

**Livelihoods: An Analysis and Proposal to  
Reconcile Conservation and Development in  
the Buffer Zone of the Quirimbas National  
Park**

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## 1. Introduction

In Cabo Delgado Province, the Mozambican government has taken conservation as a development strategy by creating the Quirimbas National Park (QNP) in 2002. Park management is receiving technical support from WWF. However, as funds were made available only in March 2005, implementation is only starting to gain steam in the second semester of this year (2005).

The creation of the QNP poses an important challenge to conservation management. The park is relatively large: its total area is about 7500 km<sup>2</sup>, whereof little less than 6000 km<sup>2</sup> is located on the mainland. It derives its name of a chain of 28 isles (the Quirimbas Archipelago), along the northeast coast of Mozambique in Cabo Delgado Province. The archipelago and the adjacent marine ecosystems including the Saint Lázaro Bank cover 1522 km<sup>2</sup>. The park involves six different districts: Quissanga, Macomia and Pemba-Metuge along the coast, and Ancuabe, Montepuez and Meluco in the interior.<sup>1</sup>

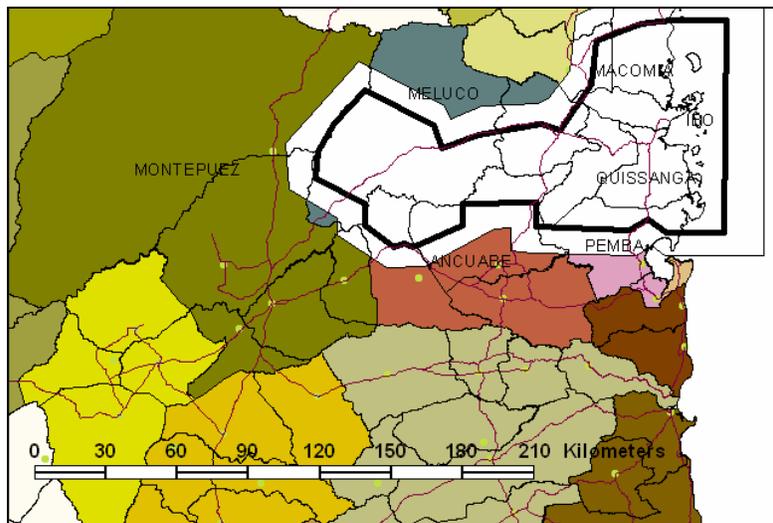


Figure 1: A map of the QNP, the buffer zone (in white) and the affected administrative areas.

Figure 1 provides an impression of the size and impact of the park. The park affects 11 administrative posts in seven different districts. Two districts (Ibo and Quissanga) are entirely incorporated in the park.

The park contains four major habitats: Coastal forest; mangroves; marine ecosystems and miombo forests and savannas. Currently, park management focuses most of its conservation efforts on the marine ecosystems of the Quirimbas Archipelago and the adjacent mangroves and coastal forest. Here, restrictions on resource use are most pronounced. This area also has the largest tourism potential. Management of the miombo forest and savannah of the interior is less restrictive<sup>2</sup>.

<sup>1</sup> MITUR (2004) Plano de Maneio 2004-2008 Parque Nacional das Quirimbas. Ministério do Turismo, República de Moçambique.

<sup>2</sup> MITUR, opus cit., p.41, p.79.

Resource use restrictions are not limited to the park itself. They also affect a buffer zone of 10 km around the park. According to the legislation on forests and wildlife, a buffer zone is a “territorial portion bordering on a protection area, which forms a transition belt between the protected area and the multiple use areas with the objective to check and reduce the impacts provoked by human activities on the respective protected area.”<sup>3</sup> In the case of the QNP this buffer zone with an estimated area of 4000 km<sup>2</sup> is almost as important as the park itself.

Table 1: Rough estimate of the people living in and around QNP (Population and area based on INE (1999); area proportions estimated on the basis of Figure 1).

District	Post	population	area	Density	% buffer	% park	pop buffer	pop park
Ancuabe	Mesa	25215	1657	15,22	30	10	1260,75	2521,5
Ancuabe	Metoro	25856	1417	18,25	0	0	0	0
Abcuabe	Sede	36172	2261	16,00	30	40	3617,2	18086
Ibo	Ibo	4453	53	84,02	0	100	0	4453
Ibo	Quirimba	2608	15	173,87	0	100	0	2608
Macomia	Macomia	23993	1152	11,67	15	10	2399,3	0
Macomia	Mucujo	24522	1070	20,83	25	50	2452,2	12261
Macomia	Quitarejo	7185	679	22,92	0	100	359,25	1796,25
Meluco	Meluco	13955	4654	10,58	20	30	1395,5	4186,5
Meluco	Muaguide	9957	1221	3,00	25	50	995,7	3285,81
Montepuez	Nairoto	5366	12419	8,15	5	0	268,3	0
Montepuez	Namanhumbir	16647	527	9,58	5	0	832,35	0
Pemba-Metuge	Metuge	24801	1575	0,43	33	40	2480,1	12400,5
Quissanga	Bilibiza	11771	861	31,59	0	100	0	11771
Quissanga	Mahate	18199	784	15,75	0	100	0	18199
Quissanga	Quissanga	4358	381	13,67	0	100	0	4358
Total		255058	30726		4018,8	7163,95	42710,78	99669,25

Within the panorama of conservation areas in Mozambique, QNP stands apart for its size and diversity. It also stands apart for the fact that it and the surrounding buffer zone are home to a large number of people. There are no clear estimates as to the number of people in the park, but according to the data in Table 1, there could be at least 100,000 people residing within the park itself.

The buffer zone covers an additional 4000 km<sup>2</sup>. It implies the involvement of another district in park affairs: Montepuez. The buffer zone affects two administrative posts in Montepuez: Nairoto and Namanhumbir. The entire buffer zone is home to about 43,000 people. Thus, the QNP directly interferes with the lives of about 150,000 persons.

It should be noted that this figure is estimated on the 1997 census, and that in reality the number of inhabitants is likely to be at least 25% higher than this because of demographic growth.

<sup>3</sup> Number 38 in Article 1 of Law 19/99 of July 7, the Forest and Wildlife Law.

The presence of these populations inside the park and in the buffer zone imposes restrictions on the capacity of the QNP to implement conservation as well as a specific responsibility regarding the residents' social and economic living conditions and opportunities for development. By its nature, poverty alleviation is one of the main objectives of the Park.<sup>4</sup>

The creation of the park is expected to result into two major gains: the conservation of biodiversity by approaching the coastal ecosystem as an interface between marine and continental systems; and increased income at the national, provincial, local and household level through boosting tourism and putting an end to abusive forms of exploitation, which promote environmental degradation and poverty.

The development of a viable tourism industry in and around the park is one of the key strategies to enhance the QNP's potential as a generator of sustainable economic growth. The global tourism industry has been successful in increasing income at the global and regional levels. Local and household incomes in receiving areas however are not as easily achieved. Much of the money raised through tourism is captured by transport and hotels, which are often owned by large corporations rather than by local entrepreneurs. Local gains over investment tourism investments are generally restricted to low-paid jobs and services. The local population living inside or close to conservation areas bears most of the costs of conservation through the impositions of restrictions on resource use, mobility, freedom of residence and the exposure to damage or even danger from animals. This imbalance between costs and benefits constitutes one of the most important threats to the success of parks regarding both conservation and economic growth.<sup>5</sup>

Other possible actions to increase local benefits concern the sharing of revenues from the exploitation of natural resources in the park and the buffer zone and the development of new resources and sustainable forms for their exploitation.<sup>6</sup> Again, experience shows that these revenue sharing mechanisms are not always easy to implement and that their impact is not always as large as initially expected.<sup>7</sup>

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<sup>4</sup> MITUR, opus cit, p.27.

<sup>5</sup> For a summary of possible impacts see: UNEP's report on tourism:  
<http://www.unep.org/pc/tourism/sust-tourism/economic.htm> .

Another interesting study is Sawkar, K., L. Noronga, A. Mascarenhas, O.S. Chauhan & S. Saeed (1998) Tourism and the Environment. Case Studies on Goa, India, and the Maldives. World Bank, Washington DC.

<sup>6</sup> Spenceley (2003) offers a useful summary of different scenarios for pro-poor and community-based tourism developments. Spenceley, A. (2003) Tourism, Local Livelihoods and the Private Sector in South Africa: Case Studies on the Growing Role of the Private Sector in Natural Resource Management. Sustainable Livelihoods in Southern Africa, Research Paper 8. ODI, Brighton. Source on alternative resource uses.

<sup>7</sup> See for examples the observations on the different experiences in Mozambique, e.g., Foloma, M. (1999) Tchuma Tchato: experiências e perspectivas, in: M. da Luz P. Dias, E. Filimão and E. Mansur (eds.) Comunidades e Maneio dos Recursos Naturais. Memórias da 1ª Conferência Nacional sobre Maneio Comunitário dos Recursos Naturais. Maputo, Novembro 1998, pp. 73-78, Brouwer, R. & M.P. Falcão (2002) Comunidades e concessões florestais: um contributo, in: E. Filimão e H. Massango (eds.) Comunidade e Maneio dos Recursos Naturais. Memórias da 2ª Conferência Nacional sobre Maneio Comunitário dos Recursos Naturais, Maputo, May 2001.

The QNP management faces the dilemma to reconcile conservation and the demand for development by the residents inside and around the park. This situation is far from unique. In many places, conservation efforts clash with patterns and tendencies in existing resource use. Various tools and mechanisms including Payment for Environmental Services (PES) have been suggested as possible solutions turning conservation economically, socially and culturally viable<sup>8</sup>.

The importance of the identification and implementation of these mechanisms cannot be underestimated. The QNP is currently facing a critical situation and if the populations of park and buffer zone are not soon successfully engaged in the conservation effort, it might well be that most of its biodiversity is lost to poachers, encroaching farmers and unscrupulous loggers.

## **2. Objectives of the study**

The costs of the population as well as its possibility to benefit from conservation depend to a large extent on the way in which it organizes the use of available resources and their conversion into the goods and services it needs for its sustenance. Available resources are typically domesticated natural resources, wild natural resources, market resources, social resources and human capital.<sup>9</sup>

In rural areas such as the QNP and surrounding buffer zone people's livelihoods are highly dependent on domesticated and wild natural resources. The restrictions related to conservation imply the imposition of limits on the access to these resources and the need to develop market, social and human capitals as their substitutes. The present document is intended to assist WWF in designing a strategy for achieving this substitution in the buffer zone. For that reason it has the following specific objectives:

1. Identification of the major livelihood activities; alternative income generating activities for the local communities and the extent to which natural resources provide income for their livelihoods.
2. Identification of the expectations of the local communities about partnerships and "collaborative management" of natural resources with private concessions and their direct involvement in the management of resources as well as the benefit they can derive from their contribution in the law enforcement to preserve the natural resources in the Buffer zones of QNP.
3. Documentation of the views of different generations or interest groups (youth, elderly, women, men, etc) towards their future in Buffer zones of QNP with the establishment of the park.
4. Assessment of the dependence of human populations on the forestry and wildlife resources and document the nature of their interaction.

