and migrants.

Mitigation Measures

The proponent will manage and mitigate the negative impacts associated with an influx of workers by developing appropriate management plans. These include:

I. Developing a Labour, Recruitment and Influx Management Plan:

The following guidelines will be used in developing such a plan:

- Information dissemination: Employment opportunities need to be advertised, however the procurement and procedures for such employment needs to be made available to the public. Regular briefings are necessary to the PACs with regard to recruitments and procurements;
- Recruitment and supply chain transparency: Recruitment and procurement rules and opportunities have to be transparent and, most importantly, accessible to the public. This will be the responsibility of the community liaison officer, as well as the human resource manager. The possibility of labour brokers might be investigated to avoid the tensions around people 'gathering at the project's gates' for employment opportunities; and
- Influx management and security arrangements: While the need for project security is understandable, such security measures can have further implications on the surrounding villagers' safety and mobility. A mechanism needs to be implemented to allow free access to their surrounding villages, while still restricting the uncontrolled influx of job seekers. Regular engagements with the local villagers and the security

personnel through workshops and meetings should build a relationship between these parties.

II. Developing a Stakeholder Engagement Plan (SEP) which incorporates developing collaborative management strategies for in-migration (this has already been developed).

With Mitigation

With mitigation measures in place, the impact should be low negative on the affected villages during the construction and operational phases, as the mine could limit the number of outside workers required.

Without Mitigation

If no plans are developed and implemented, the impact of in-migration might be highly negative for the construction and operational phases, as the project can potentially cause a significant influx of job-seekers.

Significance Statement

Impact	Effect			Risk or likelihood	Significance
	Temporal scale	Spatial scale	Severity of impact		
Construction phase					
Without mitigation	Short-term	Study area	Very severe	Probable	**HIGH -**
With mitigation	Short-term	Study area	Slight	May occur	**LOW -**
Operation phase					
Without mitigation	Long-term	Regional	Very Severe	Probable	**HIGH -**
With mitigation	Long-term	Regional	Slight	May occur	**LOW -**
No-go					
General impact	No significant changes				

6.4.4 Issue 4: Stakeholder and Community Engagement

Cause and Comment

Affective stakeholder and community engagement is of pivotal importance. The proponent is encouraged to continue having structured and regular engagements with stakeholders and affected villagers. Not having such stakeholder or community engagements might lead to social unrest or tension between the developer and affected communities.

Enhancement Measures

The following measures will be taken:

I. Implementation of the SEMS;

II. Drafting and implementing an SEP (which has been done by EOH CES); and

Apart from the Grievance Mechanism established as part of the RAP, a similar Grievance Mechanism will be established for labour-related issues and/or concerns

Without Enhancement

Without implementing enhancement measures related to regularly engaging with the affected villagers, the significance of the project could potentially have a moderate negative impact on the

affected villagers. The reason for this is that poor stakeholder engagement could cause considerable tension between the proponent and community members, especially if villagers are not informed of the project, the use of outsiders and/or regular project related activities.

With Enhancement

Should the enhancement measures be implemented during the construction phase, the significance would be moderately positive.

Significance Statement

Impact	Effect			Risk or likelihood	Significance
	Temporal scale	Spatial scale	Severity of impact		
Construction phase					
Without mitigation	Short-term	Localised	Severe	Probable	**MOD -**
With mitigation	Short-term	Localised	Beneficial	Probable	**MOD +**
Operation phase					
Without mitigation	Long-term	Localised	Severe	Probable	**MOD -**
With mitigation	Long-term	Localised	Beneficial	Probable	**MOD +**
No-go					
General impact	No significant changes				

7. SOCIAL MITIGATION PLAN

The previous section provided mitigation measures, and it is clear that these measures will require a series of separate management plans, strategies, policies and training programmes. The following table provides a summary of all the mitigation and/or enhancement measures proposed:

