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DIRECÇÃO NACIONAL DE ÁREAS DE CONSERVAÇÃO
PARQUE NACIONAL DA GORONGOSA

ADAPTIVE MANAGEMENT PLAN FOR GORONGOSA NATIONAL PARK, 2003

Edited by

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EXECUTIVE SUMMARY

1. The goal of management for Gorongosa National Park (GNP) was defined as being to:

> *Protect, conserve and utilise the natural resources of GNP in a sustainable way to ensure economic, ecological and social benefits to all stakeholders*

2. To achieve this goal the following objectives were defined:

1. Ecosystems, biodiversity and the historical and cultural assets of GNP conserved;
2. Cultural and natural resources based recreation opportunities provided to all sectors of society;
3. Opportunities for scientific studies, for education and for information exchange provided;
4. Resource use in GNP does not undermine conservation, information, recreation and income generation objectives;
5. Income that contributes to the maintenance and development of GNP generated;
6. Self-sufficient management and institutional structure for GNP established.

3. A number of key issues that would have to be addressed by GNP management were identified. These included policy level concerns as well as management concerns. The following policy concerns were seen as requiring urgent attention:

- A national policy on people living in National Parks;
- The role of stakeholder involvement in Gorongosa National Park development and management;
- An autonomous management and institutional structure to govern the affairs of GNP and that was responsive to the needs of all key stakeholder groups;

The following major ecosystem and management concerns were identified:

- Hydrology was seen as being the major driver of the ecosystems upon which the GNP was dependent. Two major concerns were identified.
  - The first concern is the increasing impact agriculture and deforestation on the Gorongosa mountain are having on the hydrology of the Gorongosa system and the water supply to the Park.
  - The second concern was the state of the Urema plug, which was believed to control the flooding of the Urema system and hence control the floodplain area.
- Human populations living within and adjacent to the GNP were a major concern. In particular the people living within the park as well as those living

on and around Gorongosa Mountain were a key issue that needed careful management and policy interventions. The concerns were associated with how the park could achieve its core objectives with approximately 10,000 people living in the park trying to satisfy potentially incompatible objectives.

- The lack of a clear understanding of vegetation community dynamics was seen as one of the major constraint to effective management of GNP;
- Human and animal conflict, both within the Park and on its borders, was seen as a major problem that GNP management needed to address (proactively as well as the current state of conflict);
- The uncertainty associated with the population dynamics of key wildlife species was seen as an important knowledge gap that needed to be addressed.

4. The proposed management framework was developed in relation to existing legislation and policy and so there are no inconsistencies. It was however clearly noted that policies would need to be developed or revised in relation to people living in the park. DNAC's acceptance of the need for stakeholder responsive institutional structures to manage GNP was seen as a major step forward. It was recognized as being a key step in the effective and sustainable management of GNP.

5. An adaptive management paradigm was accepted as being the best approach to achievement of GNP objectives. The current plan was therefore, seen as being a first step in an iterative process. The planning framework was expected to guide management for five years from its adoption and to cover the entirety of GNP. A separate but closely linked planning framework was to be designed for the co-management areas surrounding GNP. Effective monitoring and evaluation processes and procedures were seen as being vital to all aspects of the GNP management process. Financial systems, user satisfaction, ecological systems and management achievements all required effective monitoring systems to be in place as a top priority. The approach developed for Kruger National Park of developing and using thresholds of potential concern (TPC's) as guidelines for management was seen, as being an important innovation that GNP management would seek to implement. TPC's act as cues for management to pay attention to some change (the threshold) and its causes and possibly to take further action.

6. A logical framework was developed for achievement of the goal and objectives of GNP. For each of the objectives and sub-objectives activities were identified that needed to be undertaken to achieve the given objective. A tentative timeframe for the implementation of these activities was identified. The key initial activities were identified as follows:

- Design and implement the institutional framework for park management and governance;
- Establish park management system and budgets;
- Examine the state and the role of the Urema plug in Gorongosa National Park hydrology
- The identification and reintroduction of key large mammal species;

- Establishment of monitoring systems for ecosystem performance;
- Identification of likely impacts of land use change in and around GNP;
- Identify and develop opportunities for co-management in and around GNP;
- Develop an effective law enforcement system for GNP;
- Develop a research capacity including engagement with national and international research agencies;
- Establish guidelines for users of GNP;
- Develop and implement fee structures and design financing strategies;
- Establish effective financial management systems.

7. The core business of GNP was accepted to be the conservation of ecosystems, and biodiversity and the conservation of historical and cultural assets. It was acknowledged that the achievement of these objectives was dependent on the development and nurturing of good relationships with the people living in and around GNP and on an effective and enabling policy environment. In terms of conserving ecosystems and biodiversity it was agreed that management should seek to conserve the underlying processes and not specific states. It was recognized that this would be difficult because GNP was associated (in the mind of the public) with specific states such as large ungulate herds and abundant lion. It was however, accepted that seeking to manage for these states could lead to increasing the vulnerability of the ecosystems and the possibility of major changes occurring following perturbations such as drought or floods. The shift in focus from managing for state to managing processes would require management to effectively communicate these needs to the public and to policy makers lest they are surprised by the changes that come with maintaining essential processes. The major tasks of management would therefore be as follows: a) Identify the key processes that govern the functioning and state of GNP ecosystems. b) Identify the major drivers of change in those processes and their dynamics. c) Identify management actions that would amplify or mitigate these dynamics such that ecosystem processes are maintained and GNP objectives are achieved.

With regards the cultural and historical assets of GNP the major management tasks would be to identify these and to establish co-management relationships with the cultural custodians of these assets where this was appropriate.

8 GNP was seen as being an important provider of recreation opportunities that were based on the natural resources (ecosystems) of the park as well as on the cultural and historical assets of the park. As well as being an important objective of GNP the provision of these opportunities to all sectors of society would be an important mechanism for the generation of income. GNP management recognized that its core business was the provision of opportunities and not in the marketing and management of these opportunities.

9. GNP management recognized the necessity of developing close relationships with the private sector to ensure the efficient provision of these recreation opportunities. These recreation activities would be more efficiently managed by the private sector. GNP management would need to develop the standards, limits

and monitoring systems to ensure that the provision of recreation opportunities did not undermine the achievement of GNP conservation objectives. GNP management accepts its role as one of providing an enabling environment for the private sector to deliver recreation opportunities to all members of society whilst ensuring that GNP conservation objectives are not compromised.

10. GNP management recognizes that its effectiveness is constrained by a lack of knowledge as to the state of the ecosystems on which GNP is dependent as well as the functioning of these ecosystems. GNP management also recognizes that GNP provides a unique set of opportunities for education, for research and for communication of information. Whilst recognizing the importance of management as a learning process GNP management seeks to enhance its effectiveness through the development of a research strategy designed to increase the institutionalised knowledge in key areas of uncertainty. The development of close and functional partnerships with provincial, national and international research institutes will be a key component of this research strategy. First steps have been taken in identifying key areas that management requires improved understanding (the hydrology of the Urema Lake system and floodplains; vegetation dynamics; fire ecology; wildlife population dynamics; human impacts on wildlife and the hydrology of the ecosystem) but these need to be improved. GNP management recognizes the importance of traditional or local knowledge and seeks to integrate this knowledge into its institutionalise knowledge base.

As well as generating knowledge that will contribute to the management of GNP the GNP management is aware that it has an important role to play in providing education opportunities for all sectors of society. The development of an education centre will be an important mechanism for achieving this objective. But GNP management also recognises that it will have to be proactive in reaching out to the communities that live within its boundaries as well as those living adjacent to the park. The education and outreach strategy of the GNP management will pay particular attention to the needs of these groups.

10. GNP management recognises that resources within the park are being used by local communities and also by tourists. GNP management recognises the importance of some of these resources to the livelihoods of the people using them. Equally importantly GNP management recognises that the use of these resources impacts the functionality of the ecosystems upon which GNP is dependent. GNP management seeks to maintain a careful balance between GNP being able to meet the needs of resource users without these use activities undermining the achievement of the core objectives of GNP. Wherever feasible GNP management will seek to develop co-management relationships with key resource user groups to ensure that resource use is sustainable and does not threaten the core business of GNP. GNP management recognises that it will need to identify, in collaboration with key stakeholders, sustainable use levels of key resources. It will also need to identify the direct and indirect impacts of resource use activities on the functioning of GNP ecosystems.

11. The issue of income generation was a difficult one in the development of this management framework. All participants clearly recognised that for GNP to achieve its core objectives it would need to be well funded and that at least some of this funding would have to be generated by the park itself. But there was great concern that the objective of generating income did not become the major focus of GNP management. Income generation was seen as a means of achieving the core objectives of GNP. It was definitely not seen as an end in itself. GNP management set itself the task of developing and implementing a financial strategy that sought to:

- Generate funds through effective pricing of the services it provided to users;
- Generate funds through the development of proposals to donors;
- Maintain transparent and efficient accounting systems to track costs and income and hence minimise inefficient expenditure.

GNP management recognised the need to engage with the private sector for efficient revenue generation. As previously noted GNP management sees its role as being one of providing standards and an enabling environment for harnessing the capabilities of the private sector to generate income at least cost.

12. The development of a stakeholder responsive and self-sufficient management structure, with the associated institutions was seen as a vital step in the establishment of GNP as a sustainable and premier National Park. It was not expected that the management body would be established prior to the implementation of this management plan. Rather this would be a parallel process that would be initiated and implemented as soon as possible. However, the existing management system would begin implementation of the management plan and at the same time participate in the development of the new governance structure. Once the latter was established it would take over the leadership in managing GNP affairs.

13. Law enforcement was identified as a major need for GNP management to establish and maintain controls on human activities in GNP. In particular law enforcement structures were needed in relation to fire management as well as the illegal harvesting or killing of natural resources. The strengthening of the law enforcement systems within GNP was seen as a top priority. But in parallel with the strengthening at the park level was the need to strengthen the legislative framework within which GNP management sought to manage the access to and use of resources within GNP. Thus the activities under this output were designed to both strengthen structures and procedures on the ground as well as attempt to influence the policy making and legislative structures based in Maputo.

14. The availability of well-trained and experienced staff was seen as a major constraint on the ability of the current GNP management to achieve GNP objectives. A primary objective in the first stages of the implementation of the management plan was the identification of human resource requirements and then either their recruitment or the training of existing staff where appropriate.

15. The infrastructure of the GNP is inadequate to achieve the management objectives of the park. An inventory will be undertaken of existing infrastructure and a projection of requirements required to meet the needs of the proposed developments will be undertaken. As far as possible, partnerships will be developed with private sector operators to seek their assistance and co-operation in the development of the infrastructure required to provide facilities for tourism and other recreational opportunities. The GNP management will focus their infrastructural development activities on the development of the infrastructure associated with GNP management and that required to ensure that core objectives are achievable.

16. An indicative budget for the implementation of this first phase management plan is US$5.6 million. The breakdown of this budget is shown in the table below. Of this total US$1.5 million was designated for restocking, US$ 2.75 million for recurrent expenditure and US$420,000 for staff development and training.

Table 1. Indicative budget for the implementation of the GNP management plan.

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
1. Annual Recurrent Budget						
	250,000	400,000	600,000	750,000	750,000	**2,750,000**
2. Captital Development Budget						
- Staff development & Training	30,000	30,000	30,000	30,000	300,000	**420,000**
- Equipment, furnishings	50,000	60,000				**110,000**
- Restocking		750,000	750,000			**1,500,000**
- Roads & Infrastructure	25,000	30,000	30,000	50,000		**135,000**
- Baseline biodiversity surveys & Mapping	35,000	40,000				**75,000**
- Baseline Socio-economic Surveys	30,000	25,000				**55,000**
- Resettlement incentives			300,000	300,000		**600,000**
	420,000	**1,335,000**	**1,710,000**	**1,130,000**	**1,050,000**	**5,645,000**

17. GNP management recognised the importance of developing co-operative relationships with all neighbours and key stakeholders. A marketing and outreach strategy was needed to ensure that all stakeholders felt a part of this exciting development and that a commitment to contribute was strongly felt from the national to the local levels. As part of this process a management planning process was envisaged for the co-management areas surrounding GNP that would seek to engage the surrounding communities, local government and NGOs in the development of management models for co-management areas as well as specific resources within GNP. A number of GNP activities, such as the establishment of a stakeholder responsive governance body, would contribute to this process.

18. Concluding remarks. The GNP management plan is an achievable framework for Mozambique to take full advantage of the remarkable set of ecosystems that

comprise GNP. As a key National resource the Park has much to offer Mozambique, the southern African region and also to global conservation and recreation needs. Fulfilment of these potentials will require the political and moral support of the government of Mozambique and the financial support of the international donor community during the initial recovery phase. Mozambique does not have the resources to establish GNP as the premier park that it once was. But with these relatively small injections of resources the GNP could resume its place as a premier conservation area in southern Africa as well as being a must see on the southern African tourist destination list. Because of the unique mix of ecosystems, and the opportunity now presented for their recovery, GNP also offers a once in a lifetime opportunity for the scientific world to observe how complex ecosystems reconfigure following major disturbances. All in all GNP offers an almost unique set of opportunities for a great range of society's interest groups to benefit and in so doing to making a meaningful contribution to ensuring that future generations can witness the remarkable splendour of one of Africa's most exciting conservation areas.

REPÚBLICA DE MOÇAMBIQUE

MINISTÉRIO DO TURISMO

Gabinete do Ministro

This Plan has been reviewed by the National Directorate of Conservation Areas, Ministry of Tourism and approved for implementation by The Honourable Minister of Tourism of the Republic of Mozambique.

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Fernando Sumbane Junior

The Honourable Minister of Tourism

February 2003

GORONGOSA NATIONAL PARK GAZETTEMENT AND HISTORY OF MANAGEMENT

The GNP lies in the Southern most end of the Great East African Rift Valley. Its centre is formed by the Urema lake floodplains, which is bordered by the Gorongosa - Barúe plateau in the West and the Cheringoma plateau in the East (**Figure 1**).