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<sup>8</sup> See for example: Brown, M., J.M. Bonis-Charancle, Z. Mogba, R. Sundarajan & R. Warne (2005?) Linking the Community Options, Assessment and Investment Tool (COAIT), Consensus<sup>TM</sup> and Payment for Environmental Services (PES): A Model to Promote Gorilla Conservation in Africa. Washington DC, Innovative Resource Management Inc.

<sup>9</sup> Scoones, I. (1998) Sustainable Rural Livelihoods: A Framework for Analysis. IDS Working Paper 72. Institute of Development Studies, Sussex, UK.

5. Reporting on the local attitudes towards protected forestry and wildlife species and their relationship with people living inside QNP.
6. Mapping the patterns of human occupation, land use related to Forestry and wildlife distribution and habitat requirements as well as high conflict zones.
7. Proposing measures to improve management of forest and wildlife resources with the involvement of local communities to improve both conservation in the PNQ and the livelihoods of buffer zones inhabitants.

### 3. Methodology

The research underlying this report has two different starting points. On the one hand, it addresses the livelihoods of the populations in or close to the buffer zone. On the other, it addresses opportunities for development.

To understand the livelihood strategies of the local population and identify possible alternatives, combined a set of different research methods:

- Techniques borrowed from the widely used Rapid Rural Appraisal toolkit: meetings with community leaders, the community in general and with generational subgroups to map resources and community organization as well as identify major preoccupations and development priorities.
- Interviews with a broad range of stakeholders or actors who represent possible opportunities for the future. This list includes government officials and the provincial and district levels and private tourism and forestry operators.
- A survey of a representative sample of households to assess:
  - (a) The role of the five different resources or capitals that constitute the core of the livelihood approach (domesticated natural resources, wild natural resources, economic, human and social capitals);
  - (b) The damage caused by animals; and
  - (c) The attitude of people towards animals.

The survey's main objective was obtaining data permitting the identification of the different resources used by the communities of the buffer zone. The components (b) and (c) were included because of two reasons. First, damage by animals is one of the major costs conservation inflicts on neighbouring populations. Second, during the preparation of the study, it had become clear that the so-called «man-animal conflict» is currently a major political issue affecting all levels of government with province.<sup>10</sup>

The team visited five rural communities. Their approximate location is indicated in Figure 2. These communities were selected on the basis of the following criteria:

- Prior information on possible conflicts with developments in the park (in the case of Nanduli with Mareja);
- Expected occurrence of tensions between the local population and the conservation objective due to the location of communities in the valleys of the

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<sup>10</sup> See annexes 2, 3 and 4 for the questionnaire and the guides for the meetings with the local government and population.

- Messalo and Montepuez rivers, which allegedly are major migratory routes of elephants (Ngoronge, Namanhumbir);
- Expected pressure by hunting and logging in the buffer zone and/or the park (Muaje and Nacololo); and
- Existing initiatives regarding community participation in natural resource management (Mareja, Muaje, Metoro).

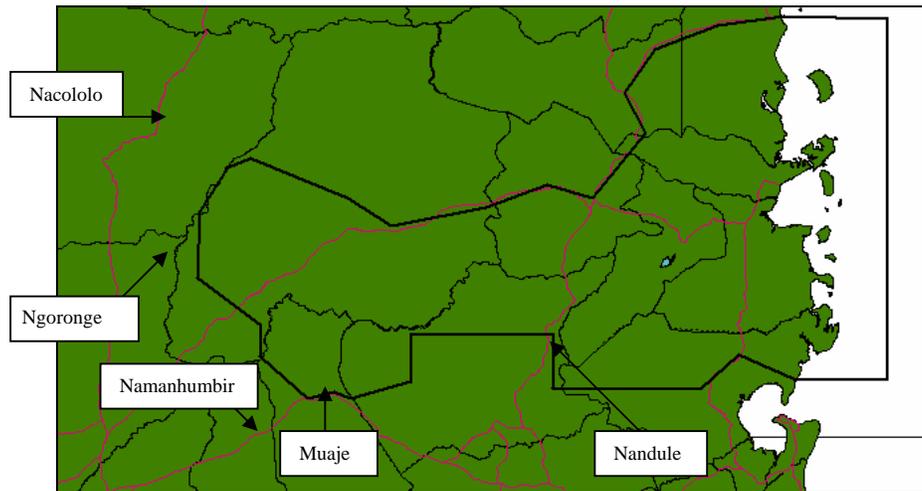


Figure 2: Approximate location of the visited communities.

The survey was carried out in three communities. The planned sample size was 40 households in each community, as this provides confidence intervals that are acceptable for this kind of exploratory study. The selection of the samples was systematic; team members assisted by members of the local communities carried out the interviews.

Table 2: Geographic coordinates, location, status, population size and sample size of the researched communities.

	Nanduli	Muaje	Ngoronge	Nacocolo	Namanhumbir
S latitude	12.52.27,2	13.06.18,7	12.38.17,6	12.18.21,7	13.25.00
E longitude	40.01.22,2	39.52.25,3	39.03.14,2	39.06.35,4	39.17.00
District	Ancuabe	Ancuabe	Montepuez	Montepuez	Montepuez
Administr. Post	Sede	Mesa	Nairoto	Nairoto	Namanhumbir
Status	Hamlet	Village	Hamlet	Village	Post
Residents	1570	5938	±320	2000	1982
Families	368	1400	80	500	±450
Sample size (n)	44	45	36	n.a.	n.a.
Proportion (%)	12%	3%	45%	n.a.	n.a.

n.a.: Not applicable.

Time was one of the major constraints of this study. Data collection in the province was limited to 13 days (August 4 till August 16). As a result, fieldwork was concentrated on two districts (Ancuabe and Montepuez) as well as the provincial

capital. Instead of covering six communities, the study only covers five; of the originally planned 240 interviews only 125 were implemented. The survey covers households in three communities: Nanduli and Muaje in Ancuabe and Ngoronge in Montepuez. In Nacololo data collection consisted of meetings with community groups and a visit to resource use areas and areas affected by elephant damage. In Namanhumbir, also in Montepuez, data collection remained limited to a meeting with the community. In Montepuez, a local agri-processing unit cum tourism facility was visited. In Mareja, attention was concentrated on the local tourism operator. In Metoro the focus was on the activities of the NGO Amigos do Meio Ambiente (AMA). Table 3 contains a rough outline of the timing of data collection.

Table 3: Time table of the implementation of the study. (Source annex 1)

<b>Area</b>	<b>Target groups</b>	<b>Data</b>
Maputo	Collection of maps and documents; preparation contacts in Pemba;	1-4 August
Pemba	Meetings with provincial government, NGOs, private operators; preparation field visit	4-7 August
Ancuabe	Meeting with district government, private operators, communities of Metoro, Nanduli and Muaje	7-9 August
Montepuez	District government, communities of Ngoronge, Nacololo and Nananhumbir	10-13 August
Pemba	Provincial government, NGO, private operators; data processing	14-17 August
Maputo	Data processing; elaboration of document and powerpoint; presentation of document	18-26 August

## 4. Results

### 4.1 General

The buffer zone affects five districts: Macomia, Meluco, Montepuez, Ancuabe and Pemba-Metuge. This report covers two of these districts: Ancuabe and Montepuez. The location of these districts can be found in figure 1:

Table 4 provides a summary of the main characteristics of Ancuabe and Montepuez. A quick glance at the table shows that both districts differ considerable and that as a result the buffer zone will provoke different impacts as well as offer different opportunities.

Table 4: Key indicators of Ancuabe and Montepuez districts

		Ancuabe	Montepuez
Geography	Area (km <sup>2</sup> ) <sup>1</sup>	5,335	15,871
Demography	Inhabitants (1997) <sup>1</sup>	87,243	149,181
	Inhabitants (2005) <sup>1</sup>	125,295	173,602
	Number (%) under 18 (1997) <sup>1</sup>	42,715 (46)	69,055 (49)
Government	Number of administrative posts <sup>3</sup>	3	4
Communication	Tarred roads (km) <sup>3</sup>	146	55
	Telecommunications	TDM	TDM, Mcel
Education	Number of primary schools <sup>3</sup>	50	98
	Number of primary learners <sup>3</sup>	19,113	34,456
	Number of secondary schools <sup>3</sup>	1	1
	Number of secondary learners <sup>3</sup>	1,678	3,579
Health	Number of medical posts <sup>3</sup>	6	9
Conservation	% QNP <sup>2</sup>	20	0
	% Buffer zone <sup>2</sup>	22	4
Economy	Main industries <sup>3</sup>	Graphite <sup>5</sup>	Marmora, Cotton, Saw-mill Tobacco <sup>5</sup>
	Licensed loggers (2005) <sup>4</sup>	4	8
	Licensed timber (2005, m <sup>3</sup> ) <sup>4</sup>	1,045	4,190
	Forestry concessions with impact on buffer zone (2005) <sup>4</sup>	None	Panga (91,250 ha)
	Tourism operators	Mareja, Van Renswijk	Negomane, Kambako, Aurora

<sup>1</sup> INE (1999) Census 1997; <sup>2</sup> Estimated on the basis of geographic data; <sup>3</sup> Local government; <sup>4</sup> SPFFB; <sup>5</sup> Not operational.

Of the two districts, Ancuabe lies closest to Pemba on the Pemba – Montepuez and the Pemba – Nampula roads. Both roads are tarred and in good conditions. The district has an estimated population of about 125,000 inhabitants; some are immigrants from Niassa Province and Chiure District (Cabo Delgado Province).

Ancuabe's economy is based on agriculture and forestry. Forestry is exclusively based on logging licenses. All four licenses affect the buffer zone. The main species are Jambirre (*Millettia stuhlmannii*), Umbila (*Pterocarpus angolensis*), Chanfuta (*Azelia quanzensis*), Pau-ferro (*Swartzia madagascariensis*), and Pau-preto (*Dalbergia melanoxylon*).

Ancuabe's main industry, a graphite mine, has ceased to function due to the high costs of energy. However, it is expected to reopen soon, as Ancuabe will be connected to the national power grid.