Table 7.1: *Social Mitigation Plan*

Mitigation/enhancement measure	Detail
Influx Management Plan	The IFC guidelines on project-induced in-migration suggest that influx can threaten "project security" and that it should be managed as a project threat. According to these IFC guidelines (IFC, 2009), a project's security objectives are to: (i) protect the work force, (ii) safeguard the physical assets, (iii) sustain business continuity, and (iv) preserve the reputation of the project and company. As such if influx related impacts are treated as threats to the project, and managed accordingly, the proponent will increase the likelihood of mitigating the in-migration of large numbers of economic migrants and job seekers to villages neighbouring the mine lease area. To include procedures for disseminating employment-related information, recruitment and supply chain procedures, as well as influx management and security arrangements.
HR policies and a Labour Recruitment Plan	A Labour, Recruitment and Influx Management Plan should be developed to mitigate any negative affects regarding labour issues and, most importantly, the use of expats which is unavoidable. For guidelines, refer to the Labour and Working Condition under the IFC PS 2, as well as the ILO. The plan needs to include procedures for disseminating employment-related information, recruitment and supply chain procedures, as well as influx management and security arrangements.
Security Personnel	A plan is required to include appropriate recruitment procedures and measures for the use of security personnel. Key issues to consider here include: - When hiring security personnel, individuals should not have been part of past abuses; - Hiring security personnel should be done in consultation with the affected villagers and key stakeholders, such as the chiefs and elders; - The chiefs and elders should provide inputs and agree to the recruitment of security personnel; - Security personnel should be hired from the surrounding areas, and need to be well-acquainted with the people of the area (especially the chiefs); and - Security personnel need to be properly trained in the use of armed force and violence, as well as conduct towards the affected villagers. Thus, a code of conduct should be drafted and implemented for security personnel
Stakeholder Engagement Plan (SEP)	An SEP needs to incorporate management strategies for influx control and in-migration, as addressed by the Labour, Recruitment and Influx Management Plan
Resettlement Action Plan (RAP)	A RAP is currently in the process of being conducted. Specific matters to be addressed by the RAP will include: - Informing the GoM prior to conducting the RAP; - Establishing a TWG with government representation; - A detailed asset and agricultural inventory; - Developing appropriate compensation strategies and entitlement matrixes; - Recording affected villagers' access to natural resources, specific sites and/or trees of cultural value etc.; - Developing livelihood restoration strategies; - Identify alternative farmland; - A future monitoring programme (with a strong focus on food security and nutrition); - Establishing a Grievance Mechanism; and - Obtaining district-level approval of the RAP prior to finalisation.
Grievance Mechanism	Apart from the RAP, a Grievance Mechanism also needs to be established for employment/labour issues
Labour and Desktop Committee	As part of a Grievance Mechanism for labour issues, a Labour and Desktop Committee should be established. This committee should also be tasked with establishing and implementing an Employment Enhancement Plan, as well as (where feasible and possible), an Expat Replacement Plan.

Farmers Development Programme	A Farmers Development Programme (FDP) should be implemented as part of the RAP process. This programme should not be limited to the RAP process, and could include additional projects that are linked to this programme. The FDP is elaborated upon in the RAP report. Additional projects linked to such a programme might include water provision for agriculture, school food programmes, school food gardens and agricultural training, for example.
Community Development Plan (CDP)	A CDP is closely tied to the above recommendation, which could form part of the same plan, but must consider the affected villagers' livelihoods after the mining operation, and prioritise SED measures aimed at building local capacity beyond the mine's lifecycle. Some recommendations include: - The provision of more wells and establishing well maintenance committees; - Assistance with the local football club (upgrading of football fields, provision of football balls, etc.); - The existing primary schools could be upgraded with decent classrooms, and possible provision for learner material; and - Scholarships and apprenticeships (especially for the youth and women) to enable the villagers to become skilled for future mine-related employment. The mine could support the schools to enable leaners to obtain graduate degrees and training in specific mine-related skills to enable graduates to replace expats used on the mine.
Cultural Heritage Plan (including a Grave Exhumation and/or Reburial Plan)	This plan must ensure that cultural heritage in the area is managed and protected. This plan needs to identify all the sacred sites to be affected and propose ways to protect these sites. The plan should also provide measures for the possible exhumation and/or reburial of particular tombs to be affected. This should include the following considerations (amongst others): - Preparation of coffins and new burial sites; and - Gender and family attention.
Community Health and Safety Plan and policy	This plan needs to include traffic safety rules, but also appropriate plans and mitigation measures for demarcating and fencing-off the mining area. The plan needs to be communicated to all personnel and PACs.

