



THE REPUBLIC OF THE GAMBIA DEPARTMENT OF PARKS & WILDLIFE MANAGEMENT

TANBI WETLANDS NATIONAL PARK MANAGEMENT PLAN 2020-2025



Gestion durable des Zones humides pour le renforcement de la Sécurité alimentaire et de la Résilience des écosystèmes en Afrique de l'Ouest (GDZHAO)

Sustainable Wetland Management for Enhancing Food Security and Ecosystem Resilience in West Africa (GDZHAO)

SUMMARY

Compiling a management plan of a protected area is no easy task, but it's obvious usefulness overrides the difficulty of the undertaking. It is difficult because it entails gathering, compiling and shifting through a daunting mass of information and data, as well as verifying their accuracy, since the future development and indeed, survival of the rich biodiversity of the Niuni National Park and Marine Protected Area is at stake. It is useful because it touches upon such a wide range of topics. History and culture are in dissociable from environment and the flora and fauna.

We wish to commend and thank the men and women who have contributed in many ways to the compilation of this management plan, and we are convinced that such a high professional, accurate, and informative work will be an excellent guide for the noble and exciting mission which the DPWM staff under the support of "Supporting food security and ecosystem resilience for sustainable management of wetlands in West Africa through the earth observation data (GDZHAO)" has to fulfill in a new millennium full of hopes and challenges.

In updating this management plan, many people have been of immense assistance. We wish to acknowledge our in-datedness to the Government of The Gambia, the Ministry of Forestry and the Environment, Department of Fisheries and the Department of Parks and Wildlife Management. Their support has been a constant and unflinching source of encouragement.

Sincere appreciation is expressed to the Directors of Parks and Wildlife Management and Fisheries Departments, the warden of Niuni National Park and his Management team and the fisher folks for their valuable support and responsibilities.

Finally, we wish to leave on record our heartfelt thanks to our family members, friends and colleagues, and all those who help in one way or the other for the implementation of this task, for the unfailing support and unlimited patience throughout this time demanding period.

Prepared by and for Department of Parks and Wildlife Management

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SUMMARY

Tanbi Wetland National Park (TWNP) has an area of 6,034 hectares. TWNP is a mangrove swamps that fronts the ocean to the North and the Gambia River to the East. It is located at the mouth of the River Gambia, occupying the southern portion of its estuary. It has developed through the combination of deposition of fluvial and marine sediments. It is an Estuarine and Intertidal forested wetland primarily of low mangrove forest, with a complex of vegetation types on its northern boundary and along the mangrove fringing the main land. The TWNP functions include coastal stabilization, fish breeding and recreation.

The area is bordered by twelve villages. The Greater Banjul human settlement surrounds TWNP to the South and East. Mandinaring, Lamin and Abuko towns are bordering TWNP to the south, to the West Fagikunda, Talinding, Ebo town and Jeshwang towns limit TWNP, Banjul is at Northeastern border while Bakau Town is at North-West of TWNP The area includes some part of the Banjul City area, some part of the Kanifing Municipality and some areas of the West Coast Region

This document is a management plan illustrating the strategies, activities and implementation arrangement of action plan of Tanbi Wetlands National Park. The Banjul Declaration and the Wildlife Conservation Act of 1977 paved the way for The Gambia's commitment to the protection and the management of the it's natural environment in spite of its early recognition by the 1916 Agricultural Policy and Legislation. During 1990's Government of The Gambia took many actions towards better management of the environment, in particular many protected areas were created and environment and biodiversity strategies and action plans adopted. The Gambia Environmental Action Plan (GEAP, 1992) and the National Biodiversity Strategy and Action Plan (NBSAP, 1999), both emphasize biodiversity conservation as a critical element of achieving this goal.

NBSAP's identified priorities for biodiversity conservation include, inter alia:

- increasing national capacity to support biodiversity conservation and sustainable use efforts (scientific and technical);
- increasing the representatively of protected area coverage, specifically coastal and marine habitats; and
- promoting a multi-sectoral integrated approach, which emphasizes the involvement of local communities in protection and management activities.

These priorities were taken into consideration during the preparation of the revised national biodiversity/wildlife policy objectives. (as well as DPWM's strategic plan for 2000-2005) In this strategic plan, The Gambia aims to:

- increase the total protected land area from 3.7% to 5%, including samples of all major habitats represented in the country, and
- Active involvement of communities in the management of wildlife and biodiversity and to promote sustainable use of their associated habitats and ecosystems (both within and outside protected areas).