In Ancuabe two tourism enterprises are starting their operations in the QNP: Jacobus van Renswijk and Mareja. Van Renswijk's operation is located on a 500 ha plot. He intends to create 20,000 ha fenced sanctuary around it which includes sections of both the park itself and the buffer zone. He aims at the upper market segment (US\$200-US\$300/night)<sup>1112</sup>. Mareja operates on a former cashew and kapok estate within the Mareja chiefdom. Its legal structure is based on a joint venture of two companies: the private tourism operator and the community incorporated in the Mareja foundation. The Mareja foundation is preparing a land claim to approximately 36,000 ha in the park. The model is expected to create a 50-50 profit sharing between the operator and the community. Mareja aims at the lower and middle market segment (from US\$25-US\$100/night upwards with increasing quality of services).<sup>13</sup>

Montepuez lies to the west of Ancuabe and borders on Niassa. It is traditionally a cotton growing area. The only tarred road connects the administrative centre to Pemba and Nampula. The remaining connections to Mueda, Balama, Namumo and Meluco are all un-tarred. As over the last few decades many bridges have collapsed large areas of the districts cannot be reached during the rainy season.<sup>14</sup>

The economy of Montepuez is based on agriculture, mining and forestry. The main commercial crop in Montepuez is cotton, which is grown by smallholders. Plexus, the successor to LOMACO, is the main if not sole cotton buyer in the region. Close to Montepuez-Sede a Marmora-mine is operational. In addition, informal miners dig up semi-precious stones, which are sold locally as well as in Pemba. Allegedly this market involves international connections with informal traders from Somalia, Congo, DRC, and even Mali.<sup>15</sup> The tobacco company belongs to the JFS group, which recently went bankrupt and is no longer active<sup>16</sup>. There are two operational forest concessions in the district. One, Panga, with an area of just above 91,000 ha, is located in the Nairoto area in the QNP buffer zone. A request for third concession to the northwest of Panga is currently being processed by the SPFFB.<sup>1718</sup>

Tourism is still incipient in Montepuez. There are two major safari operations, Negomani Safaris and Kambaku Safaris. Both operate in the Nairoto Administrative post on the border with Niassa province, at a distance of more than 100 km from the

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<sup>11</sup> Interview with Peter Brechtel, WWF Cabo Delgado, August 5.

<sup>12</sup> Interview Jacobus van Renswijk, entrepreneur, August 14.

<sup>13</sup> Interview Sonja di Cappella, Mareja shareholder and co-manager, August 6.

<sup>14</sup> Interview with Mucamate, Montepuez administration, August 13.

<sup>15</sup> Interview Jacobus van Renswijk, entrepreneur, August 14.

<sup>16</sup> Interview with Mucamate, secretary of Montepuez district administration, August 13.

<sup>17</sup> Interview with Darlindo Pechisso, Head of SPFFB, August 5.

<sup>18</sup> In total there are two concession in the PNQ buffer zone. In addition to Panga, Pemba Sun has a 43,660 ha concession in Meluco to the east of Meluco-Sede. Neither concession includes areas in the park itself. Interview Darlindo Pechisso, head of SPFFB Cabo Delgado, August 16.

park border.<sup>19</sup> Negomani's concession covers about 100,000 ha and employs about 20 local people. It caters mainly for the European (Iberian) market.<sup>20</sup>

The French NGO «Aos Corações do Mundo» has started a small agro-processing unit on a 100 ha farm originally belonging to the Catholic Mission of São José. Its main products are essences and fruit juices that are sold on the Pemba and Nampula markets. Production scale is still small: in 2004, Aurora produced 2500 litre of mango juice or the equivalent of about 230,000,000 Mt (US\$10,000). It also operates a small hostel with a capacity of approximately 20 beds aiming mainly at the European market and at by-passers.<sup>21</sup> In addition, there are three pensions and several restaurants in the City of Montepuez.<sup>22</sup>

## 4.2 Livelihood strategies

The populations of the five communities that were visited combine the use of all five forms of capital that form the core of the livelihood approach: domesticated crops and animals, wild plants and animals, financial, human and social capital.

### 4.2.1 Agricultural capital

#### Crops and tillage practices

The population is almost exclusively agrarian. Table 5 below provides a summary of the different crops grown in the communities. The data show that 19 different crops can be found in the region. The main staples are maize and cassava. Both crops dominate in all communities.

Most crops are cultivated for consumption or for small-scale trade within the community. There are three major exceptions: cotton, tobacco and sesame. Cotton and tobacco are mainly grown in Montepuez. All cotton is sold to commercial operators, in most if not all cases PLEXUS (formerly LOMACO) from Montepuez. Sesame and tobacco are also locally consumed.

All farming is manual. All interviewed denied using ploughs and animal traction. Burning is a common practice. When a field is cleared, trees are cut at a height of approximately one meter. Branches are heaped along the bigger ones to kill these through fire. Girding trees is another commonly applied technique to clear the vegetation.

Farming is almost exclusively rain-fed. Tobacco and rice are the only irrigated crops, but only tobacco is actively watered.

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<sup>19</sup> Interview Patricio Mwit, Provincial Director of Tourism, August 5.

<sup>20</sup> Interview with Luís Santos, owner-manager of Negomani-Safaris, August 14.

<sup>21</sup> Interview with Fabien, member of Aurora staff, August 7.

<sup>22</sup> Governo do Distrito de Montepuez (2004) *Balanço Preliminar do Programa Quinquenal do Governo 2000-2004*. Unpublished.

Table 5: Main crops farmed in the five investigated communities and their role in the household economy.

	Nanduli <sup>1</sup>	Muaje <sup>1</sup>	Ngoronge <sup>1</sup>	Nacocolo <sup>2</sup>	Nam <sup>2</sup>	Obj. <sup>3</sup>
Sample size	44	45	36	n.a.	n.a.	
Cotton	0	2	58	X	X	Sale
Maize	86	100	97	X	X	Cons
Cassava	91	98	83	X	X	Cons
Sweet potato	45	13	11			Cons
Pulses	61	71	58	X	X	Cons
Pumpkin	61	42	36	X	X	Cons
Legumes	25	0	14		X	Cons
Sunflower	2	4	0			Cons
Sesame	48	33	33	X	X	Sale
Rice	59	20	28	X	X	Cons
Sorghum	77	73	33	X	X	Cons
Pearl millet	34	7	3			Cons
Peanut	55	58	47	X	X	Cons
Pineapple	9	2	0			Cons
Sugarcane	14	0	19			Cons
Bananas	25	9	22	X	X	Cons
Cashew	39	18	17	X	X	Cons
Fruit trees	11	7	14			Cons
Tobacco	0	0	17	X		Sale

<sup>1</sup> Percentage of sample.

<sup>2</sup> On the basis of information provided during meetings with community members.

<sup>3</sup> Destination of the crop: Cons – consumption or local market; Sale – external market.

### Animal husbandry

The second major resource consists of domesticated animals. Table 6 provides a summary of the practice of animal husbandry in the area. The data show the total absence of any beast of burden or transport. None of the interviewed heads of households declared owning cows or donkeys. This information corresponds to the fact that all tillage is manual. Second, they indicate the influence of Islam in the region. Only along the road Montepuez-Pemba significant Christian populations can be found, which explains why only in Muaje and Namanhambir some households keep pigs. Third, the data show that in general less than half of the households keep animals, and that birds (ducks, chicken and doves) are the most common species. In Ngoronge the number of households keeping chicken and ducks is relatively low. A recent Newcastle epidemic mentioned by one of the residents might explain this phenomenon.

Animals are typically kept for consumption or the local market. The exception confirming this rule is the one Nanduli resident who keeps sheep; he sells the sheep on the external market. The external market also absorbs some of the goats.

The low stock of domestic animals implies that the populations of the researched hamlets and villages are either deficient in animal protein or rely on hunting and fishing to complete their diet.

Table 6: Different livestock and their importance as expressed by the percentage of the households declaring to own them.

Species	Nanduli <sup>1</sup>	Muaje <sup>1</sup>	Ngoronge <sup>1</sup>	Nacocolo <sup>2</sup>	Nam <sup>2</sup> ..
Bovines	0	0	0	-	-
Goats	25	18	0	X	X
Pigs	0	4	0	-	X
Ducks	11	27	0	X	X
Chicken	50	58	19	X	X
Donkeys	0	0	0	-	-
Doves	0	2	0	-	-
Sheep	2	0	0	-	-

<sup>1</sup> Percentage of sample.

<sup>2</sup> Mentioned during meeting with community members.

The occurrence of the tsetse fly and the associated trypanosomiasis in the area is one possible explanation for the absence of horned cattle in the visited communities.<sup>23</sup> Despite the occurrence of tsetse, cattle holding is not totally impossible in this area. Local government data indicate that Montepuez district in 2003 had 2509 heads of cattle.<sup>24</sup> However given the prevalence of tsetse goats are a more viable alternative.<sup>25</sup>

It is unclear to what extent the occurrence of carnivores in the vicinity of the researched communities has a verifiable effect on animal husbandry. Some households declared to have lost poultry to jackal<sup>26</sup> and others mentioned leopard and lion as a motive for not keeping goats, but the incidence of this kind of damage seems very low.

None of the households declared to be engaged in processing milk or other animal products.

<sup>23</sup> Bechtel, P. (2001) Land Law and Agricultural Development in the Cabo Delgado Province of Mozambique and in Swaziland. Paper presented at the SARPN conference on Land Reform and Poverty Alleviation in Southern Africa, Pretoria, 4 and 5 June. [http://www.oxfam.org.uk/what\\_we\\_do/issues/livelihoods/landrights/downloads/mozcd.rtf](http://www.oxfam.org.uk/what_we_do/issues/livelihoods/landrights/downloads/mozcd.rtf)

<sup>24</sup> Governo do Distrito de Montepuez, opus cit, p. 8.

<sup>25</sup> FAO (2005) Special Report Mozambique – June 2005. [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/008/J5510e/J5510e00.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/008/J5510e/J5510e00.htm)

<sup>26</sup> The population used the Macua equivalent of fox. On the basis of the description of its behaviour and the geographic spread of the different dogs, jackals and foxes, this species is most likely side-striped jackal (*Canis adustus*).

#### 4.2.2 Undomesticated resources

Table 7 provides a summary of the undomesticated natural resources used by the population. The data highlight the importance of wood fuel, construction material and of wild fruit, fish and bush meat. Despite the frequently complex legal status of hunting, a considerable number of the interviewed residents of Nanduli and Muaje declared this activity.