8. CONCLUSION

As a specialist study, this SIA was required for an ESHIA which is currently being undertaken by EOH CES of the Balama Graphite Mine in the Cabo Delgado Province of northern Mozambique. The mine is being proposed on and around two inselbergs which are encircled by three large and one small rural village, namely Ntete, Nquide, Maputo and Pirira. During the month of March 2013, these villagers were studied by means of a face-to-face household-level SEBS (using a 10% sample), focus group discussions and key informant interviews. The ESHIA required a detailed assessment of the socio-economic conditions of the PACs.

The proposed mining operation is being developed in an area that is poor and faced with limited economic opportunities at present. Living a predominantly subsistence agricultural lifestyle, most villagers are self-employed farm workers, supporting large and extended families. The largest industry in the area is Plexus, a cotton producer which supports many farmers in the area with cotton production. In addition to large-scale maize productions, some farmers do receive agricultural support either from companies such as Plexus, but also the government through seed provision and support. On a cultural side, under the traditional jurisdiction of the Macua Tribe, the area and its people are male-dominated and very patriarchal. In consequence, any development in the area has the potential to reinforce this system, which disempowers and marginalises vulnerable groups such as women, the elders, but also the youth. Coupled with the extended civil war, it is fair to argue that these villagers are vulnerable to development, especially since they are so heavily dependent on their land and agricultural harvests.

The SIA identified several impacts which need to be mitigated. Most of these issues revolve around a central theme of land and food security. The mining operation will affect a large area which is currently extensively being utilised by almost all the households for agricultural farming. Nearly all the households have large farms or machambas, many of which will be either affected or lost during the mine development. The extent of economic displacement is significant (more than 200 machambas will be lost), for which purposes the greatest mitigation measure proposed by this SIA is a RAP and the development of associated procedures to guide compensation (which has already been drafted). The most significant issue that needs to be addressed through this RAP is future food security, especially since the mine is not permanent. Affected villagers should be empowered and provided with the capacity to continue with their preferred livelihoods after a mine has closed, which should not leave them being worse off. Large areas to be mined are also used by most villagers for natural resource harvesting, whilst small areas used for cultural and religion practices will also be lost or affected by the development.

In conclusion, the specialist views the development as needed in the area, especially since the villagers suffer from food insecurity and severe poverty. It is difficult to believe that the villagers' socio-economic status would improve or sustain itself without an external economic intervention. The specialist also believes that preserving the environment for cultural reasons will not alleviate any resident from his or her poverty and food insecurity, whilst employment will. L*ocal* employment opportunities will be created, and the impact of even providing one household member with employment cannot be disregarded. The income dependency is very high, which means that even one regular income stream in one household might sustain a series of households in these villages. It is the specialist's hope for the development to create an economic opportunity which can, in the long-term, boost and empower these villages with education, skills, training and agricultural productions.

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APPENDIX A : FOCUS GROUP QUESTIONS

VILLAGE	
FACILITATORS	Mr Bosman
DATE	/ 03 / 2013

ATTENDANCE REGISTER Focus group duration:

NAME	VILLAGE	Leadership position/role performed in the community [clan chief, elderly, youth etc.]	Contact details

VILLAGE DYNAMICS

When was this village established?

Is there a regular influx of people into this village during the year? (Elaborate)

In general, how have houses in this village been obtained?

Who makes decisions in this village?

[Men] What is the men's daily work calendar in this village? *[Women] What is the women's daily work calendar?*

What is the role of the youth in this village?

What is the role of the elderly in your village?

LOCAL SOCIO-ECONOMIC INFRASTRUCTURE

EDUCATION

How would you describe the village members' educational status?

What school do the children in this village attend and how do they get there?

SOCIAL CONDITIONS

Does this village suffer from crime etc.?

What do you do in cases of crimes and where do you go for help?

How do you think the project might affect your village's safety?

COMMUNICATION AND TRANSPORT

What method of transport do you use in your village (costs involved to the nearest town)? Elaborate, costs involved for motorbikes, vehicles etc.

How would you describe the conditions of the roads?

How do you think the project could affect the conditions of the road?

_____

_____

_____

RECREATIONAL FACILITIES AND ORGANISATIONS

Do households in this village engage in activities such as football, sports, music etc.? (Elaborate)

_____

_____

_____

How do you think the project could affect these recreational activities?

_____

_____

_____

_____

Are there any important organisations/groups in this village that you think the proponents of the project need to consult with [elderly, secret society members, particular organisations etc.]?