To meet this aim seven (7) national parks have been created. These protected areas today cover 45,772ha which represents 4.27% of the territory. Most of the areas earned recognized as Site of Regional and International Importance especially TWNP. A significant amount of information on hotspots, species, threats and ecological trends have been collected during the consultations. The upgrading of the status of Tanbi Wetland Complex to a newly designated Ramsar Site and national park determine the process framework for garnering the data. The duration of the last management plan (since 1999) and the new information gathered during public consultations justify the need to revise and update TWNP management plan. In this regards, the current management plan of TWC aims to update the existing plan.

Thus the updated management plan intends to:

1. Enable restriction on the use of key critical, unique and vulnerable habitats by assigning clear functions to each zone and role to each stakeholder.
2. Develop community-based integrated management system models, including creating/reinforcing local participatory structures; establishing procedures for the effective participation of local community members in the conservation and sustainable use of coastal, marine and wetland resources; and identifying mechanisms for community benefit sharing.
3. Identify and facilitate conservation-friendly income generating activities
4. Increase capacity of government and communities to manage their coastal, marine and wetland resources, with emphasis on protection of critical nursery, breeding, feeding, and refuge habitats for endangered and threatened species, both through provision of infrastructure and equipment as well as through skill building and awareness raising.

SECTION I: DESCRIPTION OF ECOLOGICAL AND SOCIAL FEATURES

1. General Information

SECTION I: DESCRIPTION OF ECOLOGICAL AND SOCIAL FEATURES

a. Location, Site Definition, Boundaries

a. Location, Site Definition, Boundaries

Tanbi National Park (TWC) has an area of 6,304 hectares. TWC is a mangrove swamps that fronts the ocean to the north and the Gambia River to the east. It is located at the mouth of the River Gambia, occupying the southern portion of its estuary. It has developed through the combination of deposition of fluvial and marine sediments. It is an Estuarine and Intertidal forested wetland primarily of low mangrove forest, with a complex of vegetation types on its northern boundary and along the mangrove fringing the main land. The TWC functions include coastal stabilization, fish breeding and recreation. The area is bordered by twelve villages. The greater Banjul human settlement surrounds TWNP

to the south and east. Madinari, Lamin and Abuko towns are bordering TWC to the south, to the west Fagikunda, Talinding, Ebo town and Jeshwang towns limit TWC, Banjul is at Northeastern border while Bakau Town is at North-West of TWC The area includes some part of the Banjul City area, some part of the Kanifing Municipality and some areas of the West Coast Region

The Central coordinates of the protected area is: 13° 26' North and 16° 38' West. It is a low land with a mean altitude of 1m and a maximum of around 16m.

b. Land Tenure

The land is customarily owned by the twelve communities surrounding it who agreed to dedicate it to conservation. However, according to the law of the Gambia, all wetlands belongs to the Government of The Gambia. Thus all land and waterscape within the boundary of Tanbi Wetlands Complex belong to management regime which is the jurisdiction of Department of Parks and Wildlife Management.

2. Socio-economic characteristics

2.1 The Socio – Economic Importance Of Niimi Wetlands

2.2 Current Socio- Economic Activities

2.3 Management Infrastructure

3. Environmental Information

3.1. Physical

2.2.1. Climate

The Gambia is in the inter-tropical and its climate is generally described as Sudano-Sahalian. Rainfall concentrates between the months of June to October, the average rainfall at Banjul from 1987 to 2006 is 840mm per annum. Annual rainfall from 1987 to 2006 is show in figure 1 which indicates high annual variability. There has been a 25-30% decrease in annual average rainfall over the period 1950 to 1990s.

Tanbi is in inter-tropical area, temperatures are high all year long, a maxima more than 32 degrees and minima always higher than 18 degrees. October and November are the hottest month of the year but the gap between minima and maxima is greater during the first quarter of the year (Jan-March); the temperature nearly double at this period of the year. In fact difference is high all the time (higher than 10 degrees).

The high temperature along with wind speed between 1.1 and 2.0 mean high evapotranspiration; March and May have the highest evapo-transpiration level whilst the lowest occur in August and September

In general, according to weather conditions the period from March to June is critical for the management of water. The high temperatures and evapo-transpiration just after the rainy season make even harder to manage open water bodies around Tanbi. For the management purpose, one would favour water infiltration. A higher water table will interact with the swamp and feed the mangrove in fresh water

2.2.2. Geology

The Tanbi National Park is situated on the Holocene fluvial sequence that has arisen from a combination of marine and fluvial currents that produce a characteristic sediment type (Russel and Whyte, 1988). The sediments are generally fine textured sand, silts and clay and may include peat deposits (found at Lamin). This sequence overlies Pleistocene alluvium that consists of unconsolidated sediment (Ibid). Towards the north, the Banjul spit is considered to be a post Nouakchottian feature, with the upper 4m predominately made up of sand with isolated bands of clay. At 4m depth, a compact fine sand occurs which is underlain by clay below 7 to 8m (Ramsar Wetland Study The Gambia 1997).