Table 7: Undomesticated resources used by the households of the researched communities.

	Nanduli	Muaje	Ngoronge	Nacololo	Nam..
River water for irrigation	12	0	40		
River water for bathing and consumption	19	13	60		
Well water for irrigation	44	29	26		
Well water for bathing and consumption	100	100	100		
Wood fuel	100	100	100		
Wild fruits	88	71	71		
Medicinal plants	67	71	6		
Honey	51	69	43		
Mushrooms	72	71	46		
Bamboo	98	100	63	X	
Poles	95	73	51	X	
Palm leaves	70	78	57	X	
Wood for crafts	42	58	3		X
Logs	44	58	14	X	X
Bush meat	49	38	9	X	X
Fish	40	33	49		X
Grass for thatching	2				

In Nacololo, the director of the local school blamed hunting for the high drop out rate of boys. According to this source, boys start hunting when they are twelve years old. A meeting with the (male) youth of this village confirmed the importance of hunting. People present stated that hunting was «their only significant source of cash». In the Nacololo area a lot of hunting takes place in the region between the Montepuez-Mueda road and the Messalo River. In Libombene, half-way Nacololo and the river<sup>27</sup>, residents from Ngoronge had set up a provisional camp where they were preparing the meat of a kudu and a small antelope (Figure 3). Apparently local hunters provide meat to traders from Mueda. Prices seem low. An impala buttock apparently fetches only Mt 15,000.<sup>28</sup>

<sup>27</sup> Coordinates of Libombene: S 12.14.14,7; E 39.16.11,3.

<sup>28</sup> Information from anonymous informers in Nacololo, August 12.



Figure 3: Proud hunters in Limbombene (Nacololo) drying Kudu meat.

In many places life animals are traded too. In Nanduli local residents tried to sell a pangolin for Mt 300,000 (Figure 4)



Figure 4: Life animal trade in action: a pangolin for sale.

Noteworthy is the rather low incidence of exploration of honey and fish. Honey is mainly collected, often at long distances. Beekeeping is uncommon. However, along the road connecting Montepuez and Nairoto, in the neighbourhood of the Namoro hamlet, existed two traditional beehives. Fish is appreciated and in particular the population of Ngoronge declared that fishing was an important additional source of protein. However, since the transfer of the village from its

original location to its actual position the river remains at a distance of about 10 km, which makes fishing less attractive. In Nanduli, locals declared that fishing had declined due to the silting of a dam. The dam is located within a former cashew estate. Most of this 1000 ha estate was recently privatised, but the population expects little from the current owner with respect to its future development.

The residents of Ngoronge provided a list of eighteen wild fruit and eight freshwater fish species they use to collect<sup>29</sup>. Unfortunately, time did not permit any identification of the tree in the field. As a result, the only identification possible was through the literature. Positively identified fruit species include climbing wild-apricot, governors-plum and marula. Fish species include freshwater shrimp, eel and turtle.



Figure 5: Bundles of thatching grass (Nanduli).

A resource hardly mentioned by the residents but clearly of great importance is thatching grass. In Nanduli as in other villages, large stocks of this grass stand around (Figure 5). It is not unlikely that this resource constitutes another commercialised natural resource. According to the chief of Ngoronge, one bundle would fetch between 3000-5000 Mt, depending on the quality.<sup>30</sup>

#### *4.2.3 Financial capital*

Money is after domesticated and wild natural resources the third form of capital addressed by the livelihoods approach. In the questionnaire, households were requested to declare the different sources of their income. The results of this query are summarized in Table 8.

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<sup>29</sup> Full lists in annex ...

<sup>30</sup> Interview with Régulo Celestino Lamuata, August 11.

Table 8: Different sources of cash and the percentages of households citing them.

Sources of cash	Nanduli	Muaje	Ngoronge	Nacocolo	Naman.
Employment	21	7	3	X	
Sale of agricultural produce	72	84	60	X	
Processed foods	5	0	3		
Animals (incl. Products)	23	0	20	X	
Wood fuel	0	0	3	-	X
Wild fruits	0	0	0		
Palm leaves	12	4	14		
Bush meat	5	0	6	X	
Fish	9	0	29		
Other secondary products	7	2	6		
Petty trade	14	2	9	X	X
Remittances	12	0	23		
Crafts	37	0	29	X	

The data in Table 8 confirm the importance of off-farm resources for the livelihoods of the families in Nanduli and Ngoronge. The sale of palm leaves and trades such as carpenter and the weaving of mats, mattresses (see Figure 6) and sieves (*peneiras*) are important sources of income for a considerable number of households. The main source of cash is however the commercialisation of farm output on the local market or to traders from outside the community.



Figure 6: Weaving of a mattress in Ngoronge, Montepuez.

The only reliable data as to commercial crop sales come from Ngoronge. Here, Plexus bought for approximately 40,000,000 Mt cotton from local farmers. Tobacco in Ngoronge is sold for 220,000 Mt per «wheel»; one hectare should produce approximately 100 «wheels»; generally, tobacco fields would have 0.5 ha.<sup>31</sup>

#### 4.2.4 Human capital

The capacity of a household to benefit from a certain resource depends not only of the existence and access to natural resources, but also of the household itself. Large households have a larger labour pool than small ones, but the proportion of the young and old members, who in reality depend on their stronger kin, conditions the level onto which this potential pool becomes effectively able to feed all and create a surplus. Educational level is another major indicator of a households economic potential.

Table 9 provides a summary of the Key indicators of human capital in Nanduli, Muaje and Ngoronge. The table shows differences between the villages with regard to household size, education and percentage of immigrant heads of households. It appears that Nanduli is the most «rural» community in the sense that it has the largest households and the lowest immigration rates. Muaje's relatively high immigration rate is probably associated to its location on the main road between Pemba and Nampula/Montepuez. Ngoronge distinguishes itself by the low level of education. The age and household structure seem similar to Muaje, which might be an indication of the lack of consolidation associated with its relatively recent transfer from the northern margin of the Messalo River to its current location 10 km to the south.

Table 9: Key indicators of human capital in Nanduli, Muaje and Ngoronge.

Indicator	Nanduli	Muaje	Ngoronge	Province <sup>1</sup>
% female headed	9	7	11	26
Average age head of household	48.8	40.3	39.6	
Average size of the households	5.8	4.8	4.1	3.9
Average number of dependent members <sup>2</sup>	2.6	2.1	2.1	1.8
Average number of members with education	2.9	2.7	1.8	0.8
Modus highest achieved class	5	3	0	
Median highest achieved class	4	4	3	
% immigrant heads of households	14	23	19	

<sup>1</sup> INE (1999) Censo 1997; e INE (2004) Relatório Final do Inquérito aos Agregados Familiares sobre Orçamento Familiar, 2002/3. Instituto Nacional de Estatística, Maputo.

<sup>31</sup> Alfane Xavier, Ngoronge resident and tobacco producer, August 12.

<sup>2</sup> Members aged less than 15 and more than 65 years.

#### 4.2.5 Social capital

The capacity of a community to cope with stress as well as to develop initiatives requiring collective action depends highly on its social capital. Social capital is, in this context, the existence of institutions people can rely on in times of crises or which strengthen community relations internally as well as in its interactions with the exterior. In the context of this study, the concept was operationalized by asking respondents about their affiliation in different associative organizations, such as the church, other religious organizations, political parties, saving and credit organizations, etc. The results are summarized in Table 10.

Table 10: Percentages of heads of households who are members of different types of associations in Nanduli, Muaje and Ngoronge.

Head of household is member of a:	Percentage of sampled households		
	Nanduli	Muaje	Ngoronge
Muslim or Christian church	95	93	83
Traditional religious group	33	11	31
Burial society	44	33	37
Political party	86	67	77
Producers' association	29	16	3
Saving and credit groups ( <i>xitique</i> )	17	11	17
Other associations	7	0	6

The data in Table 10 highlight the importance of religion (Islam) and the high level of political mobilization. They also show the relative absence of economic associations such as producers' associations and rotating savings and credit groups (*xitique*). No specific data are available as to Nacololo and Namanhumbir, however, in both communities appear to exist the same social institutions.

#### 4.2.6 Government structures

The government system in Mozambique has the following tiers:

- Central Government
- Provincial Government
- District Government
- Administrative Post
- Village or locality
- Hamlet
- Quarter

Although not part of the regular state administration hierarchy, the administration of the QNP is bound to become one of the most important governmental actors in the buffer zone. QNP management will monitor and interfere directly in the way buffer

zone residents will be using their environment inside the buffer zone itself and in the adjacent park.

Technical staff is concentrated at the Central, Provincial and District levels. Here, specialized directions can be found. The level of specialization and technical expertise decreases with the hierarchy. Moreover, at the locality and hamlet levels, formal, state government becomes intertwined with traditional structures. Finally, at this level, in areas with a strong Frelimo presence, the distinction between state and former single party is often not very clear.

In Nanduli, local government consisted of the *presidente da aldeia*, his adjunct, the *secretaries de bairro*, *chefs de quarteirão* and the head of the community police force. Traditional leadership was not visible.

In Ngoronge, the formal structure headed by the *presidente da aldeia* and his adjunct has its counterpart in a traditional chief and the council of elders and lineage leaders. Village matters are settled in a council consisting of traditional and state-appointed officials as well as other important figures such as the director of the local school and the head of the community police.

In Muaja the role of the traditional chief seems more restricted to the spiritual domain, although he has an important role in legitimising state government actions in the community, e.g., tax collection. AMA assists a Community Development Committee. This committee has a composition similar to the village council of Ngoronge but extended with representatives of the parent-school commission, the water commissions and of forest-related professions such as carpenters. It has an important role in the district planning process<sup>32</sup>.

In Nacololo and Namanhamburi a queen completes the traditional hierarchy. The queen is in rank superior to the (male) chief. She has an important role in the belief-system related to rains.

When asked about their relationship with the different levels of government, people invariably agree that they can expose their problems to their leaders at the village, administrative post and district level. None of the interviewed, however, was (at this stage) aware of the existence of the QNP or felt that it would be easy to contact its management.

#### 4.2.7 Disasters and threats

Survival not only depends on access to resources and the capacity to exploit them; it depends also on occurrence of disasters.

Cabo Delgado has a turbulent history. In the 1960s, the liberation war took a heavy toll on the population. Until then, people had lived dispersed. The colonial government responded to the intensification of insurgency by relocating people to fenced villages (*aldeamento*). After independence, peace was short-lived. From the

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<sup>32</sup> Interview with Paulo Libamba and Josefina José Correia of AMA-Muaje, August 9.

late 1970s onward, warfare forced many people to abandon their homesteads and seek refuge in towns and cities. Since the 1992 peace agreement most moved back to their original residential areas. However, there are significant exceptions. The village of Ngoronge, for example, used to be located on the north bank of the Messala river, more than 10 km to the north of its current location.