_____

_____

_____

LAND-USE

LAND

What is the traditional land tenure system in the area (tribal land etc.)?

_____

_____

_____

_____

Who controls the land and the allocation thereof?

_____

_____

_____

_____

What is the government's involvement in land allocation?

_____

How can land currently be obtained?

Do you have any problems with land ownership in your area?

AGRICULTURE

On average, how large are agricultural fields?

What produce are mainly farmed (excluding productive fruit trees)?

What do you do with your harvests (sell, eat or both etc.)?

If you sell your harvest, where do you sell it?

What are the most serious challenges with your agriculture?

_____

_____

_____

_____

Can you describe your agricultural harvests in the last year and have these changed in the past 5 years? In other words, has your agricultural practice improved in the last few years? More and improved yields etc.?

_____

_____

_____

_____

_____

AGRICULTURAL CALENDAR

MONTH	AGRICULTURAL ACTIVITY	GENDER ROLES
Jan		
Feb		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

Do you think the mining project might affect your agricultural practice (how)?

Can you describe your village's food security (do people go to bed hungry)?

Has this situation changed in the last few years?

How will the project affect food security?

LIVELIHOODS

SOCIAL SERVICES

What method of energy do you use in your village?

If trees/charcoal, which trees are used and who collects the trees?

How many wells are there in this village, and how many households use each well (estimate)?

How many boreholes with hand pumps are there in this village, and how many households use each borehole and hand pump?

_____

_____

How would you describe the quality and reliability of the water?

_____

_____

_____

How might the project affect your water sources? [water pollution]

_____

_____

_____

What sanitation facilities do you have in your village?

_____

_____

_____

How many pit latrines are there in this village, and how many households use each latrine?

_____

_____

What would you consider to be the greatest need in your village (the most urgent services needed)?

_____

_____

_____

NATURAL RESOUCE-USE AND LIVELIHOOD PRACTICES

Would you say that this village is dependent on the natural resources in the area (the dambos/rivers/wetlands etc.?

_____

_____

_____

Has there been any changes to the natural resources in the last few years (why)?

_____

_____

How do you think the project might affect the natural resources?

Has the number of animals reduced in the last few years (why)?

How do you think the project might affect the animals in the area?

INCOMES AND EXPENDITURES

Generally, are any members in your village formally employed (i.e. receiving a salary) [if yes, type of employment, temporary/permanent]

Do you believe that the project will provide employment opportunities, and would people in your village be keen to work on the mine?

What are the largest income sources in your village?

Do households receive any other forms of income/support etc. [compensation]?

Which seasons bear the highest income trends and why?

Summer	Autumn	Winter	Spring

What are the largest expenditure sources of your village?

Which months bear the highest expenditure trends and why?

Summer	Autumn	Winter	Spring

Who normally manages the finances of the households?

CULTURE/TRADITIONAL PRACTICE AND RELIGION

CULTURE AND RELIGION

Do members in your village practice polygamy and inter-marriages?

What religions are practiced in your village?

Is there a mosque/church in you village?

Nr of mosques	Nr of churches	Visit (daily, weekly, monthly)

Do you have a cemetery in your village, or do you bury the deceased in your backyards (how often do you visit this cemetery)?

Nr of cemeteries	Bury in backyards	Visit diseased regularly (yes/no)

Do men/women belong to any secret societies (name the societies)?

_____

_____

_____

Do men/women belong to any secret societies (name the societies)?

_____

_____

_____

Do you have secret sites where you perform rituals for your secret societies (get GPS coordinates if possible)

_____

_____

_____

Besides these secret societies, do you practise any cultural traditions?

_____

_____

_____

How do you think the project might affect your traditions/secret societies?

_____

_____

_____

THE PROJECT

Do you have any concerns regarding the mining project (elaborate)?

Do you have any expectations regarding the project?

What is your opinion about the project?

How do you think the project might impact your village and your livelihoods?

THANK YOU!