2.2.3. Soils

The soils found in the Tanbi National Park range from pure sand on the northern spit to hydromorphic clays on the mainland fringes of the wetland. Backing the sand spit and lagoons of the seaward shore the soil are fine textured clays and silts. Towards the fringes of the mangrove existing and potential acid-sulphate soils occur, which are unsuitable for agriculture.

These acid-sulphate soils are often devoid of vegetation and are referred to as bare tannes. Where the acidity is moderate, halophytic vegetation occurs. On the seasonally flooded periphery of the wetland, hydromorphic clays and silts occur, which often have a sandy substratum 10-30cm below the surface (FAO 1993). During the rainy season these soils are untilled for rice cultivation while during the dry season certain areas as at Bakau are intensively cultivated for horticultural production using hand irrigation from shallow hand-dug wells (Ramsar Wetland Study, the Gambia, 1997).

2.2.4. Hydrology

The Gambia coast is subject to a prevailing NW swell that induces a major southward sediment drift. The east-west orientation of the coast between Cape Point Banjul however, receives an eastward littoral drift (ICAM, 1996). The estuary acts as a sink since it is essentially a real (drowned river valley). Still in the process of being filled in (Ibid). Sediment deposition in the mouth of the river Gambia is thus centered on the south bank due to a combination of currents and the Coriolis effect. Resultantly the waters to the east of the wetland are shallow and extensive intertidal mudflats occur, most notably along Maidenhair Flats and in the area to south of the Bund Road. These flats are utilized by water birds for feeding and in addition, these associated vegetation though the slow advancement of mangrove vegetation is an ongoing process.

The tidal range at Banjul is 1.6m during spring tides and 0.7m at neap tides (Ramsar Wetland Study The Gambia 1997). The area is characterized by a network of channels that dissect the mangrove forest and the coastal strip on the northern fringe. The entire complex is essentially estuarine in nature, though it is

subjected to full salinities on the northern fringe during floor tides, and there are numerous freshwater flushes around the periphery during the rainy season. Hyper saline conditions can develop in some of the coastal lagoons and in the upper reaches of the bolongs.

The fringe of the wetland is seasonally flooded through rainfall and runoff which affects the salinity regime within the mangrove and lagoon complex. Freshwater is found at approximately 2m depth in this fringe and during the dry season. A chain of lagoon runs between Cape Creek and Oyster Creek bridge and a single lagoon occurs on the east of Toll point lagoons, which are subject to limited tidal inundation through narrow channels. This is a dynamic and ever changing stretch of coast-line with extensive erosion and deposition occurring. This being so, there is a risk that the lagoons may be breached in several new places in the near future

3.2. Ecological informations

The Swamp

Mangrove forest dominates the Tanbi Wetland south of the Banjul High way and covers approximately 4,800ha. The typical halophytic herbs growing on the inland edges of the forest include beach Morning-glory, *Philoxerus Vermicularis* *Ipomea pes caprae*, *sesuvium portulacastrum*, *vernonia chlorati* and *Blumea aurita* are shrubs also found growing in this location. The numerous bolongs, which dissect the mangrove, form a mosaic of islands up to 800 hectares in size. Mangrove community along the channels reflects slight variation in soil levels, with sections of fringe forest interspersed with over wash forest. The extent to which these communities extend from the bolons is variable and often difficult to determine due to the thicket of branches and prop roots of these low forest. The mean height of the *Rhizophora spp*. Forest from soil level is 6-7m. At the head of many bolons however, individual trees of up to 10m occur, which may be a result of localized freshwater flushes reducing the osmotic pressure of particular trees.