War is one of the disasters that may profoundly shock people's livelihoods. Others are natural disasters such as floods and droughts. In addition less dramatic, creeping factors may mine people's chances of survival. Typical examples of such factors are pests and plagues and animal attacks to crops, assets and people, some of which may actually be constant and endemic.

As part of the questionnaire, people were asked to confirm the causes of losses of crops, animals, assets or people. The results of this query are summarized in Table 11.

Table 11: Percentage of households in Nanduli, Muaje and Ngoronge who suffered crop losses through floods, droughts and attacks of pests and animals.

Cause of loss	Percentage of sampled households		
	Nanduli	Muaje	Ngoronge
- floods	9	2	6
- droughts	63	27	57
- grasshoppers	77	67	74
- mice and rats	100	98	94
- birds	74	71	23
- wild animals	98	98	89
- snails	33	0	29

The data in Table 11 show that almost none suffered from floods. Droughts, mice and rats and wild animals are the causes of losses most commonly referred to. Their relative impacts on crop loss, however, may not correspond to these figures.

There is as strong consensus among the interviewed heads of households about which wild animal species provoke the damage (Table 12 on page 22). The most important species are monkeys, elephant, bush pig, warthog, and jackal. These animals damage primarily food crops. Some animals attack a broad range; others select only one or two cultures: jackal apparently only attacks peanut. Tobacco, cotton and to a lesser extent sesame suffer less from attacks. Damage to these crops is mainly the result of trampling.

Less common is damage to goods, animals and persons. Elephants sometimes destroy the shelters people build on their fields where they stay when they keep watch over their crops. Monkeys also provoke damage to goods. Jackal and wildcat prey on poultry. In Nanduli one person stated that a leopard had attacked and wounded a member of his household. Here, people also reported lion and leopard killing livestock.

For Nacololo and Namanhumbir no data were collected which allow for a more detailed evaluation of the damages by wildlife. However, the results from the meetings with the local populations of these communities have made it clear that the patterns here are quite similar.

Table 12: Animals seen and animal damage to crops between January 1 and August 14, 2005.

Animal	Nanduli		Muaje		Ngoronge	
	Seen	Damage	Seen	Damage	Seen	Damage
Monkey	100	98	84	82	100	89
Lion	16	5	7	2	9	0
Leopard	16	7	2	0	3	0
Elephant	79	93	96	96	51	11
Bush pig	93	91	71	73	77	54
Warthog	84	81	53	56	57	46
Fox	35	23	24	9	20	9
Hyena	2	0	2	0	6	0
Panther	5	0	9	0	0	0
Wild dog	7	0	4	0	6	0
Crocodile	0	0	9	0	20	0
Bufalo	0	0	2	0	2	0

### 4.3 Attitude towards wild animals

People's response in a confrontation with wild animals is obviously dependent on the danger of a species for man: smaller animals such as monkeys, bush pigs, warthogs, jackal and antelopes are either chased away or hunted. The larger cats and elephants are feared and avoided.

Most communities are strongly Islamic. As a result, bush pig and warthog are not part of the local diet. In Nanduli hunters would sell them to the teachers of the local school. In other places such a market may not exist. The absence of reduced size of the demand for their meat is likely to reduce human pressure on the populations of these species. This also the case with regard to monkeys.

The data in Table 12 suggest that in Muaje raids by elephants are more frequent than raids by monkeys, bush pigs and warthog. This information contrasts sharply with the information from the other communities. Moreover, the size of the elephant population in the area is much smaller than those of the other species. Therefore, it is likely that these percentages reflect not so much reality as perception.

Elephants have bad Public Relations. One single animal can create significant damage. Moreover, a farmer can protect his fields against monkeys, bush pigs and warthogs by chasing them away, but in the case of elephants the roles are inverted and it is the farmer who often has no other choice but run. Traditional techniques

such as fire apparently are no longer effective. To the contrary, it seems that lighting a fire provokes the animal's rage even more. People claim that the application of pepper is also losing its effect. The combination of impact and the power of an elephant in relation to man probably produces a bias against this species.

#### 4.4 Settlement and land use patterns

Existing land use maps and satellite imagery give an indication of vegetation cover; direct observation suggests rapid changes with farms encroaching on woodlands. In Nacololo, Nanduli, and Ngoronge many signs of recently opened field were clearly visible, as the remnants of the trees (mainly *Brachystegia* spp. and *Julbernardia* spp.) were still standing on them. Farmers clear their land by cutting down shrubs and smaller trees, and by burning and girding of trees with larger diameters. Farmland is therefore the main source of wood fuel.

Land use patterns can roughly be described as a system of widening circles. The inner circle is the residential area. Houses are invariably made of mud and sticks with thatched roofs as shown in Figure 6. Productive assets in this area are small livestock and fruit trees as well as workshops and tools. In this area one can also find social infrastructures such as shops, market areas, schools, mosques and water wells. Although in most areas water is reportedly scarce, the distance to wells normally less than an hour on foot.

The residential area is circled by farmland. The size of this circle varies according to the village. However, the results from the meeting with the villagers as well as field observations indicate that in general it may be 5 to 10 km in diameter, implying that about each village is surrounded by 8000 to 20000 ha of farmland (Table 13). Average farm size in Cabo Delgado 1.15 ha<sup>33</sup>. This suggests that only a tiny fraction of the cleared area is actually cultivated. This might be a sign of the abandoning of old farms.

Table 13: Estimated cleared and cultivated areas in the five visited communities.

Village	Number of households	Estimate cultivated area (ha)	Estimate cleared area (ha)	Fallow
Nanduli	368	423	7500	94
Ngoronge	80	92	8000	99
Nacololo	500	575	8000	93
Muaja	1400	1500	18000	92
Namanhumbir	450	500	12000	96

The separation between residential and cropping areas implies that during the farming season people will stay in small shelters on their farms to protect them

<sup>33</sup> INE (2002) Censo Agro-Pecuário 1999-2000. Apresentação Sumária dos Resultados. Moçambique. Instituto Nacional de Estatística, Maputo.

against animals. As parents will frequently charge their children with this task, according to local schoolteachers it is one of the reasons for dropout.

As different crops have different agro-ecological requirements some zoning might occur as a result of variation in soil quality, land form and the availability of water. In Nacololo, people stated that the northwestern quarter of their farmland circle was more fertile and therefore more appropriate for rice and cotton. Localized depressions are also important, especially with regard to rice farming.

A third circle, the forest, surrounds the farmland. Forest is perceived as *mato*, waste and strategic reserve at the same time. From this area people extract undomesticated resources such as bamboo, palm leaves, honey and wild animals. Due to the scarcity of these resources in a close range to the village collecting these goods may require a time investment of one or several days. It is also this area which is the strategic reserve for the clearing of new farms when the fertility in the older plots declines.

Tobacco farming is the main exception in this picture. Tobacco farming is typically done on riverbanks. In Ngoronge and Nacololo these banks were located outside the farmed circle, in the forest at a distance of between 15 and 30 km from the residential areas.

#### **4.5 Obstacles and outlooks**

The five visited communities are quite different and are likely to represent to a large extent the broad variation that exists in the buffer zone with regard to livelihoods. These differences are related to the dominant natural conditions and to accessibility. The populations of Nanduli, Ngoronge and to a less extent Nacololo share the sensation of being abandoned. Nanduli and Ngoronge are located respectively 15 and 5 km from the main road; access to markets and services is precarious; the government is seen as distant. In Ngoronge, the population claims it cannot sell its excess production in staples because of bad roads and lack of traders.

In all communities wildlife and water are seen as the main constraints to development. During the meetings with the communities, all raised the issue of the destruction of their crops. Invariably, the main culprit is the elephant. In Nanduli, people believe that the frequency and intensity of the raids has increased due to the presence of Mareja in its vicinity. Here, Mareja is perceived as a major threat and obstacle to development.

Although in all villages have several hand pumps, residents complain about the quantity and quality of the available water. The only village where drinking water doesn't seem a first priority issue is Nanduli. Here, residents defend the recuperation of a local dam to increase storage capacity and fish production.

Only in Nacololo it was possible to have meetings with different groups. The results of these meetings as to the differences between the perspectives of the general meeting and the meeting with the youth on obstacles and outlooks are represented in Table 14 below. Comparison of both results show that whereas the general meeting was very much concerned with natural resource related issues and services, the

youth of Nacololo focused very much on the creation of opportunities for development. Their interest was clearly in improving production, creating jobs and adding value. They also showed interest in education and complained about the absence of opportunities to read.

Table 14: Obstacles and outlooks of the general meeting and the meetings of women and youth in Nacololo.

General	Women	Youth
Measures to stop crop damage by wildlife	Improve access by repairing bridges	Dam
Health post	Health post	Sawmill
Boreholes	Improve conditions in school (desks)	Credit system to support business efforts (carpenters)
Improvement of the road and rehabilitation of the bridges	Dam	Water supply
Increase local revenues from timber extraction by external operators	Employment creation	Football field and sport equipment
		An economic association that would produce jobs
		Grain mill
		Treatment of cashew trees for oidium
		Market information
		Addition of 7 <sup>th</sup> grade to the local school

## 5. Opportunities for intervention

The study has brought to the light opportunities for development. The realization of these opportunities depends on four stakeholder groups: the government, the private sector, NGOs and the communities. In this chapter, these opportunities are listed per stakeholder group.

### 5.1 Government

At the provincial level a specific directorate exists for tourism development. Tourism is one of the main development options for the province in general and the QNP and the buffer zone in particular. The creation of a specific government body can and should provide a strong impetus to the development of this industry.

The creation of the QNP implies the creation of a specific organ for conservation and sustainable development in the park and in the buffer zone. QNP management is building up a management capacity by contracting well-trained staff and the recruitment of rangers and scouts as well as equipment.

At the provincial level exists capacity with regard to the monitoring and control over flora and fauna in and outside the park and buffer zone. Under the current legislation, tourism is responsible for flora and fauna in conservation areas and buffer zones and agriculture for the remaining areas. In reality, competences are not always well defined. For example, there are two forest concessions in the buffer zone. This overlap of responsibilities and competences can work as a brake on management. However, by creating the right synergies higher efficiencies and qualities can be achieved. QNP management will have a key role in creating these synergies.