APPENDIX B: QUESTIONNAIRE

COASTAL & ENVIRONMENTAL SERVICES – MARCH 2013

SOCIO-ECONOMIC BASELINE STUDY FOR THE BALAMA GRAPHITE PROJECT, SYRAH RESOURCES LTD

Q1 GENERAL INFORMATION

1.1 FIELDWORKER NAME		
1.2 VILLAGE		
1.3 HOUSEHOLD NR		
1.4 GPS POINTS		
1.5 DATE	/ 01 / 2013	
1.6 HOUSEHOLD'S ETHIC GROUP		
1.7 HOME LANGUAGE	Portuguese	Other: specify

Q2 HOME OWNERSHIP

2.1 Year that the household head settled in this village			
2.2 When was this particular living house structure built			
2.3 Is the household permanent/temporary		Permanent	Temporary
2.4 Home ownership	Owner-acquired plot from traditional authority		Owner-inherited plot
Owner-purchased plot from government	Owner-settled on plot independently		Renting/leasing
Other: specify			
2.5 If applicable, how do you pay for the land			
2.6 If applicable, how much cash do you pay each month (MZM)			

Q3 ASSETS INVENTORY: PRIMARY HOUSEHOLD STRUCTURES

3.1 How many structures in this village belong to this household											
No.	Principle use of structure 1=Living house 2=Sleeping only 3=Kitchen only 4=Meeting/recreational hut 5=Toilet/shower 6=Residential combined with commercial (specify nature of commerce) 7=Commercial only 8 = Spiritual house 9 = Storehouse 10=Other (specify)	Photo	No. of rooms	Length (m)	Width (m)	Diameter (m)	Structure round 1=Yes 2=No	Principle construction material (can be more than 1)			Ownership of structure 1=Private owner 2=Renter from private landlord 3=Other (specify)
								Floor 1=Mud 2=Cement 3=Straw/plants 4=Other (specify)	Walls 1=Cement blocks 2=Baked clay blocks 3=Baked clay bricks & plaster 4=Mud & sticks 5=Thatch 6=Tin 7=Wooden frame 8=Other (specify)	Roof 1=No roof 2=Thatch 3= Zinc sheets 4=Tarpaulin 5=No roof 6=Other (specify)	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

Q4 HOUSEHOLD COMPOSITION TABLE AND SOCIO-ECONOMIC PROFILE

4.1 How many people make-up this household (all the people who sleep in this house at least once a week, including **all** the children)	

No. R=1	Name	Relation to HH	Disabled Yes/No	Gender	Age	Residence status	Highest education	If tertiary, elaborate	Current occupation	If formally employed, elaborate
1 (Respondent)										

CODE LIST Q6

RELATIONSHIP	RESIDENTIAL STATUS	EDUCATION	CURRENT OCCUPATION
1 – Household Head (HH) 2 – Spouse of HH 3 – Son/daughter of HH 4 – Son-in-law/daughter-in-law of HH 5 – Grandchild of HH 6 – Parent of HH 7 – Parent-in-law of HH 8 – Brother/sister-in-law of HH 9 – Brother/sister of HH 10– Cousin of HH 11 – Grandparent of HH 12 – Adopted/foster/step child 13 – Other relative 14 – Non-related by dependent 15 – Nephew/niece 16 – Refugee	1 – Living on the plot 2 – Migrant worker in another district/county 3 – Migrant worker in other country 4 – Student in another district 5 – Student in another country 6 – Other temporarily absent member 7 – Living elsewhere in the area (non-migrant)	0 – None 1 – Some primary schooling 2 – Completed primary schooling (Gr 7) 3 – Some secondary school 4 – Completed secondary school (Gr 12) 5 – Tertiary	1 – Pre-school child (6 yrs. and younger) 2 – School-going age but not going to school 3– School-going 4 - Student/studying 5 – Formally employed receiving an income (temporary/permanent) 6 – Own household farming (self-employed) 7 – Assisting with another households' farming 8 – Non-farming related trading/business 9 – Farming and non-farming related trading/business 10 – Homework/not seeking work (looking after household/children/cleaning etc.) 11 – Not contributing to the household (disabled, sick etc.)