The current status of National Park was achieved in 1960 by a Legislative Decree No. 1993 of July 23rd after passing through several lower protection categories.

The origin of the Park arose from the conservation vision of the former Governor of the Majestic Company of Mozambique Mr. Pery de Linde who through a dispatch issued on the October 18th, 1920 ordered the Surveyor General to reserve the greater part of the Gorongosa District.

In complying with this dispatch, an area of approximately 1 000 Km^2 was set aside through Bylaw issued on the 2nd of March 1921 to protect a declining wildlife population and to reserve an area for hunting by the members of General Administration of the Company and their visitors.

From 1921 Jose Ferreira supervised the activities in the reserve area until the appointment of Mr. Jose Henriques Coimbra as the "Fiscal" in charge in 1935.

Through the Decree No. 26 076 of November 21st of 1935, the surface area of the Hunting Area was expanded to 3 200 Km^2 to include habitats of two important species: the Black Rhinoceros and Nyala.

At the end of the contractual concession with Compania de Moçambique in 1942, the management of the Hunting Area passed over to the Hunting Commission under the General Government of Mozambique until it was replaced in 1959 by the Wildlife Protection Section under the Veterinary Services.

To resolve the negative impact of the road from Beira to Rhodesia (Zimbabwe) which passed through the Reserve, the Hunting Commission proposed the establishment of a protective belt around the Reserve which resulted in an increase to the size of 12 000 Km^2.

It was during the mandate of the Hunting Commission, particularly in 1945 by order of Gorongosa District Administrator Pedro Carmona that the first tourist camp was built in the floodplain along the Mussicadzi River. Due to serious flooding years after, this camp was abandoned and later on occupied by lions, which gave its current name of "the Lion House".

In 1951 the construction of Chitengo camp started by orders of the Governor-General Gabriel Teixeira and the builder Alfredo Rodrigues was appointed the

"Fiscal" in charge to replace Jose Henriques Coimbra who was transferred to oversee the Manica-Sofala District.

In 1957 through a public tender the tourist accommodation of the Chitengo Camp was concessioned to Agencia de Viagens e Turismo Lda of Beira.

Under a proposal of the Wildlife Protection Section in 1960 the Legislative Decree No. 1993 of July 23rd transformed the Gorongosa Reserve into the status of National Park with a size of 5 300 Km^2.

From 1963 to 1965 the Park's administration was handed over to Dr. Amadeu Candido da Silva, Delegate of the Veterinary Services of Chimoio. Its was during this period that considerable upgrading of the Chitengo camp facilities and road network took place.

In 1964 a commission created to revise the Park's boundary proposed degazettment of part of the Gorongosa District from the Park, which came into force, by the Decree No. 26 173 of January the 8th.

In 1965 the Park management was handed over to Dr. Rosinha, Chief of District Veterinary Services who appointed Lobão Tello as a resident "Fiscal" in charge. It was during this time that the first permanent "Fiscal" posts were built.

The Park boundary established in 1964 was altered in 1966 by the Legislative Decree No. 2 673 of January 8th. In 1967 through the Legislative Decree No. 2 750 of May 6th the boundary was changed to its current size of 3 770 Km^2 (**Figure 1**)

The first resident Park Administrator, Mr. Romão was appointed in 1967 and Mr. Lobão Tello became his Deputy Park Administrator.

Between 1968 and 1973 the Park had its first resident ecologist Dr. Ken Tinley who conducted the first aerial survey in 1969.

In 1973 with the movement of the Liberation war against the Portuguese Government to the Manica-Sofala District, Frelimo freedom fighters launched the first attack the Chitengo Camp, which resulted in considerable reduction of visits.

From 1975 to 1978 the Park management was severely affected with constant staff strikes, foreign technical staff leaving, inexperienced Administrators, intensive commercial poaching etc (Tello, 1994).

From 1979 when Mr. Gabriel Nantimbo was appointed as the resident Park Administrator, and the situation improved considerably until 1982.

The 17 of December of 1981 is the date of the first attack of Chitengo main camp during which several staff members including Dr. John Burlison and Dr. Munőz were captured. From this date, the attacks in the Park became so frequent that it had to be abandoned in 1983. Therefore, from 1983 to 1992 the Park had no management staff and the belligerent forces occupied it.

In 1985, when the combined armed forces of Mozambique and Zimbabwe took over the Renamo Central Base in Casa Banana in Gorongosa region, a team of two technicians of DNFFB (Mr. Mateus Chambal and Mr. Roberto Zolho) visited the Chitengo camp and the surrounded area to assess the levels of damage and propose a strategy for the return of the management. The report of this team revealed that the camp was in complete ruins and the wildlife species were under severe pressure from hunting by the Army.

In 1992 Frelimo and Renamo cease fighting and signed the Peace Accord in Rome, which opened a new chapter for GNP. In 1994, a team of prominent scientist and former Gorongosa National Park staff Dr. Ken Tinley, Dr. Paul Dutton and Mr. Lobão Tello accompanied by DNFFB staff visited the Park on a mission to develop a proposal to the African Development Bank (ADB) for the reoccupation and rehabilitation of the Park and the Marromeu Complex.

While the ADB proposal was still being negotiated, in March 1995 a European Union (EU) funded Emergency Program implemented by IUCN was initiated and Mr. Baldeu Chande was appointed as project executant. This emergency program had the objectives of establishing the first presence of management in the Park, creating the first anti poaching unit and demining all of which were successfully achieved.

At the end of the 18 months Emergency Program, in October 1996 the ADB project was initiated and Mr. Roberto Zolho was appointed as the Park Administrator. This project was of 5 years duration with objectives of consolidating the ant poaching unit, construction of new park management infrastructure (offices, staff houses, workshops), rehabilitation of both tourist and management roads and the training of scouts and other law enforcement agents.

Apart from the immense difficulties in implementing this project mainly due to the excessive burocracy at both, ADB and the project coordinating levels, the following was achieved.

- Procurement and placement of a fleet of 11 vehicles and 1 tractor,
- Establishment of the Park management structure and staffing,
- Restructure and expansion of the anti-poaching unit from 40 to 86 men unit,
- Rehabilitation of the Chitengo camp to serve as the base for the Park management,
- Reopening of approximately 100 Km of tourist tracks,
- Rehabilitation of water system in Chitengo camp and
- Training of 60 game guards.

With support of WWF-SARPO from 1999, a training program of game guards and provincial law enforcement officers started. WWF-SARPO also supported the construction of a class room for 40 trainees. Dormitories and a kitchen were also constructed.

ACKNOWLEDGEMENTS

For the achievement in the preparation of the present Management Plan we would like first of all to thank GERFFA/DNFFB project in the name of Eng. Nakala Mandrate project the coordinator for accepting to co-fund the four planning workshops.

Secondly our thanks goes to the Resilience Alliance represented by Dr. Tim Lynam for co-funding the planning process and on his personal capacity to take the initiative to promote the involvement of all Park Wardens and prominent technician of the Wildlife Sector in Mozambique.

To the National Director of Conservation Areas of the Ministry of Tourism, Dr. Afonso Madope for his support and guidance during the third workshop on matters related to autonomisetion of the Gorongosa National Park management many thanks.

Our sincere gratitude goes to our invited specialists, Prof. J. Milford, Dr. D. Cumming, Dr. R. Owen who's advise and contributions in the planning process made possible an realistic approach to the future management of Gorongosa National Park.

Without their valuable contributions and vivid discussion this plan would not have its current substance and to this we thank the Park Wardens of Zinave, Banhine, Bazaruto National Parks and Maputo and Niassa Game Reserves.

Out thanks goes also to all colleagues of the Provincial Services of Forest and Wildlife of Maputo, Gaza, Inhambane and Zambezia for their contributions.

To all who direct and indirectly have made this plan possible, our many thanks.

INTRODUCTION

Since its establishment in 1960 Gorongosa National Park (GNP) has not had a functional management plan to guide management in making the many decisions that they face in fulfilling the parks objectives and potential. The lack of a working plan was also seen as an opportunity, by the Resilience Alliance (www.resalliance.org), to contribute to the reorganization of GNP but also to contribute to the enhancement of the adaptive management capacity of current and future leaders of wildlife and conservation systems management in Mozambique.

A dispatch from the Minister of Agriculture (6/7/94) stopped any wildlife and timber exploitation in an area surrounding park, which includes the extinct hunting areas no. 1 & 3 in the North of the park, the land between the Dondo - Inhaminga road and the park limits in the East, the land between the Inchope-Gorongosa Road and the park's limits in the West. In the South the park borders on the Pungue River. This area defined by the ministerial dispatch has since been recognized as the buffer zone (BZ) of the GNP. Although a concept for this area has been developed, no management plan exists.

At least 10000 -15000 people are living in the Buffer zone and within the limits of GNP. The concept for the BZ of the GNP proposes CBNRM projects with the private sector in form of joint venture using NR's in sustainable manner to present an opportunity for communities to move from within the park to its buffer zone and further.

The high numbers of communities living within the limits of the park provide a challenge to the management of the park and its heavily reduced

wildlife populations. At the moment some use by communities of especially the fish population is allowed to reduce pressure on the large mammals. The communities are also carrying out subsistence agriculture inside the park.

The ecology of the park and especially the survival of the floodplains are dependent on the hydrology of the Gorongosa Mountain and the Cheringoma Plateau. However, subsistence agriculture on the Gorongosa Mountain and its foothills causes erosion and sedimentation of the rivers. This may result in changes to the flood regime of Gorongosa National Park as well as possible siltation of Lake Urema and the floodplain itself. It is also possible that reduced basal flows may result in a lowered water table within Gorongosa National Park and hence changes in the vegetation structure and dynamics of the park.

Rich grasslands that used to provide biomass for the great herds of antelopes living here before the civil war cover the floodplains. The 1972 air census recorded 13,300 buffalo, 6,400 wildebeest, 3,500 hippo, 2,500 elephant, 3,300 zebra, 3,400 waterbuck as well as smaller numbers of several other species (Tinley, 1977).

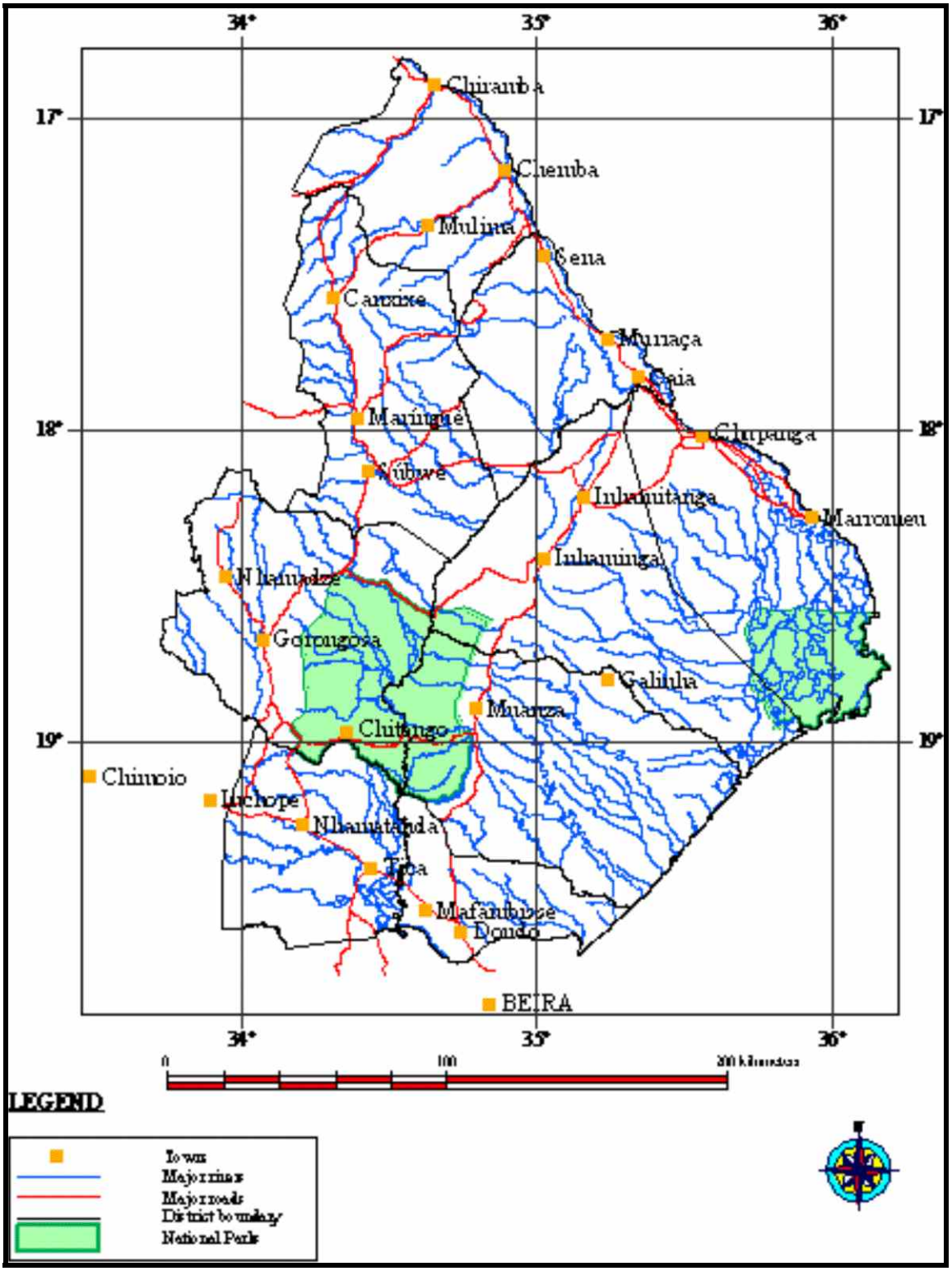


Figure 1. Map of Northern Sofala showing Gorongosa National Park, the major river systems and towns.