In the slightly elevated interiors of the island and on the mainland fringe, shrub forest occurs in either pure stands of *Avicennia africana* up to 1.5m in height, or in association with *Rhizophora spp* and *Laguncularia racemosa*. These areas are generally interspersed with salt marsh and bare tannes. There are extensive areas of tannes (seasonal saline flats) on the periphery of the Tanbi Wetlands that are subjected to seasonal flooding and subsequent drying following the rains. The associated vegetation varies with the degree of salinity. It ranges from bare tannes to halophytic dominated vegetation including Seasonal Purslane, Beach Morning-glory and *Philoxerus vermicularis*, merging into grassland dominated by *Sporobolus spicatus*, *Phragmites australis* and *Paspalum vaginatum*. As the dry season progresses the vegetation of the seasonal saline flats dies back. The seaward side of the lagoons has a sandy substrate with West Indian Alder and occasional *Avicennia Africana* occurring on the beach or sand dune, along with typical zerophytic-halophytic herbs such as Seaside purslane and Beach morning –glory. On the landward side of the lagoons the substrate is of finer silts and clays with a shrub mangrove community dominated by *A. Africana* with varying amounts of *Rhizophora spp*. And *Laguncularia racemosa*. Towards Oyster Creek and backing the lagoon at Toll point the vegetation occurs, characterized by Baobab *Adansonia digitata*, Swamp Date Palm *Phoenix reclinata*, African Nettle tree *Celtis integrifolia*, *Crateva religiosa*, *Strophantus sarmentosus* and *Hibiscus tiliaceus*. The introduced neem *Azadirachta indica* has colonized extensively in this belt to the East of Toll Point and poses a threat to the natural vegetation as it is fast growing and very drought tolerant.

2.3.2. Flora

The mangrove swamps that consolidate the wetland are considered as noteworthy. The main species are *Rhizophora mangle*, *R. harrisoni*, *Avicennia Africana*, *Laguncularia racemosa*, and West Indian Alder *Conocarpus erectus*. Their conservation is fundamental for the conservation of TWNP. Intertidal salt marshes with a typical halophytic assemblage of species are common in the fringe of the mangrove complex and in the upper reaches of some of the bolongs including Cape Creek. These areas may be flooded only in the spring tides but nonetheless contain the typical halophytic assemblage of species associated with both permanent and seasonal salt marsh in The Gambia. Seaside Purslane *Sesuvium portulacastrum*, Beach morning-glory *Ipomea pes-caprae*, and *Philoxerus vermicularis* typically dominate along with the grasses *Paspalum sp*, *Leptochloa* and *Sporobolus spicatus*. The dune front fringing the sea forms a pioneer zone with a zerophytic-halophytic community binding the sand against wave and wind action. The outer fringe tends to be dominated by a sparse covering of Seaside purslane which merges with Beach Morning-glory further

back. The community diversifies in the fringe dune to include *Ipomoea stolonifera*, *Phloxerus vermicularis*, Seaside Sword Bean *Carnivalia rosea*, *leptadenia hastate*, *Alternanthera aritima*, *Pergularia daemis*, *merremia tridentate* and the monocots *cenchrus biflorus*, *Sporobulus spicatus* and *Cyperus maritimus*. The dune belt in places extends inland for up to 400m and behind the shelter of the fringe *Dodonaea viscosa*, *Maytenus senegalensis*, *Scaevola plumeri*, *Tamarisk Tamarix senegalensis* and *Thespesia populnea* form a shrubby mosaic with accessional small trees of *Calotropis procera*, Thirsty Thorn Acacia *seyaland* Winter Thorn *Accacia albida*. The herb-layer consists mainly of species such as River Bean *Sesbania bispinosa*, *Impomoea heterotrichia*, *Ruspolia hypocrateriformis*, *Amorphophallus aphyllus* In the dune backs on to a lagoon West Indian Alder dominates the vegetation with occasional *Avicennia Africana* on the lagoon margin

2.3.2. Aquatic invertebrates The aquatic invertebrate fauna is composed predominantly of crustaceans and mollusks. Very abundant species include shrimps (*Panaeus notialis*), crabs and mangrove oysters *Crassostrea tulipa* (Ramsar Wetland study, the Gambia, 1997)

2.3.3. Fish

Fishes belonging to at least 5 families have been recorded in the Tanbi National Park. The most abundant of these species are Tilapia spp. Followed closely by Mulletts *Mugil spp.*,. Although Atlantic Mudskippers *Periophthalmus papilio*, are also present in large numbers and are very widespread. The fish fauna is comprised mainly of pelagic or demersal species in the fry, juvenile or sub-adult stages (Ramsar wetland study, the Gambia, 1997). Communities' view on fish richness in Tanbi Community cited more than thirty species present in Tanbi; only one species of Shark is noticed as disappeared: tiger fish (poisson-scu). Two species of crocodiles and two species of fresh water turtle are still sighted in and around Tanbi, but the population is considerably decreasing. The same trend is observed for manatees and dolphins. Tanbi wetland is not only harboring diverse fish species but also is a breeding and nursery ground for most of the species. Fishes lay eggs from May to October during the raining season than the dry season. Shrimbs species (*Panaeus notialis*) have most of his crucial stage (eggs, larvae, and recruitment, juvenile to mature) in deltaic ecosystem from river Senegal to Guinea Bissau. Tanbi ecosystem as well as mangrove of the Gambia River is considered as the most important for this function in the sub-Region