At the local level government is headed by a president and a traditional chief. Government is highly collective and involves both modern and traditional authorities. This structure is a good point of departure for formal local councils for the management of forest and wildlife resources<sup>34</sup>, which can receive and administer the receipts of logging and hunting licenses.

## **5.2 The private sector**

Around the park two major (legal) industries exist: tourism and logging. Experiences with other conservation areas show that they may have a pivotal role in the development of a vibrant tourism industry in its surroundings. Tourism can expand more easily outside a park because restrictions on development are less stringent. The three existing innovative tourism initiatives in the area (Aurora, Mareja and Van Renswijk) all share a commitment to ecological sustainability and community development. Two of the three enterprises are located within the QNP and have a direct impact on the buffer zone. The third (Aurora) is located outside the buffer zone. Bringing these three together will help to create a critical mass that can both help to promote the diversification of tourism away from beach-based and marine activities into the interior and to rally forces around wildlife preservation and landscape conservation in park and buffer zone.

In addition to these three initiatives two major safari enterprises operate in the Nairoto area. Although concentrating their activities on the western section of the province on the border with Niassa Game Reserve, it seems possible to create partnerships that will enable the use of their knowledge with regard to wildlife management, poaching control and a specific segment of the tourism market on behalf of the buffer zone.

The second major private operation is logging. Currently the industry is moving away from extraction through simple logging licenses towards managed forest concessions. Forest concessions require exploitation on the basis of ecological

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<sup>34</sup> These councils are foreseen by article 31 of Law 10/99 (the Forestry and Wildlife Law) of July 6 as an instrument in the implementation of participatory management; the articles 95, 96, 97 and 98 of Decree 12/2002 of June 6 regulate their composition and competences.

sustainability and the development of a forest industry chain by the installation of saws. Under current market and government conditions, the economical viability of a forest concession is precarious. As a matter of consequence, concession holders might easily be coaxed towards diversification of their activities. Certification of timber in order to facilitate access to the US and EU markets away from the dominant Chinese market constitutes another commercial opportunity if concession holders are willing to adopt FSC management standards. Certified timber produces potentially benefit also from premium prices between 5% and 30%.<sup>35</sup> Although timber certification is not expected to provide significant commercial benefits to developing countries in the near future, it could provide significant rents to individual firms that develop market niche strategies<sup>36</sup>. Finally, concession holders in the buffer zone are likely to support measures that will reduce the poaching of timber by neighbouring loggers or community members.

### 5.3 NGOs

Several NGOs have developed relevant activities in the province. One is WWF itself. It represents a large stock of experience with regard to the management of conservation areas. As WWF already provides technical and financial support to the management of the QNP and the park and its buffer are intimately related, this organization should also assume a leading role in the development and implementation of initiatives in the park's immediate surrounding by developing partnerships with other NGOs with different mandates.

As part of this study four major NGOs were contacted: Aga Khan, AMA, Helvetas and Progresso. Each of these organizations is engaged in natural resource management in the buffer zone and the park, although perspectives may differ. Aga Khan focuses on food security and income raising and pays special attention to the mitigation of the impact of elephant on crops; AMA focuses on the building of organizational capacities; Helvetas concentrates on agriculture and district planning<sup>37</sup>; Progresso's activities cover education, health, livestock and poultry, and agriculture. Other major NGOs are Acção Agrária Alemã, CARE and PAMA. CARE and PAMA are involved in the development of the local trade network. The existence of these organizations constitutes an important opportunity for major impact in the buffer zone through coordinated interventions.

### 5.4 The local population

Conservationists and local communities generally tend to take opposite stands as to the management of resources. The study shows that the communities living in or

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<sup>35</sup> Hansen, E. (1999?) Certified Forest Products Marketplace. Chapter 3 in: Forest Products Annual Market Review 1997-1998. 12pp. <http://www.unece.org/trade/timber/docs/rev-98/chap-3.pdf>

<sup>36</sup> Varangis, P.N., R. Crossley, R. Braga & C.A. Primo (1995) Is there a commercial case for tropical timber certification?, Volume 1. Policy Research Working Paper 1479. World Bank, Washington DC.

<sup>37</sup> Interviews with Peter Merz, Country Director, August 3 and Avêncio Matenga, Helvetas Chiure office, August 6

close to the buffer zone use the land, vegetation and fauna in this buffer zone and also in the park. By doing so, they reshape the landscape the park intends to preserve.

Conservation strategies target these communities in order to change resource use patterns that obstruct the management objectives of the park. While target of intervention, people also constitute an opportunity. People are bodies and minds, manpower and creativity. Wildlife can benefit from the local population through the creation of community managed feeding pastures, water holes and dams, and the people's active involvement in protecting them from invading alien species, fire and poachers.

The engagement of the residents' man- and willpower in favour of landscape preservation is decisive for the success of the conservation effort as a whole. This engagement will only take place if it will result into gains that substantially surpass the opportunity costs of conservation unfriendly forms of resource use. Its success depends on linking benefits directly to the costs of conservation; it cannot depend on project-type of interventions with fixed timeframes and without a direct bearing on these costs.<sup>38</sup> Project-type of interventions should have a supportive role by reinforcing the improvement of living conditions achieved through the conservation-related interventions.

Interventions should build on the communities' capitals and help to minimize risks and threats. These capitals are the existing crops, livestock, wild natural resources, human capital and social capital. In all areas cashew production has declined due to the fungal oidium disease. In Nanduli, Incaju manages the 50 ha remnant of a recently privatised 1000 ha cashew estate. Incaju produces saplings but local farmers complain that their trees are not productive. In Nacololo youths and women called for government support by treating the trees with a fungicide. This fungicide programme is already being implemented in other parts of the country. Young trees in the area testify the investment of local farmers in this crop. It would seem that a synergy could be created that would benefit all communities involved.

## **5.5 Natural resources**

The buffer zone contains a wide range of resources, some of which are shared with the park. Commercial extraction of bush meat, life animals, bamboo and timber within and outside the law are a reality. Non-marketed resources include fish, honey, palm leaves, wild fruits and medicinal plants. Pressure on wildlife, bamboo and timber seems threaten the survival of the populations in and around the buffer zone.

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<sup>38</sup> Brown, M., J.M. Bonis-Charancle, Z. Mogba *et al.*, opus cit.

## 6. Possible interventions

### 6.1 Converting costs into gains

The creation of the QNP and the buffer zone create additional costs for the local population. These costs have to be mitigated and/or turned into gains. Table 15 contains a list of costs of conservation and suggestions for their mitigation or compensation or inversion into gains. The list is not intended to be final or complete. It is tentative, and probably neither exhaustive nor entirely practicable. It is merely an example of how interventions that will make conservation a viable option for the population of the buffer zone can be identified.

Table 15: Costs of conservation and possible actions for inversion or compensation.

Costs of conservation	Potential actions for inversion or compensation
Raids by bush pig and warthog	Acquisition of bush pig and warthog meat by restaurant facilities in and around the park from animals caught under certified conditions
Raids by monkeys	Study the viability of controlled hunting of problem monkeys and the sale of their meat on the domestic Chinese market.
Raids by elephants	Organized cull of problem animals within the context of a safari
Raids by elephants	Payment of fees by tourists per spotted animal
Relocation of machambas	Payment for abandoning a machamba established prior to a certain date in designated zones
Relocation of machambas	Fining for opening machambas after a certain date in designated zones
Competition man-animal for water	Creation of dams and waterholes in strategic areas for men and animals
Restrictions on the collection of wood fuel and increased demand for energy	Installation of hydropower, solar power with a fee structure based on opportunity costs firewood collection
Competition men-elephant for bamboo	Study the viability of bamboo farms.
Restrictions on hunting	Allow hunting of problem animals in well-defined and controllable context.
Restrictions on hunting	Employment of hunters as guides and payment per spotted life animal
Restrictions on hunting	Promote access to alternative sources of animal protein, in particular through support to animal husbandry.
Restrictions on community logging	Craft and carpentry training to increase local added value.
Restrictions on commercial logging	Strict control of compliance with management plan; support chain development and diversification of concession holders
Restrictions on community logging	Capture and application of 20% community share over commercial logging

The proposals in the table show that it is possible to make conservation economically interesting. However, the success of such an effort requires concerted actions of all actors mentioned in chapter 5 as the main stakeholders. Moreover, it will be necessary to develop conscious efforts to attract more attention to the area and promote new investments, especially in the field of tourism. Attracting investment, on its turn, depends to a large extent on the capacity and willingness of government structures to identify potential partners and to open the necessary avenues. The barriers to new investors are perhaps not so much related to taxes and so forth, but primarily to red tape, bureaucratic passivity, the lack of clarity about procedures, and lack of coordination between government agencies. Capacity building at the government level involving MITUR, DPA, DPCI, DINAGECA district governments and other key agencies is therefore a sine qua non for any intervention in the buffer zone.

Table 15 indicates that it is possible to find solutions for different negative impacts of conservation. It also shows that these solutions depend on (a) successful fundraising; (b) successful commercial enterprises; and (c) on the capacity to enforce the use restrictions foreseen in the QNP management plan. In this way, the suggestions in Table 15 highlight again the importance of capacity building within the QNP, the Provincial Directions, District governments and the communities.

## **6.2 An outline for possible interventions**

On the basis of the suggestions in Table 15 it is possible to draw the outlines of a project proposal. As WWF capacity is limited, and as it will be necessary to build an institutional and social basis this project should take the shape of pilots in some key areas. These pilots should feed into a wider project circle of problem identification, project design, implementation and evaluation.

This report cannot claim to have assessed *the* problems of *the* buffer zone. It covers only a relatively small extension of that zone; it does not cover any of the sections to the north of the QNP. However, many of the problems are typical of a conservation area and therefore are likely to occur in other parts of the buffer zone, too. Therefore, pilots based on the outcomes of this study will constitute a useful input into the entire QNP/buffer zone management effort.

Any selection of a pilot area will be arbitrary. However, it should be based on more or less acceptable criteria:

- potential positive impact on conservation and development
- existence of a development potential, e.g., on the basis of the different resources of the community, and the presence of partners
- the risks related to doing nothing.

A summary of this assessment for the five communities involved can be found in Table 16. On the basis of this table it seems that the priority for pilot interventions are:

- (1) At the level of the provincial government and QNP management;
- (2) At the level of the tourism operators in the province
- (3) In Nanduli and in Nairobi.

On the basis of this assessment, it seems that the pilots should be carried out at the provincial level, at the level of the administrative post (Nairobi) and at the community level (Nanduli).

Table 16: Summary of main issues for community development in the five investigated areas.