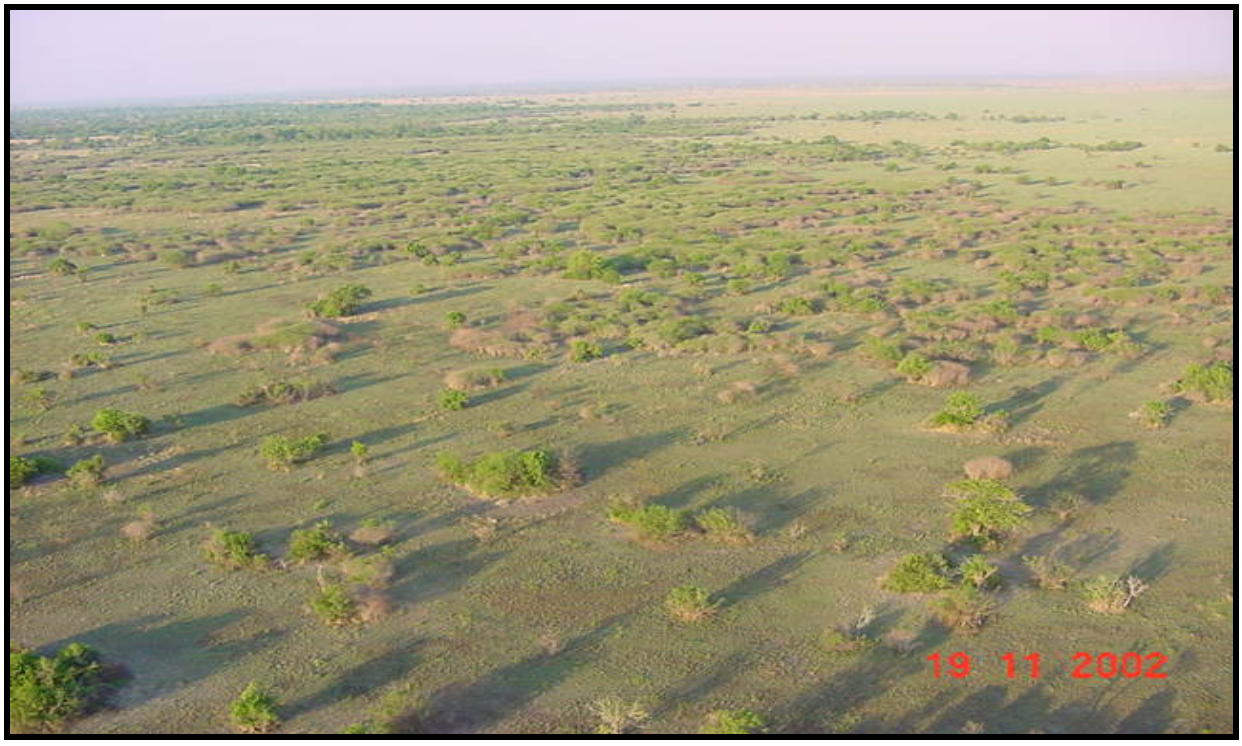
Before the war, GNP presented the highest numbers and diversity in wildlife per km² of any park in Africa. It had several tourist lodges and facilities of which the Chitengo main camp was the largest and housed the highest number of tourists. 1973 saw the peak of tourism in GNP with 11,000 visitors.

REVIEW OF EXISTING OBJECTIVES AND DEVELOPMENT OF SUB-OBJECTIVES

During the review of the legislated management objectives for GNP (Box 1) it was agreed that these were inadequate to provide complete guidance to park management. Using these preliminary objectives the workshop participants developed a revised set with sub-objectives to provide greater clarity. At a subsequent meeting these objectives were further refined through the addition of the objective of establishing self-sustaining institutional and management structures. These objectives are presented in **Figure 2**.

Box 1. The original objectives of GNP management derived from the Legislative Diploma 2753 of May 27th, 1967:

- The conservation of natural fauna and vegetation
- The protection of scientific interests of the country, with particular emphasis for the aesthetics, geology, history and archaeology, and
- The recreation of visitors.



Brenhas de Termiterias na zona de ecotones da planicie do Sungue. (PNG-2002)

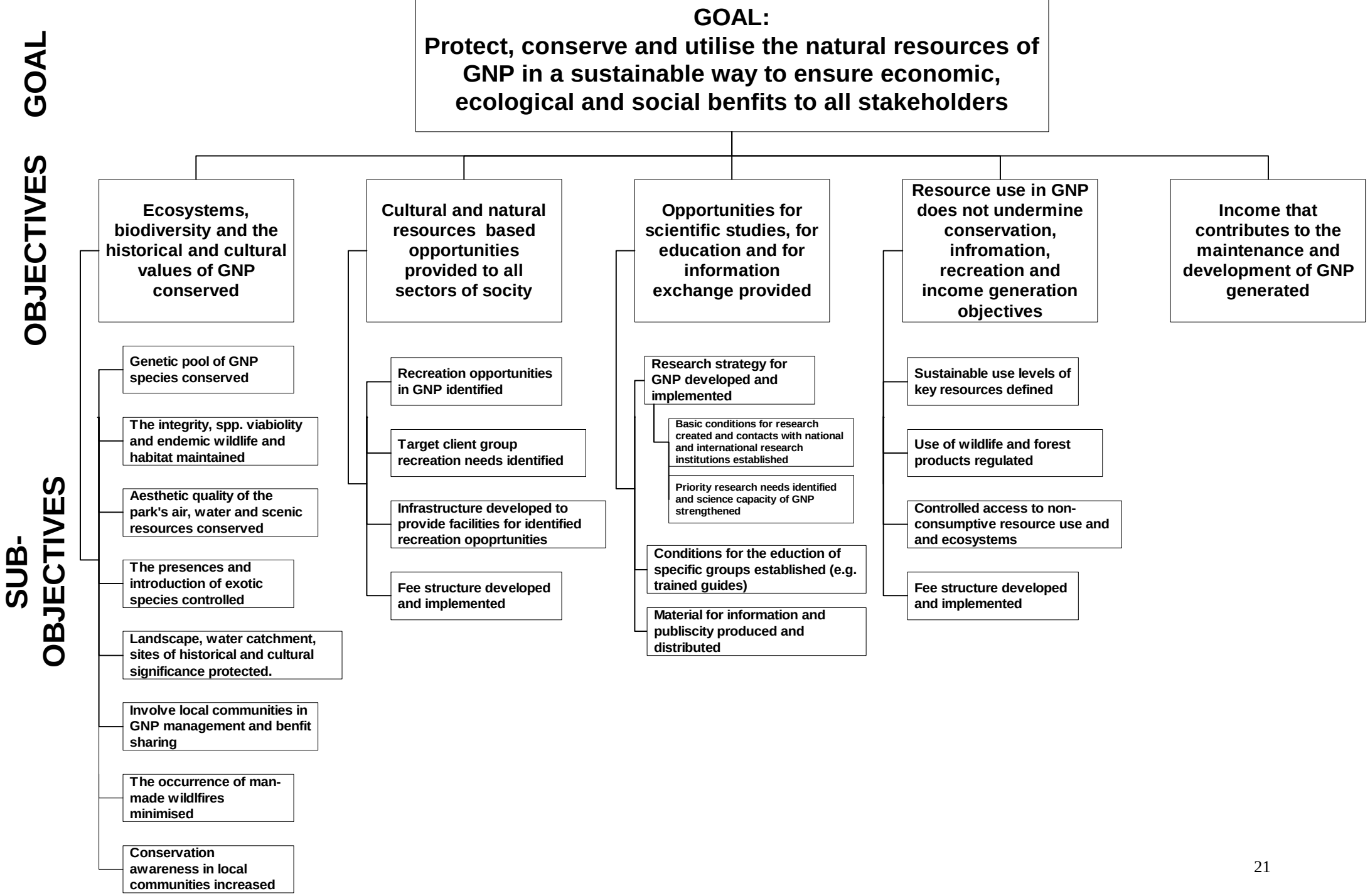


Figure 2. Revised management objectives for GNP.

CONSTRAINTS, CHALLENGES AND OPPORTUNITIES

The major constraints, challenges and opportunities that the managers of GNP face in attempting to achieve the defined objectives were identified as follows, with the most pressing highlighted in bold:

Constraints

a. Illegal exploitation of resources within GNP
b. **Communities living within GNP**
c. Human activities outside of the GNP that impact GNP
d. Encroachment of exotic species into GNP
e. Inadequate equipment and resources
f. Poor infrastructure and accessibility
g. Inadequate human resources
h. Insufficient information on the current natural resources of the GNP
i. Inadequate political support
j. Inadequate incentives for field personnel
k. **Inadequate institutional framework (including policies and legislation**
l. Inadequate finance

Challenges

a. **Involvement of local communities and private sector in park management**
b. **Buffer Zone management**
c. Redevelopment of tourism capacity
d. Research and monitoring systems
e. Human-wildlife conflict
f. **Interface with policy-makers**
g. How to deal with environmental uncertainty
h. Mechanism to achieve financial sustainability

Opportunities

i. **Favourable political environment at National and local levels**
j. Rich and interesting history of GNP
k. **Recovery of wildlife populations**
l. **International support**
m. Past research activities and efforts
n. **Investor interest**

PLANNING APPROACH AND PHILOSOPHY

The general approach adopted for the development of this management framework had four principles:

1) As many as possible of the conservation professionals from Mozambique would be invited to participate in the development of the management plan. By doing this it was expected that these professionals would be exposed to the basic concepts of adaptive management as well as the concepts of managing for resilience.
2) As an extension of this first principle it was believed that the development of the management framework should be a capacity building exercise such that the managers of other parks would be able to undertake similar exercises once the GNP management framework was complete.
3) It was believed to be important for GNP that the managers who would ultimately have to implement a management plan were involved in all stages of the development of the plan.
4) Given the complexity and unpredictability of real world socio-ecological systems, such as GNP and its buffer areas, adaptive management was acknowledged as the most suitable management paradigm for GNP.

Through a series of week long workshops the wildlife and conservation professionals from Mozambique came to Chitengo and developed specific components of the management plan. Four meetings were held. The first, over the period 11 to 13th July 2001 concentrated on revising the objectives for GNP and putting together the team that would assist in developing the GNP management framework. In the second meeting held from 21st to 27th October 2001, what was known of GNP ecosystems was reviewed through the agency of constructing simple models of the major processes governing ecosystem functioning in GNP. The third meeting, held in Chitengo in May 2002, had as its objectives the development of the draft management framework. This draft Management Plan was then reviewed and tested in a fourth meeting, Oct 27th – Nov 2nd 2002. The full list of participants in these workshops is appended as **Annex IV.**

Four activity groups that formed the basis of the iterative process of adaptive management were defined as follows:

a. **DIRECTION**
b. **DETECTION**
c. **EXPLANATION**
d. **RESPONSE**

The DIRECTION suite of activities sought to identify the objectives, goals or purposes of the management activities or team. These were identified in a first workshop (11 – 13th July, 2001).

In the DETECTION suite of activities managers attempt to identify obstructions, states, trends or problems that they would have to respond to. In this suite of activities managers would need to establish the methods of identifying their proximity to goals or objectives as well as attempt to see major problems or hurdles before they were encountered. A first iteration of this DETECTION process was developed as the review of knowledge workshop held in Chitengo between 21 to 27th October 2001.

The purpose of the EXPLANATION suite of activities is to develop satisfactory, causal explanations for the problem, states or trends that have been detected. These explanations are an essential pre-cursor to the development of appropriate RESPONSES - activities that are consistent with the EXPLANATION and designed to achieve some outcome. The explanation component of the current process was also undertaken (in a first iteration) during the October 2001 workshop.

One of the major objectives of this Resilience Alliance initiative was to enhance the abilities of team members (i.e. participants) to set and change direction, to detect states trends and problems, to formulate and test explanations and to devise best-bet responses.

A guiding theoretical model for the Gorongosa National Park planning process was the four-stage adaptive cycle model (**Figure 3**) of the Resilience Alliance (Holling and Gunderson, 2002). It was generally accepted that at the start of the project Mozambique and Gorongosa were in the alpha or reorganisation phase. This phase provided great opportunities for influencing the future direction of GNP.

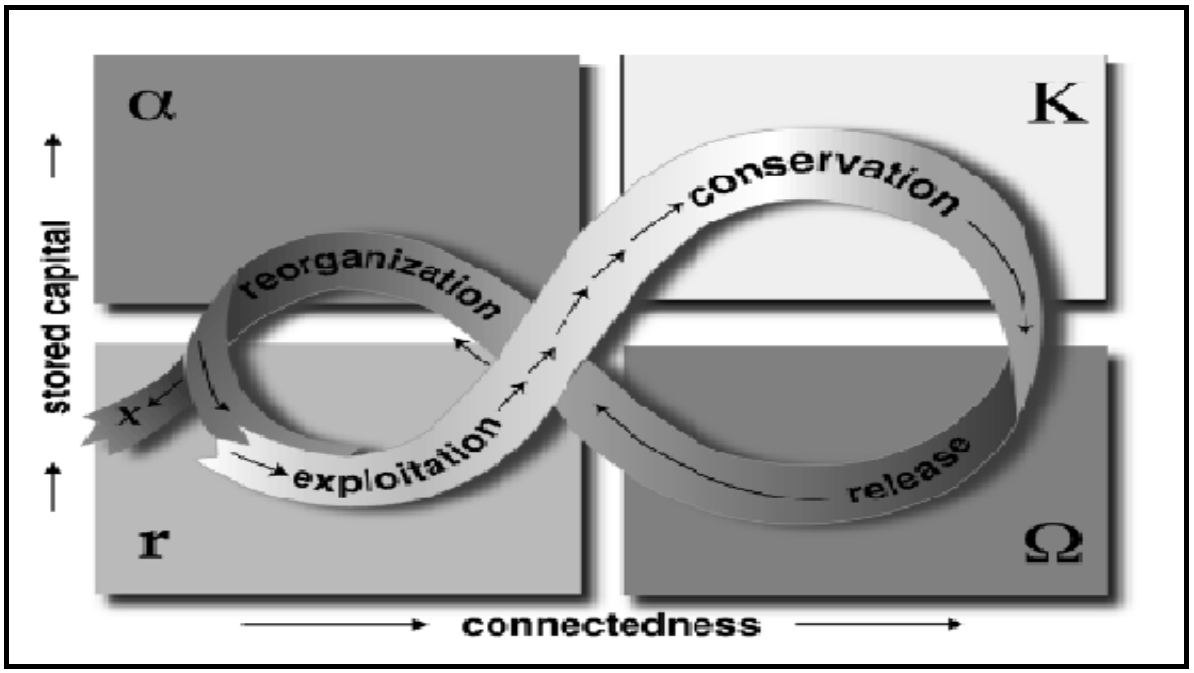


Figure 3. A stylised representation of the four ecosystem functions (r,K,W,a) and the flow of events among them. The arrows show the speed of that flow in the cycle, where short, closely spaced arrows indicate a slowly changing situation and long arrows indicate a rapidly changing situation. The cycle reflects changes in two properties, (1) Y axis: the potential that is inherent in the accumulated capital of biomass and nutrients. (2) X axis: the degree of connectedness among variables. Low connectedness is associated with diffuse elements loosely connected to each other whose behaviour is dominated by outward relations and affected by outside variability. High connectedness is associated with aggregated elements whose behaviour is dominated by inward relations among elements of the aggregates, relations that control or mediate the influence of external variability. The exit from the cycle indicated at the left of the figure suggests, in a stylised way the stage where the potential can leak away and where a flip is most likely into a less productive and organized system.