Q5 HOUSEHOLD LIVING CONDITIONS

5.1 PRIMARY ENERGY SOURCE (select one)					
5.1.1 Sources of energy	Wood	Charcoal	Paraffin		Gas
Generator	Solar panel	Battery	Lantern		Electricity
5.1.2 Other (specify)					
5.2 DRINKING WATER (circle one option)					
5.2.1 Household drinking water	Tank	Well	Borehole with hand pump		Tap
Spring	Stream/river	Creek	Chipembe Dam	Other: specify	
5.2.2 Water quality	Always drinkable	Sometimes dirty, but always drinkable	Always dirty and sometime undrinkable		
Always dirty and needs purification					
5.2.3 Do you think you have sufficient drinking water	Yes	No			
5.3 SANITATION (circle one option)					
5.3.1 Principle toilet used for household	Bushes/forest	Pit latrine			
Flush toilet/septic tank/sewerage system					
5.3.2 If pit latrine, how many people use a pit latrine	N/A				
5.4 WASTE DISPOSAL (circle one option)					
5.4.1 Waste disposal system	Bury waste	Burn waste	Compost waste	Feed waste to livestock	
Central waste landfill	Private landfill	Other (specify)			
5.5 TRANSPORT AND COMMUNICATION					
5.5.1 What is the method of transport ***your*** household uses daily	Bicycle	Walking	Motorbike		
Bus					
Other:					
5.5.2 Where do you go when you have problems in your village					
5.5.3 Where does your village receive important news from					
5.6 MARKETS					
5.6.1 Where do you go for your groceries					
5.6.2 How often do you go there	Daily	Weekly	Monthly		
5.6.3 Who normally collects the groceries	Men	Women	Both		

5.7 Schools												
5.7.1 If children are attending school in ***your*** household, which school are they attending												
5.7.2 How do the children get to the school	Walk		Bus			Other: specify						
5.7.3 After primary school, will the children in ***your*** household attend secondary school									Yes		No	
5.7.4 If no, why not												
5.7.5 If yes, where will they attend this												
5.8 HOUSEHOLD FERTILITY AND MORTALITY												
5.8.1 How many infants were born in your household in the past year												
5.8.2 How many infants (1-3 years) in your household died in the past year												
5.8.3 How many people (excluding infants) died in the past year												
5.8.4 What were the primary reasons for these deaths												
5.9 Food security												
5.9.1 Did your household go hungry in the last year						Yes				No		
5.9.2 What were the reasons for this												
5.9.3 Please indicate during which months your household went hungry												
Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	

Q6 CULTURE AND HERITAGE			
6.1 GRAVES (note: <u>only</u> in the estate)			
6.1.1 Does your household have any graves	Yes	No	
61.2 How many graves	N/A		
6.1.3 Are these graves buried in your backyard or in a central graveyard	Backyard	Central graveyard	
Both			
6.1.4 If central graveyard, take GPS coordinates of central graveyard where household has graves			
6.1.5 If needed, would you have concerns if these graves were to be moved to another site			

Q7 COMMUNITY NATURAL RESOURCE-USE		
7.1 Does anyone in your household ever use the forests/dambos/rivers in the area for the following purposes:		
7.1.1 Do you fish in the Chipembe Dam	Yes	No
7.1.3 Do you fish in any other smaller rivers/wetland/dambo in the area	Yes	No
7.1.4 Do you swim/bathe in the Chipembe Dam	Yes	No
7.1.5 Do you swim/bathe in any other smaller rivers/wetland/dambo in the area	Yes	No
7.1.6 Is water used from the Chipembe Dam for the animals (cattle)	Yes	No
7.1.7 Is water used from smaller rivers/wetland/dambos in the area for the animals (cattle)?	Yes	No
7.1.8 Grazing/browsing land for animals	Yes	No
7.1.9 Sand/clay for brick-making	Yes	No
7.1.10 Clay for pottery	Yes	No
7.1.11 Grass/reeds for thatch	Yes	No
7.1.12 Grass/reeds for weaving/basket-making	Yes	No
7.1.13 Medicinal plants	Yes	No
7.1.14 Wild plants (vegetables/fruit etc.)	Yes	No
7.1.15 Wild animal meat	Yes	No
7.1.16 Insect harvesting	Yes	No
7.1.17 Wood to make charcoal	Yes	No
7.1.18 Wood to use as firewood	Yes	No
7.1.19 Timber harvesting for selling	Yes	No
7.1.20 Gum harvest	Yes	No
7.1.21 Beekeeping	Yes	No
7.1.22 Other: specify		