Area	Assessment
Province	Low management capacity at Tourism department. Need to create communication between the different directions and services at the provincial level. Need to market the province's interior as a tourism destination; support to key undertakings.
Nanduli	The area is a high-risk area for the success of one of the few community-based ecotourism undertakings in the region: Mareja. Bone of contention is the damage inflicted by the animals (primarily elephants) that are a key asset to Mareja without any visible compensation for the Nanduli residents. Farming is penetrating the buffer zone and encroaching on the park. The community has a strong internal organization and apparently stable leadership. The risks of no intervention are high. Illegal hunting and sale of life animals.
Nairobi: Ngoronge	By its history and demography Ngoronge seems a less stable community. Its focus is on commercial agriculture; hunting and exploration of other wild resources exists but no proof of large-scale commercial ventures. Hunters move across the Messalo River into the Nacololo area.
Nairobi: Nacololo	Huge ecological potential; sparsely populated; main gateway into the best sections of the park from the NW. Logging and hunting are major activities. Tensions with Panga and other loggers a threat.
Muaje	Risk area for PNQ management due concentration of population and good access (the main road is the border of the park); logging seems frequent. Area in buffer zone is mainly agrarian.
Namanhumbir	Roaming elephants, but further little connection with park or buffer zone.

At the provincial level, efforts should be directed at the government, the private sector, and the NGOs:

- Building of the government's capacity to assess resources and monitor and control their use, engage and assist private operators, and stimulating inter-department communication,
- Supporting private operators in turning their undertakings sustainable, profitable and magnets for others, and
- Mobilizing partner organizations such as Progresso, Aga Khan, CARE, Helvetas around the development of the buffer zone.

At the community level, actions should on the one hand follow the ideas outlined in Table 15 on page 29 in order to create the correct stimuli for conservation. On the other hand, there should be direct interventions of the following types:

In Nandul:

- Fencing of farms against elephants,
- improvement of per hectare productivity,

- generation of energy in mini-dam; aquaculture;

In Nairoto:

- Creation of a commission for the 20% of Panga
- Stationing of permanent and mobile forest and game scouts to monitor logging and hunting
- Installation of saw mill
- Capacity building among carpenters
- Revival of cashew and improvement of per hectare productivity
- Generation of energy in mini-dam
- Aquaculture

A more detailed outline can be found in Table 17. This table provides a list of possible actions grouped per area and type of activity and accompanied by a short summary of a possible format for their implementation.

Table 17: Summary of possible project activities and their modus operandi.

<b>Level</b>	<b>Nature</b>	<b>Type of activities</b>	<b>Modus operandi</b>
Province	Capacity building	Training of Provincial Direction of Tourism in <ul style="list-style-type: none"> <li>- marketing strategies</li> <li>- legal aspects</li> <li>- administration</li> </ul>	Contracting of consultant to execute the training
Province	Promotion (PR)	Design and implementation of tourism marketing strategy	Contracting of enterprise in partnership with MITUR, operators and QNP
Province	Tourism development	Identify possible attractions in the interior and create mechanisms for their exploitation	Consultancy and partnership with tourism operators
Province	Tourism development	Facilitate access to tax exemptions etc. for ecotourism undertakings	Negotiations with CPI, Finance Ministry, MITUR
Province	NGO	Engagement of development organizations with QNP and buffer zone and coordination of efforts	Organize a «donor conference» and create a provincial steering committee for NGOs
All communities	Development undomesticated resource use	Promotion of the sustainable production and marketing of non-timber forest products such as honey, palm leaves, snails, mushrooms, bamboo	Assessment of potential production and demand; creation of networks with PAMA and CARE.
Nanduli	Infrastructures	Rehabilitation of dam for water, aquaculture and if possible the generation of energy Fencing of agricultural fields against elephants	Integrated approach involving PROGRESSO, Incaju, DPP, DPA, MITUR, Aga Khan
Nanduli	Capacity building	Create mechanism of levy for maintenance access roads to Mareja	Involve Mareja tourism and community in supporting Nanduli community

<b>Level</b>	<b>Nature</b>	<b>Type of activities</b>	<b>Modus operandi</b>
Nanduli	Wildlife management	Culling of problem animals on agricultural fields Creation of water (bore-)holes in Mareja area to divert animal away from Nanduli area. Ascribe QNP scouts to Nanduli area to supervise hunting and life animal trade.	Create partnership with professional hunters.
Nanduli	Agricultural development	Diversification (animal husbandry) Improvement of farming techniques Improvement of transport and ploughing capacities (animal traction) Create privileged commercial relations between Mareja and Nanduli farmers.	Coordinate interventions by Incaju, CARE, PAMA, Progresso and Mareja
Nairoto-Sede	Capacity building	Create a basis for fixed and mobile brigades of forest and game rangers Operating brigades on bridge and other key points Rehabilitation of infrastructure	QNP, MITUR, SPFFB, WWF
Nacololo	Tourism development	Support Panga in attempts to develop ecotourism activities on its concession.	Panga, MITUR, consultant
Nacololo	Forestry development	Support Panga in installing a sawmill in the area	Facilitate subsidized loan; Facilitate contacts FSC
Nacololo	Capacity building	Train locals from Nacololo in carpentry and other crafts Support Panga in adopting FSC management principles and certifying timber	Involve technical and professional training institute from Montepuez, Progresso
Nacololo	Capacity building	Create committee in Nacololo for the 20% of logging receipts.	Support local communities, Panga and SPFFB
Nacololo	Wildlife management	Culling of problem animals on agricultural fields through organized safaris	Negotiate community-friendly deal with Negomani safaris
Nacololo	Infrastructure	Construction of a dam for water storage and the generation of energy	Study technical and economical feasibility, create mechanism for financial sustainability, partnership with DPA, DNA, EDM?
Nacololo	Capacity building	Support the creation of professional groups	Involve CARE, CLUSA?, PAMA, Progresso
Ngoronge	Capacity building	Support marketing of staples	Engage PAMA

Annex 1: Programme and contacts

Instituição	Pessoa	Função	Contacto	Data	Hora
Helvetas – Maputo	Peter Merz	Director	21-487787	3-aug	11.30
Viagem				4-aug	07.55
Aga Khan	Luciano Macumbe	Substituto do chefe do programa	272-21189	4-aug	14.00
PNQ	César dos Santos	Administrador	82-4325080	4-aug	15.30
SPFFB	Darlindo Pechisso	Director dos Serviços	82-4547920	4-aug	17.00
MITUR	Patrício Cornélio Mwitu	Director Provincial	272-21912	5-aug	08.00
WWF	Peter Bechtel	Assessor técnico	82-6614950	5-aug	10.00
SPFFB	Darlindo Pechisso	Director dos Serviços	82-4547920	5-aug	11.00
MITI-Madeira	Faruk	Empresário	82-3150900	5-aug	13.00
SP GeCa	Manhique	Director Provincial	82-5886550	5-aug	15.00
Progresso	Rodrigues Ngonga	Coordenador provincial		5-aug	16.00
Arte Maconde/panga	Isabel	Empresário		5-aug	18.00
Helvetas - Cabo Delgado	Avêncio Matengue	Colaborador	82-7444710	6-aug	17.00
AMA-Metoro	Paula Limbama & Josefina			7-aug	12.00
Mareja	Sonja di Cappella	Namorada	82-7058860	7-aug	13.00
Administrador Ancuabe		Administrador	272-611000	8-aug	09.00
CGLRN-Moaja, Ancuabe				9-aug	15.00
Comunidade Nanduli				9-aug	
Aurora-Ancuabe	Julien	Membro		10-aug	07.00
Comunidade Ngoronge				10-aug	
Comunidade Nacololo				12-aug	

Instituição	Pessoa	Função	Contacto	Data	Hora
Administrador Montepuez		Administrador		13-aug	09.00
Comunidade Namanhumbir				13-aug	
Selma Romão		Empresário, Moa		13-aug	18.00
Negomane Safaris, Nairote	Luís Santos	Empresário		14-aug	11.30
Turismo Ancuabe	Jacobus van Renswijk	Empresário		14-aug	17.00
MICOA	Emília		272-21954	16-aug	09.00
Nuova Fronteira				16-aug	
DP Cultura	José Alintengue	Director provincial		16-aug	

## Annex 2: Questionnaire

<b>1. Dados sobre a entrevista:</b>	
1.a Data da entrevista	
1.b Local da entrevista	
1.c Nome do entrevistador	
1.d Número da entrevista	

### 2. Dados sobre o entrevistado

2.a Nome do entrevistado	
2.b Idade do entrevistado	
2.c Sexo do entrevistado (homem/mulher)	
2.d Naturalidade do entrevistado	
2.e Caso não ser natural, quando chegou?	
2.f Entrevistado é chefe? Sim/Não	

### 3. Dados sobre o chefe da família

3.a Nome do chefe da família	
3.b Sexo do chefe da família	
3.c Idade do chefe da família	
3.d Naturalidade do chefe da família	
3.e Caso não ser da aldeia, quando chegou?	
3.d Vive junto da família (sim/não)	

### 4. Dados sobre o agregado familiar

Membro	Idade	Sexo	Escolaridade*	Profissão
1 (chefe)				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

\* sem; alfabetizado; EP1 iniciado; EP1 completo; EP2 completo; ESG1; ESG2; Universidade; outro

## 5 O papel da agricultura:

5.a O agregado vive da, entre outras fontes, entre outras fontes,; agricultura:  
sim/não

6. Características das machambas	Machamba					
	1	2	3	4	5	6
6.a Área (estimativa em campos de futebol)						
6.b Zona (alta/baixa)						
6.c Solo: a=arenoso; b=limoso; c=argiloso						
6.d Rega (sim/não)						
6.e Cor do solo: A=amarelo; B=branco; C=cinzento; P=preto; V=vermelho;						
6.f Adubos (sim/não)						
6.g Lavrar com charrua (sim/não)						
6.h Algodão (sim/não)						
6.i Milho (sim/não)						
6.j Mandioca (sim/não)						
6.k Batata doce (sim/não)						
6.l Feijões (sim/não)						
6.m Abóbora (sim/não)						
6.n Hortaliças (cenoura, couve, etc.) (sim/não)						
6.o Girassol (sim/não)						
6.p Gergelim (sim/não)						
6.p Arroz (sim/não)						
6.q Mapira (sim/não)						
6.r Mexoeira (sim/não)						
6.s Amendoim (sim/não)						
6.t Ananás (sim/não)						
6.u Cana de açúcar (sim/não)						
6.v Banana (sim/não)						
6.w Cajueiros (sim/não)						
6.x Árvores fruteiras (sim/não)						

## 7. Quais são as árvores fruteiras que tem na machamba?

.....  
 .....