POLICY AND LEGAL FRAMEWORK

The importance of the maintenance of biodiversity and the need for a sustainable use of natural resources are reflected in various legislations of Mozambique and the most relevant in protected area management and biodiversity conservation are the Government Programme for Poverty Alleviation (PARPA), National Policy and Strategy for Development of Forest and Wildlife, the Forest and Wildlife Law and Regulation, the Land Law, the Gorongosa National Park Regulation.

Government Programme For Poverty Alleviation (Parpa)

This 5 Year Government Programme for Poverty Alleviation (PARPA approved by Resolution No.4/2000 of 22nd of March of the Assembly of the Republic establishes that while continuing the effort for the rehabilitation the national economy, the government will concentrate action on four major objectives focused on the national economic growth and the reduction of levels of poverty particularly on rural areas and the consolidation of the peace, national unity and democracy.

With regards to conservation of natural resources in particular and biodiversity at large, this program proposes to develop a multi-sector strategies to promote favourable environment for agriculture development, create incentives for investment and diversification of the industry, promotion of research program into better use of natural resources improve the road network, communication infrastructure and commercialisation.

The government has set that the economic development of Mozambique depends in great measure on the sustainable use of land. Land is considered to be a resource indispensable for soil conservation, agriculture, livestock husbandry, forest production, conservation and utilization of wildlife, maintenance of biodiversity and ecological equilibrium.

Establishes also that the policy for land management should guarantee the right of use of land to all entities, singular or collective, national to foreign who has economic and social initiatives for the benefit of the people of Mozambique.

National Policy And Strategy For Development Of Forest And Wildlife

The long-term policy of objective of the National Policy and Strategy for Development of Forest and Wildlife is stated as:

"Protection, conservation, utilization and development of forest and wildlife resources for the social, ecological, economical benefits of the present and future generation of the people of Mozambique".

The Policy established a set of specific social, ecological and economical objectives that are regarded as priority in promotion of a sustainable development of the sector:

The social objective includes the need to re-enforce the role of forest and wildlife resources in the alleviation of poverty and increase the participation of local communities in the management and utilization of resources.

The ecological objective are centred on the protection and conservation of forest and wildlife resources emphasizing the role of forest resources in the maintenance of soil, water conservation and other environmental benefits

The economic objective centres on re-enforcing the role of forest and wildlife in the promotion of economic development, meeting the demand of local industry of forest products and generation of revenue through efficient tax collection.

The Forest And Wildlife Law (Law 10/99 Of 07 Of July 1999 And Regulation)

The Forest and Wildlife Law 10/99 which replaces several post-independence and colonial laws establishes in its preamble that the economic, social, cultural and scientific importance of forest and wildlife justifies the need for its sustainable use as well as its protection and conservation for the benefit and improvement of the life quality of citizens of Mozambique.

With regard to Conservation Areas, this Law defines National Park as a total protected zone for the propagation, protection, conservation and management of vegetation and wildlife as well as to protect of sites, landscape or geological formation of particular scientific, cultural or aesthetic value and for the recreation of the public representative of national heritage. Hunting, exploitation of forest, agriculture, mineral or livestock husbandry are prohibited.

One of the innovations of this law is the uplifting of the penalty fees and imposes the confiscation of vehicles and any equipment found during the transgression.

Gorongosa National Park Regulation

The Gorongosa National Park is until today the only Park in the country with Statutes and Regulation established in the Legislative Diploma 2753 of May 27th, 1967.

Although some aspects of these legislation need adjustment to conform with the current social, political and economical situations, its worth to mention that that their existence have created a basis for its current management.

CURRENT MANAGEMENT STRUCTURE

The first Park Administration after the civil war (1996 to 1999) functioned with four Departments namely Administration & Logistics, Anti-poaching & Community, Construction & Maintenance and Research.

Given the evolution of the rehabilitation process and the increasing complexity of management aspects, this management structure was readjusted in 1999. The readjustment consisted in the splitting of Department of Anti-poaching & Community into the Department of Anti-poaching and the Department of Coordination and Community Development, the creation of the Department of Tourism and the rest of the structure was maintained.

The Park management structure is therefore, composed of six Department:

- Department of Administration & Logistics (DALO),
- Department of Anti-poaching (DEFI),
- Department of Coordination of Community Initiatives (DECICO),
- Department of Construction & Maintenance (DECOM),
- Department of Tourism and Recreation (DETUR) and
- Department of Research and Management (DEIGE).

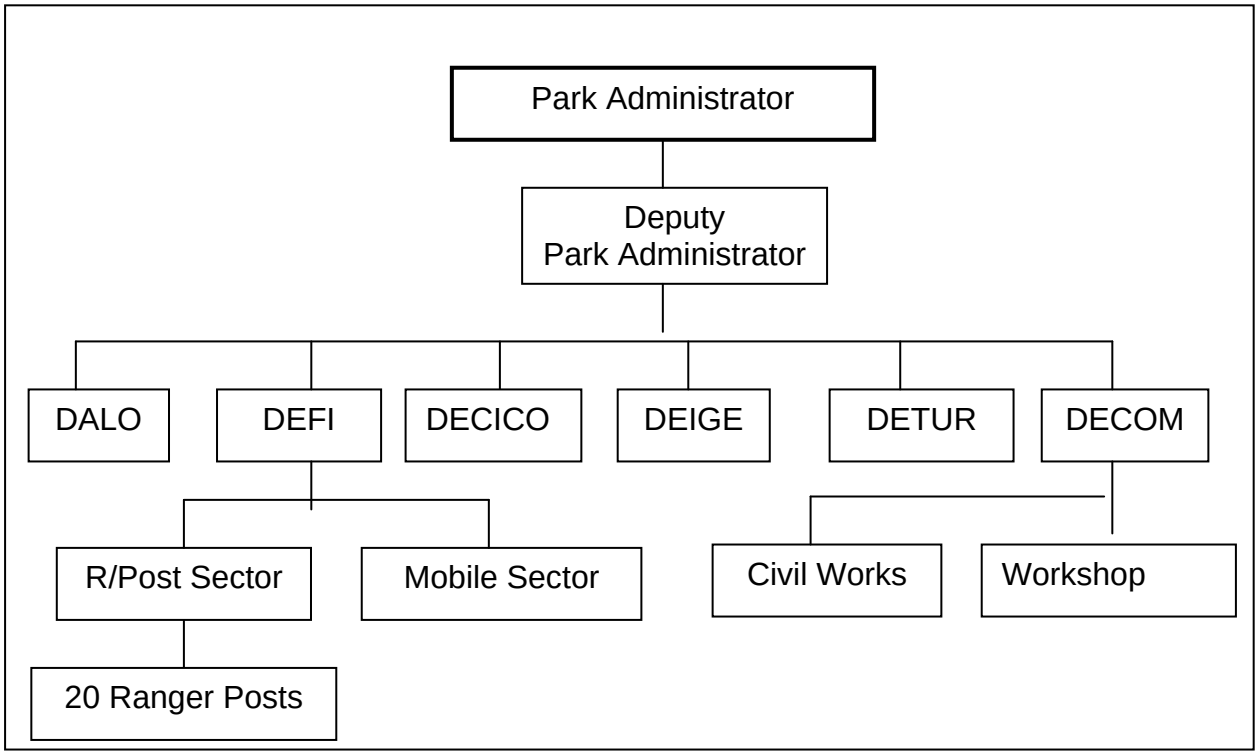


Figure 4. Current Gorongosa National Park Management structure (GNP Administration, 2002).

The functions of the Departments are as follows:

Department of Administration & Logistics (DALO)

The Department of Administration & Logistics, which includes secretarial services, human resources and overall logistics activities, deals with administration and finance of the Park, acquisition and distribution of goods and materials necessary for the implementation of the rehabilitation and management program, organization of the human resources, accounting and financial management, salaries and general administration.

Department of Anti-poaching (DEFI)

The Department of Anti-poaching through its two sector – the Ranger Post Sector and the Mobile Sector - has the responsibility of enforcing the Park Regulation and other relevant legislation for the protection of natural resources within and in the co-management areas.

Department of Construction & Maintenance (DECOM)

The Department of Construction & Maintenance is responsible for the planning and implementation of civil works including maintenance and construction of infrastructure to support to the park management, recreation and tourism in the Park as well as the maintenance of vehicles and others equipment.

Department of Coordination of Community Initiatives (DECICO)

The Department of Coordination of Community Initiatives is responsible for the planning and the institutional coordination and monitoring of community based natural resource management in the co-management area and liaison with communities around the Park.

Department of Tourism and Recreation (DETUR)

The Department of Tourism and Recreation will deal with the tourism and recreation activity planning and implementation including reception, fees collection, interpretation program, and development of network of signs in Gorongosa National Park.

Department of Research and Natural Resource Management (DEIGE)

The Department of Research and Natural Resource Management is responsible for the management of the ecological processes that governs the integrity of the Park's ecosystem including the re-introduction of species and the control of exotic species in Gorongosa National Park. It is also responsible for the fire management, protection of aesthetic, historical and cultural sites, and

biodiversity, formulation of research policy for the Park including research prioritisation, coordination with outsize research and academic institutions and public awareness. It is also responsible for the publication and dissemination of relevant research work.

LOGICAL FRAMEWORK AND TIMING

The major objectives and outputs of GNP management over the projected period covered by this framework were clearly articulated (Table 2) and provide clear targets for management. These outputs were developed around the six core objectives of the GNP management.

Table 2. Proposed objectives and outputs of GNP management.

Summary of management log frame showing major management outputs
1. Ecosystems, biodiversity and the historical and cultural assets of GNP conserved
1.1 Genetic pool of GNP species conserved
1.2 The integrity, species viability and endemic wildlife and habitat maintained
1.3 The aesthetic quality of the park's air, water and scenic resources conserved
1.4 The presence and introduction of exotic species controlled
1.5 Sites of historical and cultural significance protected
1.6 Landscape elements and water catchments conserved
1.7 Local communities involved in GNP management and benefit sharing
1.8 The occurrence of man made wildfires minimised
1.9 Conservation awareness in local communities increased
2. Cultural and natural resources based recreation opportunities provided to all sectors of society
2.1 Recreation opportunities in GNP identified, assessed, evaluated and implemented
2.2 Target client group recreation needs identified
2.3 Infrastructure developed to provide facilities for identified recreation opportunities
2.4 Human resources / capacity to guide and manage tourists / facilities developed / provided
2.5 Opportunities for neighbouring communities to provide cultural experiences (e.g. dancing, crafts) to visitors explored

3. Opportunities for scientific studies, for education and for information exchange provided

3.1 Research strategy for GNP developed and implemented

3.1.1 Basic conditions for research created and contacts with international research institutions established

3.1.2 Priority research needs identified and science capacity of GNP strengthened

3.2 Conditions for the education of specific groups established (e.g. trained guides)

3.3 Material for information and publicity produced and distributed

3.4 Information management system created

3.5 Indigenous knowledge strengthened and integrated into GNP research strategy

4. Resource use in GNP does not undermine conservation, information, recreation and income generation objectives

4.1 Sustainable use levels of key resources identified

4.2 Use of wildlife and forest products regulated

4.3 Access to non-consumptive resources use and ecosystems controlled

5. Income that contributes to the maintenance and development of GNP generated

5.1 Private sector partnerships developed.

5.2 Revenue structure developed and implemented.

5.3 Partnerships with potential donors established.

5.4 Efficient and effective use of revenue ensured.

6. Self sufficient institutional and management structures for GNP established and functioning

6.1 Review of current management structure completed

6.2 Study of alternative management systems (e.g. private reserves, limited companies) completed

6.3 Results of review and recommendations adopted by government

6.4 New participatory management structure appointed and in place

6.5 Review / evaluation of new management structure completed.

6.6 Implementation of GNP management plan initiated.

A number of key activities were identified and placed in a timing sequence to reflect what were priority activities and what activities should follow the priority ones. The most important activities were as follows:

- Design and implement the institutional framework for park management and governance;
- Establish park management system and budgets;
- The identification and reintroduction of key large mammal species;
- Establishment of monitoring systems for ecosystem performance;
- Identification of likely impacts of land use change in and around GNP;
- Identify and develop opportunities for co-management in and around GNP;
- Develop an effective law enforcement system for GNP;
- Develop a research capacity including engagement with national and international research agencies;

- Establish guidelines for users of GNP;
- Develop and implement fee structures and design financing strategies;
- Establish effective financial management systems.

Thereafter subsequent activities were identified in a sequence that reflected ongoing processes to achieve GNP objectives as well as the requirement for follow on activities, which built on the outputs of initial activities. The details of these activity sequences are shown in ANNEX II.