Q8 NATURAL RESOURCE-USE

8.1 Please provide us with the 3 most important types of wild trees/plants used by your household in the project area (i.e. collected, not planted):			
Type of tree/plant		*Usage*	
8.1.1			
8.1.2			
8.1.3			
8.2 Have these plants reduced in the last 5 years		Yes	No
8.3 Is this a concern to you (explain)			
8.4 Does any member in your household hunt in the area		Yes	No
8.5 If yes, list three animals hunted	11.5.1		
	11.5.2		
	11.5.3		
8.6 Have the animals reduced in the last 5 years		Yes	No

Q9 AGRICULTURE

9.1 Does your household currently practice food gardening (agriculture)		Yes	No
9.2 Where do you practice this gardening:	Around the house	A field on a separate land	Both
9.3 If around house, which produce are currently planted (tick all)		Nothing planted yet	
Ground nuts	Beans	Sorghum	Vegetables
Cotton	Corn	Cabbage	Maize
Tomatoes	Cassava	Rice	Sweet potatoes
Sugarcane	Sesame	Millet	Pineapples
Plantain		Pepper	
Spinach		Onions	
Yams		Peas	
Other: specify			
9.4 Last year, what did you do with these produce		Sell everything and consume none	Sell most, consume little
Sell half, consume half		Consume most and sell little	Consume all and sell none
Did not plant anything last year			
9.5 If on a separate land, how many current cultivated fields does this household have			

Q10 DETAILS OF AGRICULTURAL FIELDS (only of cultivated fields)

No.	GPS coordinates	Ownership 1 = Owner - purchased land from traditional authority 2 = Owner - purchased land from government 3 = Owner - acquired land independently 4 = Inherited 5 = Renter - private landlord 6 = Other (specify)	If leasing, how much per month (MZN)	Cultivated last year 1=Yes 2=No	How did you work the land 1=Using animals 2=Hoe 3=Tractor 4=Other (specify) (allow to tick more than one option)	How did you water the plants on the field 1=Only the rain 2=Well/borehole 3=Flood/irrigation 4=Pumped from river 5=Water can 6=Other (allow to tick more than one option)	Fertilisation 1=None 2=Bought fertiliser 3=Slash and burn 4=Other (allow to tick more than one option)	Rotation Number of harvests on field before moving to new area?	All crops current being planted (tick all) - Ground nuts - Beans - Sorghum - Vegetables - Cotton - Corn - Cabbage - Maize - Tomatoes - Cassava - Rice - Sweet potatoes - Sugarcane - Sesame - Millet - Pineapple - Pepper - Plantain - Spinach - Onions - Soya - Yams - Peas - Other: specify

Q11 PRODUCTIVE TREES (self-planted)

11.1 Does your household have any of the following productive trees:	Number	Usage (commercial; subsistence; both)	If commercial, for how much per bag/bunch
11.1.1 Banana			
11.1.2 Mango			
11.1.3 Paw Paw			
11.1.4 Papaya			
11.1.5 Avocado			
11.1.6 Lemon			
11.1.7 Mandarine			
11.1.8 Guava			
11.1.9 Orange			
Other: specify			

Q12 LIVESTOCK

12.1 How many of the following livestock does your household have, and what are they used for:		
Type of livestock	*No*	*Usage (commercial; subsistence; both)*
12.1.1 Cattle		
12.1.2 Goats		
12.1.3 Sheep		
12.1.4 Pigs		
12.1.5 Rabbits		
12.1.6 Chickens		
12.1.7 Turkey		
Other (specify)		

Q13 HOUSEHOLD INCOMES AND EXPENDITURES

13.1 Can you estimate the amount of money the household received last month from each of the following sources (MZN):		
13.1.1 Employment	Annual income from local trading and local shops (not agriculture-related)	
	Monthly salaries and/or wages of resident household members (total of all members)	
13.1.2 Agriculture	Monthly income from livestock sales/ by-product sales	
	Annual income from your crops/vegetables	
	Annual income from your productive trees	
	Other (specify)	
13.1.3 Donations		
13.1.4 Charcoal		
13.1.5 Land-lease payments		
13.1.6 Compensation payments (elaborate)		
13.1.7 Other sources of income (specify)		

13.1.8 On what item do you spend the most *(choose one; don't prompt)*	Food	Healthcare	Education	Clothes
Household material	Transport	Ceremonies	Funerals	Other

Q14 THE PROJECT

14.1 Any comment that you would like to make about the proposed project	
14.2 Do you have any concerns with the proposed mining project	