## 8- Destino do produto

Cultura \ Destino	Consumo em casa	Venda no mercado local	Venda a comerciantes ou empresas
8.h Algodão (sim/não)			
8.i Milho (sim/não)			
8.j Mandioca (sim/não)			
8.k Batata doce (sim/não)			
8.l Feijões (sim/não)			
8.m Abóbora (sim/não)			
8.n Hortaliças (cenoura, couve, etc.) (sim/não)			
8.o Girassol (sim/não)			
8.p Gergelim (sim/não)			
8.p Arroz (sim/não)			
8.q Mapira (sim/não)			
8.r Mexoeira (sim/não)			
8.s Amendoim (sim/não)			
8.t Ananás (sim/não)			
8.u Cana de açúcar (sim/não)			
8.v Banana (sim/não)			
8.w Cajueiros (sim/não)			
8.x Árvores fruteiras (sim/não)			

## 9. Pecuária

Espécie	Tem: Sim/não	Número estimado	Destino		
			Consumo em casa	Venda no mercado local	Venda a comerciantes ou empresas
9.a Gado bovino					
9.b Gado caprino					
9.c Gado suíno					
9.d Patos					
9.e Galinhas					
9.f Burro					
9.g					

9.h Faz leite, manteiga ou queijo? .....

### 10. Fontes de rendimento

<b>Fontes de rendimento</b>	<b>Sim/Não</b>	<b>Número de membros do agregado envolvidos</b>
10.a Emprego sazonal		
10.b Emprego permanente		
10.c Venda de produtos da machamba		
10.d Venda de produtos vegetais processados		
10.e Venda de animais ou produtos de animais		
10.f Venda de lenha		
10.g Venda de carvão		
10.h Venda de frutos silvestres		
10.i Venda de folhas de palmeira		
10.j Venda de carne de caça		
10.k Venda de peixe		
10.l Venda de outros produtos produzidos localmente (mel, cugumelos, animais vivos, etc.		
10.m. Comércio		
10.n Dinheiro enviado por familiares		
10.o. Ofícios: .....		

### 11. Descrição da casa

<b>Edifício</b>	<b>Chão</b>	<b>Parede</b>	<b>Tecto</b>
Casa 1			
Casa 2			
Casa 3			
Casa 4			
Casa 5			

### 12. Descrição dos celeiros

<b>Número de celeiros sem cobertura</b>	<b>Número de celeiros com cobertura</b>

**13. Aproveita dos seguintes recursos naturais**

	Sim	Distância (ida e volta)				
		< meia hora	< 2 horas	< uma manhã	< um dia	> um dia
Água do rio para regar						
Água do rio para lavar						
Água do rio para beber						
Água do poço para regar						
Água do poço para lavar						
Água do poço para beber						
Lenh/carvão para cozinhar						
Lenha/carvão para aquecer água do banho						
Lenha/carvão para combater o frio						
Frutos silvestres						
Plantas medicinais						
Mel						
Cogumelos						
Bambu						
Estacas e laca-laca						
Folhas de palmeira						
Madeira para artesanato						
Madeira em toros						
Carne de caça						
Peixe						

**14. Há terceiros que não são membros da comunidade, que aproveitam dos recursos naturais locais?**

Recurso	Sim
Lenha e/ou carvão	
Frutos silvestres	
Plantas medicinais	
Mel	
Cogumelos	
Bambu	
Folha de palmeira	
Estacas e laca-laca	
Madeira para artesanato	
Madeira em toros	
Carne de caça	
Peixe	

### 15. Entre-ajuda (sem pagamento em dinheiro)

<b>Tipo de ajuda</b>	<b>Existe</b>	<b>Dá</b>	<b>Recebe</b>
Ajudar amigo, familiar, ou vizinho lavrar com enxada			
Emprestar junto de bois para ajudar a lavrar			
Emprestar charrua para lavrar a terra			
Ajudar na sacha			
Ajudar na colheita			
Ajudar a pastar o gado			
Ajudar doente			
Dar comida a indigente			

### 16. Instituições sociais

<b>É membro de:</b>	<b>Sim</b>	<b>Não</b>
Uma igreja (cristã ou muçulmana)?		
Uma associação religiosa tradicional?		
Uma associação fúnebre?		
Um partido político?		
Uma associação de produtores?		
Uma associação de poupança e crédito ( <i>xitique</i> )		
Uma outra associação?		

### 17. Governo

<b>O povo é ouvido por:</b>	<b>Concordo totalmente</b>	<b>Concordo mais ou menos</b>	<b>Não concordo</b>
O régulo			
O chefe do posto			
O administrador do distrito			
A administração do Parque			

### 18. Desastres

<b>Perdeu (sim/não)</b>	<b>Bens</b>	<b>Culturas</b>	<b>Animais</b>	<b>Membros do agregado</b>
Cheias				
Secas				
Gafanhotos				
Ataques por ratos				
Ataques por passarinhos				
Ataques por animais selvagens				

**19. Problemas com animais selvagens entre 1 de Janeiro e hoje:**

Espécie de animal	Viu (Sim)	Perdeu			Membros do agregado	
		bens	culturas	Animais	Feridos	Mortos
Macacos						
Leão						
Leopardo						
Pantera						
Elefante						
Hipopótamo						
Rinoceronte						
Búfalo						
Crocodilo						
Porco do Mato						
Javalis						
Cão africano						
Raposa						
Hiena						

**18. Como tem reagido quando se encontrou com animais selvagens:**

Espécie de animal	Resposta dada		
	Fugir	Afugentar	Matar
Macaco			
Leão			
Leopardo			
Pantera			
Elefante			
Hipopótamo			
Rinoceronte			
Búfalo			
Crocodilo			
Porco do Mato			
Javalis			
Cão africano			
Raposa			
Hiena			

Observações:

## Guião Administradores/Chefes de Posto

Nome:

Período que está no distrito/posto

Naturalidade

Organização e demografia do distrito

- Postos e localidades
- Número de habitantes
- Tendências migratórias e os seus motivos
- Concentração geográfica da população

Situação económico do distrito

- Agricultura (principais culturas)
- Indústria
- Comércio
- Sector Florestal (concessões, espécies, degradação)
- Turismo
- Outras actividades (garimpeiros, etc.)

Situação social do distrito

- Educação
- Religião
- HIV/SIDA
- Conflitos sobre terra
- Outros conflitos (bruxaria, etc.)
- O papel das ONG
- O papel das associações religiosas/igrejas

Relacionamento com o PNQ

- Actividades
- Conflitos homem-animal
- Registo de prejuízos e mortos

Relacionamento com público (horas para audiências públicas; troca de ideias com autoridades tradicionais; comités locais, planeamento distrital, etc.).

ONG a trabalhar no distrito (por posto e por tipo)

Constrangimentos ao desenvolvimento

- Acesso
- HIV/SIDA
- Conflitos internos
- Etc.

#### Oportunidades para o desenvolvimento

- Venda de excedentes agrícolas
- Exploração florestal
- Artesanato
- Hotelaria
- Safaris de caça
- Safaris fotográficos
- As capacidades existentes nas comunidades

#### Expectativas para o futuro

- Como será
- Como chegar lá

#### Outros pontos

##### Zonas para a segunda fase de pesquisa

- Zona florestal
- Existência de fauna
- Existência de exploração
- Zonas de conflito com PNQ
- Condições existentes (acampamento; tradutores e guias)

## Encontros com anciãos, mulheres e jovens:

1. Mapeamento da zona pertencente à comunidade com:
  - a. Limites
  - b. Zonas de uso de terra (agricultura – baixa e alta; pastagem, floresta, caça, habitação)
  - c. Principais fontes de água
  - d. Principais infra-estruturas (mesquitas, postos médicos, escolas, casa do régulo, casas de médicos tradicionais, lugar de reuniões, etc.)
  - e. Principais caminhos e estradas
  - f. Zonas de conflitos com a fauna
  - g. Número de agregados
  - h. Estrutura da família e casa
2. História da comunidade
  - a. Primeira linhagem
  - b. Mãe ou pai mítico
  - c. Choques, crises e grande sucessos
  - d. Anos de fome e de colheitas ricas
  - e. Movimentos migratórios
  - f. Mudanças na agricultura (cultivo de algodão e outras novas culturas, introdução de novas ferramentas, etc.)
  - g. Mudanças na pecuária
  - h. O mercado de emprego
  - i. A ajuda mútua e solidariedade entre os membros da comunidade
  - j. O artesanato
  - k. Mudanças na flora e fauna ao longo dos anos
    - i. Pau-preto e outras árvores
    - ii. Ocorrência de leões, búfalos, cães africanos, etc.
    - iii. Conflitos homem-animal (tendências)
  - l. ....
3. Recursos que a comunidade usa:
  - a. As culturas agrícolas
  - b. Os animais domésticos (incluindo cães e gatos)
  - c. As árvores fruteiras
  - d. As espécies animais que são caçadas
    - i. As armas e armadilhas usadas (seria bom ver)
    - ii. Os destinos dados aos produtos (matriz)
  - e. Plantas medicinais (matriz)
  - f. Material lenhoso (matriz)
    - i. Fins
    - ii. Espécies
4. Conflitos com outras comunidades
  - a. Terra
  - b. Água
  - c. Fauna
  - d. Flora
5. Conflitos com pessoas de fora
  - a. Terra

- b. Água
  - c. Fauna
  - d. Flora
6. Os principais problemas da comunidade
7. Expectativas para o futuro
- a. No campo social
  - b. No campo de agricultura
  - c. No campo da pecuária
  - d. No campo de emprego
  - e. Na visão da comunidade: Como deve ser daqui a 15 anos e como vamos chegar lá

<b>Area</b>	<b>Potential conflict</b>	<b>Development potential</b>	<b>Natural resources</b>	<b>Presence of partners</b>
Nanduli	High, tensions with Mareja	Strong social capital; possible synergy with Mareja	Elephants in Mareja	Mareja; possible link to Aga Khan, Progresso
Ngoronge	Some hunting	Cotton and tobacco	Only across the river into Nairobi and the park; agriculture	Plexus
Nacololo	Tensions with Panga and other loggers	Strong community; key access area to arguably the best forests in the area; close to Mueda (hunters)	No clear data,	Panga, Negomani safaris
Muaje	High, huge population in Park and buffer	Strong on the basis of the road; exploitation of charcoal etc.	Rhino?, timber in park; buffer zone agrarian	AMA
Namanhumbir	Roaming elephants	Based on road and agriculture, little connection to park and buffer	Agriculture, firewood and charcoal?	Not clear