ECOSYSTEMS, BIODIVERSITY AND THE HISTORICAL AND CULTURAL ASSETS OF GNP CONSERVED

Ecosystems and biodiversity of GNP conserved

The core business of GNP was accepted to be the conservation of ecosystems, and biodiversity and the conservation of historical and cultural assets. It was acknowledged that the achievement of these objectives was dependent on the development and nurturing of good relationships with the people living in and around GNP and on an effective and enabling policy environment. In terms of conserving ecosystems and biodiversity it was agreed that management should seek to conserve the underlying processes and not specific states. It was recognised that this would be difficult because GNP was associated (in the mind of the public) with specific states such as large ungulate herds and abundant lion. It was however, accepted that seeking to manage for these states could result heightened vulnerability of the ecosystems and the possibility of major changes occurring following perturbations such as drought or floods. The shift in focus from managing for state to managing processes would require management to effectively communicate these needs to the public and to policy makers lest they are surprised by the changes that come with maintaining essential processes. The major tasks of management would therefore be as follows: a) Identify the key processes that govern the functioning and state of GNP ecosystems. b) Identify the major drivers of change in those processes and their dynamics. c) Identify management actions that would amplify or mitigate these dynamics such that ecosystem processes are maintained and GNP objectives are achieved (Table 3).

Table 3. Activities identified to achieve the conservation and cultural assets objective for GNP broken down by sub-objective.

1.1.1 Conduct baseline inventories of fauna and flora species of GNP and develop a vegetation map.

1.1.2 Establish five year census system 1.1.3 Identify key large mammal species that are now missing or are not genetically or demographically viable 1.1.4 Reintroduce viable breeding populations of critical or key species. 1.1.5 Establish thresholds of potential concern (TPCs) for populations of key species. 1.1.6 Identify threats to population viability for key species and develop appropriate responses. 1.2.1 Establish TPCs for critical species habitats 1.2.2 Establish a monitoring system to track population and ecosystem performance in relation to TPCs. 1.2.3 Develop capacity to respond to crossing of TPCs as necessary.
1.3.1 Identify likely impacts of surrounding and internal landuse and industrial development on water and air quality in GNP. 1.3.2 Establish GNP management representation on relevant decision making bodies and / or develop an effective lobbying strategy. 1.3.3 Establish monitoring system where necessary 1.3.4 Establish TPCs for air and water quality.
1.4.1 Identify and map distribution of exotic species 1.4.2 Establish degree of threat to GNP for major exotic species. 1.4.3 Design and implement control and eradication program as necessary. 1.4.4 Establish surveillance program to detect new invasions.
1.7.1 Identify existing water catchment elements of ecological importance. 1.7.2 Identify threats. 1.7.3 Develop and implement mitigation strategies. 1.7.4 Monitor effects.
1.8.1 Review opportunities for co-management. 1.8.2 Develop and implement co-management institutions as feasible. 1.8.3 Identify or establish channels of communication to facilitate exchange of information and knowledge and to facilitate the resolution of conflicts.

1.9.1 Open channels of communication with communities. 1.9.2 Produce audio-visual materials for community use. 1.9.3 Develop and implement an education / awareness campaign for local communities. 1.9.4 Involve local communities and District government in the program of fire control. 1.9.5 Zone community areas. 1.9.6 Identify the causes of fires and develop appropriate responses. 1.9.7 Regulate the use of the buffer zone by local people. 1.9.8 Promote changes in local community methods of resource use as necessary. 1.9.9 Develop and implement incentive schemes to control fires. 1.9.10 Develop rules for tourists and other visitors. 1.9.11 Develop a fire management plan (early burning, firebreaks, fire monitoring and observation points). 1.9.12 Study the ecology of fire in GNP. 1.9.13 Establish and effective law enforcement system that includes patrols, control of poachers, control of people entering GNP. 1.9.14 Establish an effective monitoring and evaluation system for the fire management program.
1.10.1 Establish conservation education program. 1.10.2 Establish the level of conservation awareness in the communities within and neighbouring GNP. 1.10.3 Evaluate potential incentive structures to improve conservation use of natural resources.
2.1.1 Identify recreation opportunities suitable for GNP. 2.1.2 Assess the ecological, the economic and the social implications of developing opportunities for each recreational activity. 2.1.3 Assess the carrying capacity for tourists overall as well as for each recreational opportunity. 2.1.4 Cost / benefit analysis of Park management versus private sector providing services. 2.1.5 Call for tenders and allocate contracts as necessary.

Historical and cultural assets conserved

With regards the cultural and historical assets of GNP the major management tasks would be to identify these and to establish co-management relationships with the cultural custodians of these assets where this was appropriate (Table 4).

Table 4. Activities required to achieve the objective of conserving historical and cultural assets.

1.5.1 Identify and map sites of historical and cultural significance.
1.5.2 Identify threats
1.5.3 Establish protection strategy where necessary
1.5.4 Develop co-management plans with appropriate stakeholders
1.6.1 Identify existing landscape elements of ecological importance.
1.6.2 Identify threats.
1.6.3 Develop and implement mitigation strategies.
1.6.4 Monitor effects.

CULTURAL AND NATURAL RESOURCE BASED OPPORTUNITIES FOR RECREATION PROVIDED TO ALL SECTORS OF SOCIETY

Opportunities for recreation based on cultural and historical resources

GNP was seen as being an important provider of recreation opportunities that were based on the natural resources (ecosystems) of the park as well as on the cultural and historical assets of the park. As well as being an important objective of GNP the provision of these opportunities to all sectors of society would be an important mechanism for the generation of income. GNP management recognised that its core business was the provision of opportunities and not in the marketing and management of these opportunities. GNP management would seek to identify recreation opportunities and then seek private sector partnerships to develop and market these recreation opportunities (Table 5)

Table 5. Activities required to achieve the objective of providing recreation opportunities to all sectors of society.

2.1.1 Identify recreation opportunities suitable for GNP.
2.1.2 Assess the ecological, the economic and the social implications of developing opportunities for each recreational activity.
2.1.3 Assess the carrying capacity for tourists overall as well as for each recreational opportunity.
2.1.4 Cost / benefit analysis of Park management versus private sector providing services.
2.1.5 Call for tenders and allocate contracts as necessary.
2.2.1 Identify potential client groups.
2.2.2 Conduct a survey of opinions and expressed needs of potential client groups.
2.2.3 Analyse and report on survey and select target groups.
2.3.1 Develop information centre for tourists.
2.3.2 Develop and make available sign posts, maps and brochures for visitors to the park and inside the park.
2.3.3 Identify, design, site and construct facilities required for each recreational opportunity.
2.3.4 Explore options for leasing concessions to private enterprise to develop / construct facilities.
2.4.5 Develop a set of standards for infrastructure development including EIA.
2.4.1 Identify training needs and develop training strategy.
2.4.2 Develop standards for recruited staff.
2.4.3 Establish guidelines and standards for guiding in the park.
2.4.4 Implement training strategy.
2.5.1 Meetings and discussions with neighbouring communities.
2.5.2 Facilitate the provision of cultural experiences by selected local groups / crafts people.

Opportunities for recreation based on natural resources

GNP management recognised the necessity of developing close relationships with the private sector to ensure the efficient provision of these recreation opportunities. These recreation activities would be more efficiently managed by the private sector. GNP management would need to develop the standards, limits and monitoring systems to ensure that the provision of recreation opportunities did not undermine the achievement of GNP conservation objectives. GNP management accepts its role as one of providing an enabling environment for the private sector to deliver recreation opportunities to all members of society whilst ensuring that GNP conservation objectives are not compromised.

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OPPORTUNITIES FOR SCIENTIFIC STUDIES, FOR EDUCATION AND FOR INFORMATION EXCHANGE PROVIDED

GNP management recognises that its effectiveness is constrained by a lack of knowledge as to the state of the ecosystems on which GNP is dependent as well as the functioning of these ecosystems. GNP management also recognises that GNP provides a unique set of opportunities for education, for learning and for communication of information. Whilst recognising the importance of management as a learning process GNP management seeks to enhance its effectiveness through the development of a research strategy designed to increase the institutionalised knowledge in key areas of uncertainty. The development of close and functional partnerships with provincial, national and international research institutes will be a key component of this research strategy. First steps have been taken in identifying key areas that management requires improved understanding (the hydrology of the Urema Lake system and floodplains; vegetation dynamics; fire ecology; wildlife population dynamics; human impacts on wildlife and the hydrology of the ecosystem) but these need to be improved. GNP management recognises the importance of traditional or local knowledge and seeks to integrate this knowledge into its institutional knowledge base.

A number of key activities were identified for management to achieve the objective of providing information and education opportunities (Table 6). The most important of these were the identification of staff training needs and the training of staff. Coupled with this was the development of functional relationships with research and education units in the region and internationally. Thereafter management would seek to establish the facilities required to support research as well as to manage the information and data collected. This latter was seen as being of primary importance.

An important component of the knowledge and information management objective was the development of closer links with local communities and the development of knowledge bases that could adequately capture local knowledge and tests its usefulness or accuracy.

The development of an internationally accessible web site was seen as being an important outreach activity as well as providing opportunities for engaging with supporters from across the globe.

Table 6. Activities required to achieve the objective of making information and information and education opportunities available.

3.1.1 Build a small research station.
3.1.2 Nominate appropriate staff.
3.1.3 Equip the research station and department.
3.1.4 Create partnerships with other research institutions nationally and internationally including experience exchange and staff training.

3.2.1 Revise the existing draft of research needs and include it as an annex to the management plan.
3.2.2 Identify training needs.
3.2.3 Provide in-service training for staff.
3.2.3 Send staff for short term training within the region.
3.3.1 Prepare terms of reference for researchers.
3.3.2 Sign MOU's and contracts.
3.3.3 Monitor and evaluate the implementation of contracts.
3.3.4 Carry out research.
3.3.5 Publish research results.
3.4.1 Create visitors centre and equip.
3.4.2 Nominate and train appropriate staff.
3.4.3 Develop appropriate education material.
3.5.1 Identify needs and types of materials to be published.
3.5.2 Produce drafts of material and information.
3.5.3 Identify specialised companies for production, publishing and distribution.
3.5.4 Prepare TOR's and sign contracts for services supply.
3.5.5 Create web-site.
3.6.1 Design information management systems (identify information needs and design forms for data entry).
3.6.2 Collect information on GNP.
3.6.3 Establish library and documentation centre.
3.6.4 Acquire software and hardware for library, documentation centre and for information management systems.
3.6.5 Design and implement database systems.
3.7.1 Conduct diagnosis of existing indigenous technical knowledge.
3.7.2 Select, validate and document relevant IK.
3.7.3 Integrate IK into GNP research strategy where appropriate.
3.7.4 Adopt incentives to facilitate co-operation with local communities on data provision.

As well as generating knowledge that will contribute to the management of GNP the GNP management is aware that it has an important role to play in providing education opportunities for all sectors of society. The development of an education centre will be an important mechanism for achieving this objective. But GNP management also recognises that it will have to be proactive in reaching out to the communities that live within its boundaries as well as those living adjacent to the park. The education and outreach strategy of the GNP management will pay particular attention to the needs of these groups.

RESOURCE USE IN GNP DOES NOT UNDERMINE CONSERVATION, INFORMATION, RECREATION AND INCOME GENERATION OBJECTIVES

GNP management recognises that resources within the park are being used by local communities and also by tourists. GNP management recognises the importance of some of these resources to the livelihoods of the people using them. Equally importantly GNP management recognises that the use of these resources impacts the functionality of the ecosystems upon which GNP is dependent. GNP management seeks to maintain a careful balance between GNP being able to meet the needs of resource users without these use activities undermining the achievement of the core objectives of GNP. Wherever feasible GNP management will seek to develop co-management relationships with key resource user groups to ensure that resource use is sustainable and does not threaten the core business of GNP. GNP management recognises that it will need to identify, in collaboration with key stakeholders, sustainable use levels of key resources. It will also need to identify the direct and indirect impacts of resource use activities on the functioning of GNP ecosystems.

Major activities that GNP management would expect to undertake (Table 7) include inventorying key resources and identifying the demands on these resources. Thereafter the key activities would be to establish sustainable use levels for these resources or alternatively develop indicators (thresholds of potential concern) that would provide early warning to management and other user groups of use levels exceeding the ecosystems' ability to supply. Coupled with these activities would be activities designed to zone specific areas in GNP for specific activities as well as to set limits on activities within some of these areas.

Table 7. Activities required to achieve objective of resource use not undermining other GNP objectives.

4.1.1 Undertake resource inventories
4.1.2 Define criteria for identification of key resources.
4.1.3 Identify key resources for sustainable use.
4.1.4 Define sustainable management or use cycles where appropriate.
4.2.1 Create incentives and or dis-incentives to have communities move themselves from key ecosystems to outside of the park.
4.2.2 Define and set up rules and procedures for sustainable use (e.g. maximum permitted off-take, maximum allowable visitor rate, maximum allowable infrastructure number, etc.)
4.2.3 Create and efficient enforcement system and or enhance the existing one.
4.2.4 Enforce the existing rules and procedures.
4.2.5 Identify suitable areas for relocation.

4.3.1 Identify the tourism carrying capacity of different ecosystems. 4.3.2 Designate tourist areas in accordance with the identified carrying capacities and map them. 4.3.3 Train guides. 4.3.4 Monitor tourist activities and direct them to the desired areas. 4.3.5 Design and implement sign posts system to control tourist access. 4.3.6 Define rules and procedures for access to historical and cultural sites by communities and tourists.

INCOME THAT CONTRIBUTES TO THE MAINTENANCE AND DEVELOPMENT OF GNP GENERATED

The issue of income generation was a difficult one in the development of this management framework. All participants clearly recognised that for GNP to achieve its core objectives it would need to be well funded and that at least some of this funding would have to be generated by the park itself. But there was great concern that the objective of generating income did not become the major focus of GNP management. Income generation was seen as a means of achieving the core objectives of GNP. It was definitely not seen as an end in itself. GNP management set itself the task of developing and implementing a financial strategy that sought to:

- Generate funds through effective pricing of the services it provided to users;
- Generate funds through the development of proposals to donors;
- Maintain transparent and efficient accounting systems to track costs and income and hence minimise inefficient expenditure.

GNP management recognised the need to engage with the private sector for efficient revenue generation. As previously noted GNP management sees its role as being one of providing standards and an enabling environment for harnessing the capabilities of the private sector to generate income at least cost (Table 8).

Table 8. Activities required to generate and manage income for GNP.

5.1.1 Develop strategy for private tender participation.
5.1.2 Make tender public and invite participation.
5.1.3 Negotiate and establish partnerships.
5.2.1 Conduct marketing survey of potential opportunities and willingness to pay of client groups.
5.2.2 Analyse results of market survey.
5.2.3 Select opportunities to be developed and or provided.
5.2.4 Cost / benefit / impact analysis of offering and developing each selected recreational opportunity.
5.2.5 Monitor and evaluate revenue, impacts and visitor satisfaction.
5.2.6 Fee structure developed and implemented.
5.2.7 Fee structured reviewed and revised.
5.3.1 Identify development projects for potential donor funding.
5.3.2 Develop proposals or concepts for donor funding.
5.3.3 Submit concepts / proposals to donors.
5.3.4 Implement funded projects.
5.4.1 Establish financial monitoring system to track expenditure.
5.4.2 Minimise inefficient expenditure.
5.4.3 Establish similar mechanisms to track income.

SELF SUFFICIENT INSTITUTIONAL AND MANAGEMENT STRUCTURES FOR GNP ESTABLISHED AND FUNCTIONING

The development of a stakeholder responsive and self-sufficient management structure, with the associated institutions was seen as a vital step in the establishment of GNP as a sustainable and premier National Park. It was not expected that the management body would be established prior to the implementation of this management plan. Rather this would be a parallel process that would be initiated and implemented as soon as possible. However, the existing management system would begin implementation of the management plan and at the same time participate in the development of the new governance structure. Once the latter was established it would take over the leadership in managing GNP affairs.

The development of the new institutional / management structure would begin with a review of the current management scheme which would then lead to explorations of alternative management structures. It is expected that GNP management may visit Niassa Reserve and Kruger National Park to identify the advantages and disadvantages of different management systems.

Once a management structure was identified then it would be implemented. Along with this implementation would be the establishment of financial and human resources management systems as well as the crucial element of a monitoring system to facilitate the evaluation of the management systems. The major activities for this process are outlined in Table 9, below.

Table 9. Outline of the major activities to achieve the self-sufficient institutional and management structure.

6.1 Review of current management scheme
6.2 Study of alternative management systems (e.g. private reserves, limited companies)
6.3 Results of review adopted by government
6.4 New participatory management structure appointed / in place
6.4.1 Funding / financial resources to establish management structure and implement management plan sourced.
6.4.2 Financial management and human resource management systems established
6.4.3 Private sector partnerships explored and developed
6.4.4 Partnerships / links with stakeholders and neighbours established
6.4.5 Monitoring systems for management and achievement of conservation objectives established.
6.5 Review and evaluation of new management structure completed

LAW ENFORCEMENT

Boundaries

The current boundaries of Gorongosa National Park are those established in 1967 by the Legislative Diploma No. 2 750 of May the 6th. The successive alterations done since 1959, though with best intentions, were all made on the map without proper fieldwork (Rosinha, 1970). As a result, the conflict between the Park Management and the approximately 10 000 people residing inside the Park has never been resolved.

There is an urgent need to assess the effectiveness and practicability of the existing Park's boundaries in view of the revised management objectives and suggest alterations if necessary.

Communities Inside Gorongosa National Park

Since its establishment, Gorongosa National Park has been confronted with the problem of the presence of communities inside its boundary. Major communities inside the Park are distributed along major watercourses particularly along the Rivers Nhansengure, Mucodza and Vanduzi in the Western boundary, Nhandue, Nhafice and Nhandinde in the North boundary; along the Mocombeze and Urema in the centre and along the Mussapassua river, the SSE corner of the Park. **Figure 5**.

Given the absence of socio-economic infrastructures and employment to service the resident communities the extent and magnitude of Park-Community conflict is on the rise.

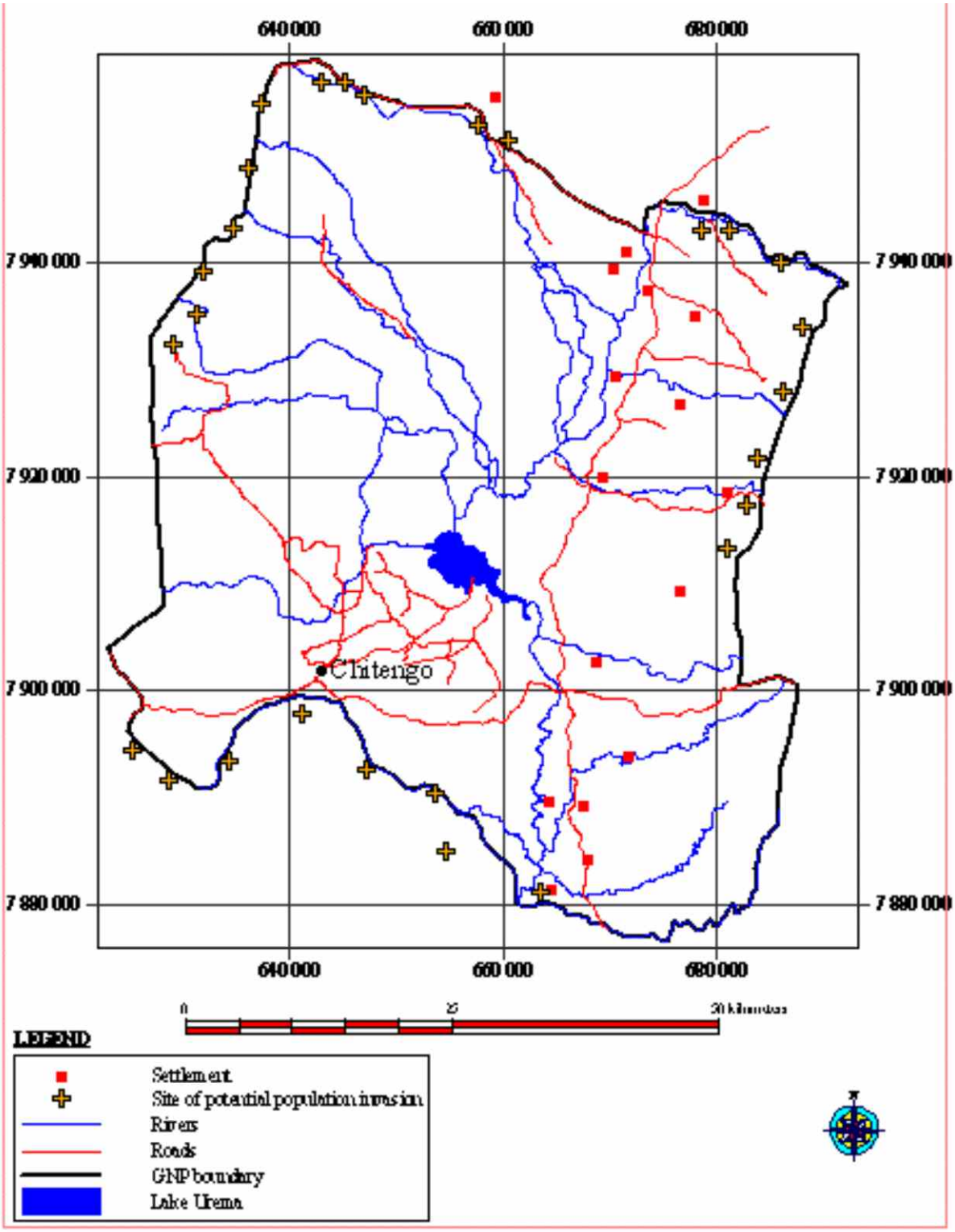

Figure 5. Map of GNP showing major sites of human habitation and sites of potential or actual human penetration into GNP. Position as of 1975.

To minimise the negative impact of such conflicts it is urgent to undertake a detailed demographic assessment to establish trends of population growth and resource use by these communities.

Through a proper consultation and negotiation with the respective communities and local district administration a zone plan of the Park must be formulated to allow for resettlement scheme and the development of co-management procedures including resource use, direct beneficiation from the Park's revenue and the provision of social amenities.

To alleviate the pressure on the use of natural resource inside the Park by the local communities, CBNRM projects should be encouraged and implemented in the Buffer zone of the Park.

Anti-Poaching Strategy

According to statistics of the past 3 years, the commercial poaching by outsider is under control; however, hunting for subsistence and subsistence/commercial by resident communities still occur with levels of intensity fluctuating between seasons. The overall trend is a decrease of the poaching incidents.

The strategy adopted by the Park management is based on a regular review of the sensibility of each area mainly around community areas inside the boundaries and thereafter undertake anti-poaching operations when necessary.

The anti-poaching unit is composed of two sectors, one dealing with fixed "Fiscal" posts located close to major communities and around the perimeter of the Park and the other is the mobile team that re-enforces the capacity of the fixed ranger posts during major operations and is also responsible for the patrol of areas not covered by the "Fiscal" posts, particularly the centre of the Park.

To provide and effective coverage of the Park, given its size and the absence of management roads, a review of the effectiveness of the anti-poaching operation should be undertaken.

It is desirable to establish sectorial field posts responsible for a group of "Fiscal" posts.

HUMAN RESOURCES MANAGEMENT

The Gorongosa National Park was until 1989 the only National Park with a full operational management structure. Prior to the breaking of the war in 1981 the Park had among the traditional departments, one resident ecologist.

The staff of the Park was divided into two distinct groups, namely the permanent and the seasonal staff. The same contracting modality is still applied and today the management is composed of 135 staff members as shown in Table 10 of which 110 are permanent and the reminder contracted on seasonal basis.

According to the size of the Park (3 770 Km^2) it is clear that the Park is under staffed. This is exacerbated by borders and the presence of approximately 10 000 people living inside the Park.

Table 10. Current staff of Gorongosa National Park

Department	Staff Number		
	Permanent	Seasonal	Total
Administration and Logistics	7	0	**7**
Anti-poaching	86	0	**86**
Construction and Maintenance	10	25	**35**
Coordination of Community Initiatives	1	0	**1**
Tourism and Recreation	5	0	**5**
Research & Natural Resource Management	1	0	**1**
Total	**110**	**25**	**135**

With the increasing management activities and with the increase of wildlife numbers it is anticipated that an increase in conflict between resident communities and the Park's management will result. The staff level has therefore to be respectively adjusted. Table 11 indicates the minimum staff requirement for the first 3 years of the implementation of the Management Plan.

Training of Gorongosa National Park staff for the medium level positions such as heads of department and research team will be required to guarantee the best implementation of this plan.

Scouts or game guards and the *fiscias* will require frequent retraining on new legislation and procedures.

Table 11. Required staff of Gorongosa National Park

Department	Staff Number		
	Permanent	Seasonal	Total
Administration and Logistics			
. Head of Department	1	0	**1**
. Accountant	1	0	**1**
. Human Resource Officer	1	0	**1**
. Store keeper	2	0	**2**
. Driver	2	0	**2**
. Cleaner	2	0	**2**
Subtotal	**9**	**0**	**9**
Anti-poaching			
. Head of Department	1	0	**1**
. Head "Fiscal" for Operations	1	0	**1**
. "Fiscal" InCharge of Fixed Post	27	0	**27**
. "Fiscal" 2nd-InCharge of Fixed Post	27	0	**27**
. "Fiscal"	87	0	**87**
. Driver	2	0	**2**
Subtotal	**145**	**0**	**145**
Construction and Maintenance			
. Head of Department	1	0	**1**
. Head Machanic	1	0	**1**
. Brick layer	2	0	**2**
. Carpenter	2	0	**2**
. Electritian	1	0	**1**
. Panel Beater	1	0	**1**
. Plumber	1	0	**1**
. Tool keeper	1	0	**1**
. Driver	4	0	**4**
. Labour	14	25	**39**
Subtotal	**28**	**25**	**53**
Coordination of Community Initiatives			
. Head of Department	1	0	**1**
. CBNRM Officer	4	4	**8**
Subtotal	**5**	**4**	**9**
Tourism and Recreation			
. Head of Department	1	0	**1**
. Planning and Interpretation officer	1	0	**1**
. Tour Guides	2	4	**6**
. Driver	1	0	**1**
Subtotal	**5**	**4**	**9**
Research & Natural Resource Management			
. Head of Department	1	0	**1**

. Ecological Monitoring officer	3	0	**3**
. Technical staff	3	0	**3**
. Driver	1	0	**1**
Subtotal	**8**	**0**	**8**
Total	**200**	**0**	**200**

INFRASTRUCTURE, MATERIAL AND EQUIPMENT

The current infrastructures are inadequate for the management of the Park. Gorongosa National Park had two development sites Bela-Vista and Chitengo. While Bela-Vista served only for tourism activities, the Chitengo Camp served both tourism and management. All the Park management infrastructures including the administration building, workshops, stores and a research center were concentrated at Chitengo Camp. As it was mentioned before, all of these were destroyed during the war and the road network requires rehabilitation.

The Park's infrastructures are classified into three broad categories: management, visitor and private infrastructures. Of concern are the management and public infrastructures, which are necessary for the proper administration and fallow under direct administration of the Park. These include: office blocks, staff residences, store rooms, workshops, conference room, roads, bridges, lookout points, picnic areas, natural trails, fire breaks.

Private infrastructures are those related to the hospitality industry in the Park and are developed under specific contract with DNAC. DNAC sets the standards, but these facilities are constructed and maintained by the investor.

The current management and visitor infrastructure under direct management of the park are as shown in Table 12.

Table 12 ; Current Infrastructure of Gorongosa National Park

Infr-Type	Purpose	No.	Current state
Rondavel (2 room)	Administration	1	Require rehabilitation
Two rooms blocks	offices	4	Require rehabilitation
House	Radio room	1	Require rehabilitation
Machessa	Meeting and Eating	1	Require rehabilitation
House Type 2	Junior staff residence	26	Require rehabilitation
House Type 3	Senior staff residence	8	Require rehabilitation
Class room	Class/Conference Room	1	New
6 room block	Dormitory	2	Ok
2 room block	Kitchen and refectory	1	Ok
6 shower block	Bathroom	1	Require rehabilitation
2 shower block	Bathroom	4	New
Workshop		1	Require rehabilitation
Store room		3	Require rehabilitation
Water tank		2	Require rehabilitation
Air strip		1	Rehabilitated
Bridges		12	Require rehabilitation
100 Km tourist tracks		1	Require rehabilitation
Lookout point		2	Require rehabilitation

Gate		2	Require rehabilitation

FINANCES

An indicative budget for the implementation of this first phase management plan is US$5.6 million (Table 13). The breakdown of this budget is shown in the table below. Of this total US$1.5 million was designated for restocking, US$ 2.75 million for recurrent expenditure and US$420000 for staff development and training.

Once this budget is approved (which implies approval for the management framework) then a proposal will be developed to put to GEF or similar donor for funding.

Table 13. Indicative budget for the implementation of the GNP management plan.

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
1. Annual Recurrent Budget	250,000	400,000	600,000	750,000	750,000	**2,750,000**
2. Captital Development Budget						
- Staff development & Training	30,000	30,000	30,000	30,000	300,000	**420,000**
- Equipment, furnishings	50,000	60,000				**110,000**
- Restocking	-	750,000	750,000			**1,500,000**
- Roads & Infrastructure	25,000	30,000	30,000	50,000		**135,000**
- Baseline biodiversity surveys & Mapping	3 5,000	40,000				**75,000**
- Baseline Socio-economic Surveys	30,000	25,000				**55,000**
- Resettlement incentives			300,000	300,000		**600,000**
	420,000	**1,335,000**	**1,710,000**	**1,130,000**	**1,050,000**	**5,645,000**

MARKETING AND OUTREACH STRATEGIES

GNP management recognised the importance of developing co-operative relationships with all neighbours and key stakeholders. A marketing and outreach strategy was needed to ensure that all stakeholders felt a part of this exciting development and that a commitment to contribute was strongly felt from the national to the local levels. As part of this process a management planning process was envisaged for the co-management areas surrounding GNP that would seek to engage the surrounding communities, local government and NGOs in the development of management models for co-management areas as well as specific resources within GNP. A number of GNP activities, such as the establishment of a stakeholder responsive governance body, would contribute to this process.

CONCLUDING REMARKS

The GNP management plan is an achievable framework for Mozambique to take full advantage of the remarkable set of ecosystems that comprise GNP. As a key National resource the Park has much to offer Mozambique, the southern African region and also to global conservation and recreation needs. Fulfilment of these potentials will require the political and moral support of the government of Mozambique and the financial support of the international donor community during the initial recovery phase. Mozambique does not have the resources to establish GNP as the premier park that it once was. But with these relatively small injections of resources the GNP could resume its place as a premier conservation area in southern Africa as well as being a must see on the southern African tourist destination list. Because of the unique mix of ecosystems, and the opportunity now presented for their recovery, GNP also offers a once in a lifetime opportunity for the scientific world to observe how complex ecosystems reconfigure following major disturbances. All in all GNP offers an almost unique set of opportunities for a great range of society's interest groups to benefit and in so doing to making a meaningful contribution to ensuring that future generations can witness the remarkable splendour of one of Africa's most exciting conservation areas.

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ANNEX I – Simplified logframe

Outputs	Measurable Indicators	Means of Verification	Important Assumptions
1. Ecosystems, biodiversity and the historical and cultural assets of GNP conserved 1.1 Genetic pool of GNP species conserved 1.2 The integrity, species viability and endemic wildlife and habitat maintained 1.3 The aesthetic quality of the park's air, water and scenic resources conserved 1.4 The presence and introduction of exotic species controlled 1.5 Sites of historical and cultural significance protected 1.6 Landscape elements and water catchments conserved 1.7 Local communities involved in GNP management and benefit sharing 1.8 The occurrence of man made wildfires minimised 1.9 Conservation awareness in local communities increased 2. Cultural and natural resources based recreation opportunities provided to all sectors of society 2.1 Recreation opportunities in GNP identified, assessed, evaluated and implemented 2.2 Target client group recreation needs identified 2.3 Infrastructure developed to provide facilities for identified recreation opportunities 2.4 Human resources / capacity to guide and			

manage tourists / facilities developed / provided 2.5 Opportunities for neighbourig communities to provide cultural experiences (e.g. dancing, crafts) to visitors explored 3. Opportunities for scientific studies, for education and for information exchange provided 3.1 Research strategy for GNP developed and implemented 3.1.1 Basic conditions for research created and contacts with international research institutions established 3.1.2 Priority research needs identified and science capacity of GNP strengthened 3.2 Conditions for the education of specific groups established (e.g. trained guides) 3.3 Material for information and publicity produced and distributed 3.4 Information management system created 3.5 Indigenous knowledge strengthened and integrated into GNP research strategy 4. Resource use in GNP does not undermine conservation, information, recreation and income generation objectives 4.1 Sustainable use levels of key resources identified 4.2 Use of wildlife and forest products regulated 4.3 Access to non-consumptive resources use and ecosystems controlled			

5. Income that contributes to the maintenance and development of GNP generated 5.1 Private sector partnerships developed. 5.2 Revenue structure developed and implemented. 5.3 Partnerships with potential donors established. 5.4 Efficient and effective use of revenue ensured. 6. Self sufficient institutional and management structures for GNP established and functioning 6.1 Review of current management structure completed 6.2 Study of alternative management systems (e.g. private reserves, limited companies) completed 6.3 Results of review and recommendations adopted by government 6.4 New participatory management structure appointed and in place 6.5 Review / evaluation of new management structure completed. 6.6 Implementation of GNP management plan initiated.	Board appointed within six months of Government approval of management plan. Management structures in place within nine months of Government approval of management plan.		
Activities	Project Milestones		**Important assumptions**
1.1.1 Conduct baseline inventories of fauna and flora species of GNP and develop a vegetation map.			

1.1.2 Establish five year census system 1.1.3 Identify key large mammal species that are now missing or are not genetically or demographically viable 1.1.4 Reintroduce viable breeding populations of critical or key species. 1.1.5 Establish thresholds of potential concern (TPCs) for populations of key species. 1.1.6 Identify threats to population viability for key species and develop appropriate responses. 1.2.1 Establish TPCs for critical species habitats 1.2.2 Establish a monitoring system to track population and ecosystem performance in relation to TPCs. 1.2.3 Develop capacity to respond to crossing of TPCs as necessary. 1.3.1 Identify likely impacts of surrounding and internal landuse and industrial development on water and air quality in GNP. 1.3.2 Establish GNP management representation on relevant decision making bodies and / or develop an effective lobbying strategy. 1.3.3 Establish monitoring system where necessary 1.3.4 Establish TPCs for air and water quality. 1.4.1 Identify and map distribution of exotic species 1.4.2 Establish degree of threat to GNP for major exotic species. 1.4.3 Design and implement control and eradication program as necessary. 1.4.4 Establish surveillance program to detect new invasions.		

1.5.1 Identify and map sites of historical and cultural significance. 1.5.2 Identify threats 1.5.3 Establish protection strategy where necessary 1.5.4 Develop co-management plans with appropriate stakeholders 1.6.1 Identify existing landscape elements of ecological importance. 1.6.2 Identify threats. 1.6.3 Develop and implement mitigation strategies. 1.6.4 Monitor effects. 1.7.1 Identify existing water catchment elements of ecological importance. 1.7.2 Identify threats. 1.7.3 Develop and implement mitigation strategies. 1.7.4 Monitor effects. 1.8.1 Review opportunities for co-management. 1.8.2 Develop and implement co-management institutions as feasible. 1.8.3 Identify or establish channels of communication to facilitate exchange of information and knowledge and to facilitate the resolution of conflicts.		

1.9.1 Open channels of communication with communities. 1.9.2 Produce audio-visual materials for community use. 1.9.3 Develop and implement an education / awareness campaign for local communities. 1.9.4 Involve local communities and District government in the program of fire control. 1.9.5 Zone community areas. 1.9.6 Identify the causes of fires and develop appropriate responses. 1.9.7 Regulate the use of the buffer zone by local people. 1.9.8 Promote changes in local community methods of resource use as necessary. 1.9.9 Develop and implement incentive schemes to control fires. 1.9.10 Develop rules for tourists and other visitors. 1.9.11 Develop a fire management plan (early burning, firebreaks, fire monitoring and observation points). 1.9.12 Study the ecology of fire in GNP. 1.9.13 Establish and effective law enforcement system that includes patrols, control of poachers, control of people entering GNP. 1.9.14 Establish an effective monitoring and evaluation system for the fire management program. 1.10.1 Establish conservation education program. 1.10.2 Establish the level of conservation awareness in the communities within and neighbouring GNP. 1.10.3 Evaluate potential incentive structures to improve conservation use of natural resources.		

2.1.1 Identify recreation opportunities suitable for GNP. 2.1.2 Assess the ecological, the economic and the social implications of developing opportunities for each recreational activity. 2.1.3 Assess the carrying capacity for tourists overall as well as for each recreational opportunity. 2.1.4 Cost / benefit analysis of Park management versus private sector providing services. 2.1.5 Call for tenders and allocate contracts as necessary. 2.2.1 Identify potential client groups. 2.2.2 Conduct a survey of opinions and expressed needs of potential client groups. 2.2.3 Analyse and report on survey and select target groups. 2.3.1 Develop information centre for tourists. 2.3.2 Develop and make available sign posts, maps and brochures for visitors to the park and inside the park. 2.3.3 Identify, design, site and construct facilities required for each recreational opportunity. 2.3.4 Explore options for leasing concessions to private enterprise to develop / construct facilities. 2.4.5 Develop a set of standards for infrastructure development including EIA. 2.4.1 Identify training needs and develop training strategy. 2.4.2 Develop standards for recruited staff. 2.4.3 Establish guidelines and standards for guiding in the park. 2.4.4 Implement training strategy.			

2.5.1 Meetings and discussions with neighbouring communities. 2.5.2 Facilitate the provision of cultural experiences by selected local groups / crafts people.		
3.1.1 Build a small research station. 3.1.2 Nominate appropriate staff. 3.1.3 Equip the research station and department. 3.1.4 Create partnerships with other research institutions nationally and internationally including experience exchange and staff training. 3.2.1 Revise the existing draft of research needs and include it as an annex to the management plan. 3.2.2 Identify training needs. 3.2.3 Provide in-service training for staff. 3.2.3 Send staff for short term training within the region. 3.3.1 Prepare terms of reference for researchers. 3.3.2 Sign MOU's and contracts. 3.3.3 Monitor and evaluate the implementation of contracts. 3.3.4 Carry out research. 3.3.5 Publish research results. 3.4.1 Create visitors centre and equip. 3.4.2 Nominate and train appropriate staff. 3.4.3 Develop appropriate education material. 3.5.1 Identify needs and types of materials to be published. 3.5.2 Produce drafts of material and information. 3.5.3 Identify specialised companies for production, publishing and distribution. 3.5.4 Prepare TOR's and sign contracts for services supply. 3.5.5 Create web-site.		

3.6.1 Design information management systems (identify information needs and design forms for data entry). 3.6.2 Collect information on GNP. 3.6.3 Establish library and documentation centre. 3.6.4 Acquire software and hardware for library, documentation centre and for information management systems. 3.6.5 Design and implement database systems. 3.7.1 Conduct diagnosis of existing indigenous technical knowledge. 3.7.2 Select, validate and document relevant IK. 3.7.3 Integrate IK into GNP research strategy where appropriate. 3.7.4 Adopt incentives to facilitate co-operation with local communities on data provision.		
4.1.1 Undertake resource inventories 4.1.2 Define criteria for identification of key resources. 4.1.3 Identify key resources for sustainable use. 4.1.4 Define sustainable management or use cycles where appropriate.		

4.2.1 Create incentives and or dis-incentives to have communities move themselves from key ecosystems to outside of the park. 4.2.2 Define and set up rules and procedures for sustainable use (e.g. maximum permitted off-take, maximum allowable visitor rate, maximum allowable infrastructure number, etc.) 4.2.3 Create and efficient enforcement system and or enhance the existing one. 4.2.4 Enforce the existing rules and procedures. 4.2.5 Identify suitable areas for relocation. 4.3.1 Identify the tourism carrying capacity of different ecosystems. 4.3.2 Designate tourist areas in accordance with the identified carrying capacities and map them. 4.3.3 Train guides. 4.3.4 Monitor tourist activities and direct them to the desired areas. 4.3.5 Design and implement sign posts system to control tourist access. 4.3.6 Define rules and procedures for access to historical and cultural sites by communities and tourists.		
5.1.1 Develop strategy for private tender participation. 5.1.2 Make tender public and invite participation. 5.1.3 Negotiate and establish partnerships.		

5.2.1 Conduct marketing survey of potential opportunities and willingness to pay of client groups. 5.2.2 Analyse results of market survey. 5.2.3 Select opportunities to be developed and or provided. 5.2.4 Cost / benefit / impact analysis of offering and developing each selected recreational opportunity. 5.2.5 Monitor and evaluate revenue, impacts and visitor satisfaction. 5.2.6 Fee structure developed and implemented. 5.2.7 Fee structured reviewed and revised. 5.3.1 Identify development projects for potential donor funding. 5.3.2 Develop proposals or concepts for donor funding. 5.3.3 Submit concepts / proposals to donors. 5.3.4 Implement funded projects. 5.4.1 Establish financial monitoring system to track expenditure. 5.4.2 Minimise inefficient expenditure. 5.4.3 Establish similar mechanisms to track income.		
6.4.1 Secure funding / financial resources to establish new management structure and to implement management plan. 6.4.2 Establish financial management and human resources management systems. 6.4.3 Explore and develop private sector partnerships. 6.4.4 Establish partnerships and links with stakeholders and neighbours. 6.4.5 Establish monitoring systems for management and achievement of conservation goals.		

ANNEX II – IMPLEMENTATION PLAN

Table 1: Activities per Objectives in order of priority of implementation

Goal of GNP: Protect, conserve and utilise the natural resources of Gorongosa National Park in a sustainable way to ensure economic, ecological and social benefits to all stakeholders	Priority			
	1st	2nd	3rd	4th
Objective 1: Ecosystems, biodiversity and the historical and cultural assets of GNP conserved				
Sub-objective 1.1: Genetic pool of GNP species conserved				
1.1.1 Conduct baseline inventories of fauna and flora species of GNP and develop a vegetation map.		✓		
1.1.2 Establish five year census system			✓	
1.1.3 Identify key large mammal species that are now missing or are not genetically or demographically viable	✓			
1.1.4 Reintroduce viable breeding populations of critical or key species.	✓			
1.1.5 Establish thresholds of potential concern (TPCs) for populations of key species.				✓
1.1.6 Identify threats to population viability for key species and develop appropriate responses.				✓
ub-objective 1.2: The integrity, species viability and endemic wildlife and habitat maintained				
1.2.1 Establish TPCs for critical species habitats				✓
1.2.2 Establish a monitoring system to track population and ecosystem performance in relation to TPCs.	✓			
1.2.3 Develop capacity to respond to crossing of TPCs as necessary.				✓
ub-objective 1.3: The aesthetic quality of the park's air, water and scenic resources conserved				
1.3.1 Identify likely impacts of surrounding and internal landuse and industrial development on water	✓			

quality in GNP.				
1.3.2 Establish GNP management representation on relevant decision making bodies and / or develop an effective lobbying strategy.			✓	
1.3.3 Establish monitoring system where necessary				✓
1.3.4 Establish TPCs for air and water quality.		✓		
Sub-objective 1.4: The presence and introduction of exotic species controlled				
1.4.1 Identify and map distribution of exotic species				✓
1.4.2 Establish degree of threat to GNP for major exotic species.				✓
1.4.3 Design and implement control and eradication program as necessary.				✓
1.4.4 Establish surveillance program to detect new invasions.				✓
Sub-objective 1.5: Sites of historical and cultural significance protected				
1.5.1 Identify and map sites of historical and cultural significance.			✓	
1.5.2 Identify threats			✓	
1.5.3 Establish protection strategy where necessary			✓	
1.5.4 Develop co-management plans with appropriate stakeholders			✓	
Sub-objective 1.6: Landscape elements and water catchments conserved				
1.6.1 Identify existing landscape elements of ecological importance.			✓	
1.6.2 Identify threats.			✓	
1.6.3 Develop and implement mitigation strategies.			✓	
1.6.4 Monitor effects.				✓
Sub-objective 1.7: Local communities involved in GNP management and benefit sharing				
1.7.1 Identify existing water catchment elements of ecological importance.			✓	

1.7.2 Identify threats.			✓	
1.7.3 Develop and implement mitigation strategies.			✓	
1.7.4 Monitor effects.				✓
Sub-objective 1.8: The occurrence of man made wildfires minimized				
1.8.1 Review opportunities for co-management.	✓			
1.8.2 Develop and implement co-management institutions as feasible.	✓			
1.8.3 Identify or establish channels of communication to facilitate exchange of information and knowledge and to facilitate the resolution of conflicts.	✓			
Sub-objective 1.9: Conservation awareness in local communities increased				
1.9.1 Open channels of communication with communities.		✓		
1.9.2 Produce audio-visual materials for community use.				✓
1.9.3 Develop and implement an education / awareness campaign for local communities.				✓
1.9.4 Involve local communities and District government in the program of fire control.		✓		
1.9.5 Zone community areas.		✓		
1.9.6 Identify the causes of fires and develop appropriate responses.		✓		
1.9.7 Regulate the use of the buffer zone by local people.		✓		
1.9.8 Promote changes in local community methods of resource use as necessary.				✓
1.9.9 Develop and implement incentive schemes to control fires.				✓
1.9.10 Develop rules for tourists and other visitors.		✓		
1.9.11 Develop a fire management plan (early burning, firebreaks, fire monitoring and observation points).		✓		
1.9.12 Study the ecology of fire in GNP.	✓			
1.9.13 Establish an effective law enforcement system that includes patrols, control of poachers and control of people entering GNP.	✓			
1.9.14 Establish an effective monitoring and evaluation system for the fire management program.			✓	

Sub-objective 1.10:				
1.10.1 Establish conservation education program.		✓		
1.10.2 Establish the level of conservation awareness in the communities within and neighbouring GNP.		✓		
1.10.3 Evaluate potential incentive structures to improve conservation use of natural resources.			✓	
Objective: 2. Cultural and natural resources based recreation opportunities provided to all sectors of society				
Sub-objective 2.1: Recreation opportunities in GNP identified, assessed, evaluated and implemented				
2.1.1 Identify recreation opportunities suitable for GNP.		✓		
2.1.2 Assess the ecological, the economic and the social implications of developing opportunities for each recreational activity.			✓	
2.1.3 Assess the carrying capacity for tourists overall as well as for each recreational opportunity.				✓
2.1.4 Cost / benefit analysis of Park management versus private sector providing services.		✓		
2.1.5 Call for tenders and allocate contracts as necessary.			✓	
Sub-objective 2.2: Target client group recreation needs identified				
2.2.1 Identify potential client groups.		✓		
2.2.2 Conduct a survey of opinions and expressed needs of potential client groups.		✓		
2.2.3 Analyse and report on survey and select target groups.		✓		
Sub-objective 2.3: Infrastructure developed to provide facilities for identified recreation opportunities				
2.3.1 Develop information Center for tourists.		✓		
2.3.2 Develop and make available sign posts, maps and brochures for visitors to the park and inside the park.		✓		
2.3.3 Identify, design, site and construct facilities required for each recreational opportunity.			✓	

2.3.4 Explore options for leasing concessions to private enterprise to develop / construct facilities.		✓		
2.3.5 Develop a set of standards for infrastructures development including EIA		✓		
2.3.6 Develop Interpretative Plan of the Park		✓		
Sub-objective 2.4: Human resources/capacity to guide and manage tourists / facilities developed / provided				
2.4.1 Identify training needs and develop training strategy.			✓	
2.4.2 Develop standards for recruited staff.			✓	
2.4.3 Establish guidelines and standards for guiding in the park.	✓			
2.4.4 Implement training strategy.			✓	
2.4.5 Develop a set of standards for infrastructure development including EIA.	✓			
Sub-objective 2.5: Opportunities for neighbouring communities to provide cultural experiences (e.g. dancing, crafts) to visitors explored				
2.5.1 Meetings and discussions with neighbouring communities.				✓
2.5.2 Facilitate the provision of cultural experiences by selected local groups / crafts people.				✓
Objective 3. Opportunities for scientific studies, for education and for information exchange provided				
Sub-objective 3.1: Research strategy for GNP developed and implemented				
Sub/sub-objective 1.1.1 ***Basic conditions for Research created and contacts with international research institutions established***	✓			
Sub/sub-objective 1.1.2 ***Priority research needs identified and science capacity og Gorongosa National Park strengthed***	✓			
3.1.1 Build a small research station.		✓		
3.1.2 Nominate appropriate staff.	✓			

3.1.3 Equip the research station and department.		✓		
3.1.4 Create partnerships with other research institutions nationally and internationally including experience exchange and staff training.	✓			
ub-objective 3.2: Conditions for the education of specific groups established (e.g. trained guides)				
3.2.1 Revise the existing draft of research needs and include it as an annex to the management plan.	✓			
3.2.2 Identify training needs.		✓		
3.2.3 Provide in-service training for staff.		✓		
3.2.3 Send staff for short term training within the region.			✓	
			✓	
Sub-objective 3.3: Material for information and publicity produced and distributed				
3.3.1 Prepare terms of reference for researchers.	✓			
3.3.2 Sign MOU's and contracts.	✓			
3.3.3 Monitor and evaluate the implementation of contracts.	✓			
3.3.4 Carry out research.	✓			
3.3.5 Publish research results.	✓			
Sub-objective 3.4: Information management system created				
3.4.1 Create visitors center and equip.		✓		
3.4.2 Nominate and train appropriate staff.		✓		
3.4.3 Develop appropriate education material.		✓		
3.4.4 Acquire hardware and software		✓		
3.4.5 Create data base		✓		
Sub-objective 3.5: Indigenous knowledge strengthened and integrated into GNP research strategy				
				✓
3.5.1 Identify needs and types of materials to be published.				✓
3.5.2 Produce drafts of material and information.				✓

3.5.3 Identify specialised companies for production, publishing and distribution.				✓
3.5.4 Prepare TOR's and sign contracts for services supply.				✓
3.5.5 Create web-site.				✓
3.6.1 Design information management systems (identify information needs and design forms for data entry).				✓
3.6.2 Collect information on GNP.				✓
3.6.3 Establish library and documentation centre.			✓	
3.6.4 Acquire software and hardware for library, documentation centre and for information management systems.			✓	
3.6.5 Design and implement database systems.			✓	
3.7.1 Conduct diagnosis of existing indigenous technical knowledge.			✓	
3.7.2 Select, validate and document relevant IK.			✓	
3.7.3 Integrate IK into GNP research strategy where appropriate.			✓	
3.7.4 Adopt incentives to facilitate co-operation with local communities on data provision.			✓	
Objective 4. Resource use in GNP does not undermine conservation, information, recreation and income generation objectives				
Sub-objective 4.1: Sustainable use levels of key resources identified				
4.1.1 Undertake resource inventories	✓			
4.1.2 Define criteria for identification of key resources.	✓			
4.1.3 Identify key resources for sustainable use.	✓			
4.1.4 Define sustainable management or use cycles where appropriate.		✓		
Sub-objective 4.2: Use of wildlife and forest products regulated				
4.2.1 Create incentives and or dis-incentives to have communities move themselves from key ecosystems to outside of the park.			✓	
4.2.2 Define and set up rules and procedures for sustainable use (e.g. maximum permitted off-take,	✓			

maximum allowable visitor rate, maximum allowable infrastructure number, etc.)				
4.2.3 Create an efficient enforcement system and or enhance the existing one.		✓		
4.2.4 Enforce the existing rules and procedures.		✓		
4.2.5 Identify suitable areas for relocation.		✓		
Sub-objective 4.3: Access to non-consumptive resources and ecosystems controlled				
4.3.1 Identify the tourism carrying capacity of different ecosystems.		✓		
4.3.2 Designate tourist areas in accordance with the identified carrying capacities and map them.		✓		
4.3.3 Train guides.				✓
4.3.4 Monitor tourist activities and direct them to the desired areas.				✓
4.3.5 Design and implement sign posts system to control tourist access.		✓		
4.3.6 Define rules and procedures for access to historical and cultural sites by communities and tourists.			✓	
Objective 5. Income that contributes to the maintenance and development of GNP generated				
Sub-objective 5.1: Private sector partnerships developed.				
5.1.1 Develop strategy for private tender participation.		✓		
5.1.2 Make tender public and invite participation.		✓		
5.1.3 Negotiate and establish partnerships.			✓	
Sub-objective 5.2: Revenue structure developed and implemented.				
5.2.1 Conduct marketing survey of potential opportunities and willingness to pay of client groups.		✓		
5.2.2 Analyse results of market survey.		✓		
5.2.3 Select opportunities to be developed and or provided.		✓		
5.2.4 Cost / benefit / impact analysis of offering and developing each selected recreational opportunity.		✓		
5.2.5 Monitor and evaluate revenue, impacts and visitor satisfaction.			✓	
5.2.6 Fee structure developed and implemented.	✓			

5.2.7 Fee structured reviewed and revised.		✓		
Sub-objective 5.3: Partnerships with potential donors established.				
5.3.1 Identify development projects for potential donor funding.	✓			
5.3.2 Develop proposals or concepts for donor funding.	✓			
5.3.3 Submit concepts / proposals to donors.	✓			
5.3.4 Implement funded projects.		✓		
Sub-objective 5.4: Efficient and effective use of revenue ensured.				
5.4.1 Establish financial monitoring system to track expenditure.	✓			
5.4.2 Minimise inefficient expenditure.			✓	
5.4.3 Establish similar mechanisms to track income.	✓			
Objective 6. Self sufficient institutional and management structures for GNP established and functioning				
Sub-objective 6.1: Review of current management structure completed	✓			
Sub-objective 6.2: Study of alternative management systems (e.g. private reserves, limited companies) completed	✓			
Sub-objective 6.3: Results of review and recommendations adopted by government	✓			
Sub-objective 6.4: New participatory management structure appointed and in place	✓			
6.4.1 Secure funding / financial resources to establish new management structure and to implement management plan.	✓			
6.4.2 Establish financial management and human resources management systems.	✓			
6.4.3 Explore and develop private sector partnerships.	✓			

6.4.4 Establish partnerships and links with stakeholders and neighbours.	✓			
6.4.5 Establish monitoring systems for management and achievement of conservation goals.	✓			
Sub-objective 6.5: Review / evaluation of new management structure completed.	✓			
Sub-objective 6.6: Implementation of GNP management plan initiated.				

ANNEX III – DESCRIPTIONS OF MAJOR ECOSYSTEMS

The Gorongosa National Park ecosystem is well described in Tinley (1973). The Park is located at the lower and terminal section of the great African Rift Valley; with its East and Western boundaries extending over the East and West escarpments.

The ecological profile of the Park, distinguishes three regions, the Barue/Gorongosa Plateaux, the Rift Valley Through and the Cheringoma Plateaux comprised of about 47 ecosystems.

The Barue/Gorongosa Plateaux, comprises 14 ecosystem

The Rift Valley Through

The Cheringoma Plateaux

ANNEX IV – List of contributors

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