2.3.4. Reptiles

Nile crocodiles *Crocodylus niloticus*, appear to inhabit the Tanbi National Park in low numbers (Ramsar wetland study, the Gambia, 1997), as there are two sites on the wetland fringe, Katchikally sacred pool, in Bakau, and Abuko Nature Reserve, that certainly contain crocodiles and which probably allow some movement of animals into the wetland. Communities indicate the presence of dwarf crocodiles in Tanbi belongs. Green Turtles *Chelonia mydas* are likely to occur on the coastline of Tanbi, where they probably feed on the offshore seagrass beds. It is possible that they use the beaches between Cape Point and Banjul as breeding sites. The leatherback Turtle *Dermochelys coriacea* may also be found offshore. Bell's hinged Tortoise *Kinixys belliana* has been recorded from the coastal strip (Ramsar wetland study, the Gambia, 1997). Marsh Terrapin *Pelomedusa subrufa*, and Pan Hinded Terrapin *Pelusios subniger*, are likely to occur in the freshwater fringes of Tanbi as both have been recorded close to the edges of the wetland complex. Lizards known to occur in the Tanbi National Park, include the *Agama agama*, Brook's house Gecko *Hemidactylus brookianguilatus*, Fig-tree Gecko *Tarentola ephippiata*, Orange-sided Skink *Mabuya perrotetil*, Orange-Throated Skink *M. affinis* and the Nile Monitor *Varanus niloticus*. All of these species are relatively common, especially the smaller species. The Nile Monitor is still found in good numbers and large specimens are regularly encountered. Snakes that have been recorded in Tanbi include African Rock Python *Python sebae*, Royal Python *P. regius*, Beauty Snake *Psammophis elegans*, Striped Beauty Snake *P. sibilans*, Olive Sand Snake *P. Phillipsi*, Bush Snake *Philothamnus irregularis*, Black Necked Spitting Cobra *Naja nigricollis*, Forest Cobra, *N. Melanoleucha* and Puff Add *Bitis ariens*. Snakes are generally killed on sight by Gambians, so very large specimens, especially of the Pythons and Cobras, are rarely seen. The Royal Python record comes from a single sighting near Old Jeshwang, but recently specimens have been found at Abuko Nature Reserve, so this species may be more common than was previously thought.

2.3.5. Birds

The avifauna is composed of both resident and inter-African and Palearctic migratory species. The 1997 study records 362 bird species from 66 families for the Tanbi National Park (Ramsar wetland study, the Gambia, 1997). The perimeter survey carried out in December 2005 lists 7859 individual and 122 species, the list is attached to the document. Community identified Tanbi National Park as a hotspot for bird. Water birds are feeding in the low tidal mud and belongs, resting in marshy parts of the islands, roosting in the mangrove and breeding in the small islands. Communities, during PRA and consultations, identified bird hotspots sites in Tanbi a shown in map 2. The following sites are considered as hotspots for birds: -Island in Talinding Bolong is a roosting site for birds
-Birds Island in Mandinaring area is a breeding site; the breeding period in this island is from November to January
-Kusami bolong is a breeding place for birds like heron, pelican, Cray egret, black, white egret, king fisher 8 different types. The breeding period is estimated by Talinding community between August and December
-Devil Island different birds, no person used to go there, is a breeding place for birds and some animals
-Pelican Island: feeding ground for birds, resting sites you find monkey otter mole lizard

2.3.6. Mammals ngng,

The mammalian fauna of the Tanbi National Park is inevitably restricted due to the proximity of the large urban areas around the periphery of the complex. Large mammals are unlikely to occur regularly except in the complex south of Talinding which may still harbor animals such as Bushbuck *Tragelaphus scriptus*, as this area is less disturbed. The mangrove area along the coast and around Mandinari flats and Mandinari Point provides a possible corridor for the movement of such animals from the Tanbi Wetland to the Mandina wetlands to the south.

Primates are still fairly well established in the Tanbi Wetlands, especially adjacent to Abuko

Nature Reserve where large numbers of both *Callithrix* Monkeys *Cercopithecus sabaeus*, and Western Red Colobus *Piliocolobus badius temminckii*, are protected, and venture out into the wider countryside from the secure base.

Aquatic mammals probably fare much better than those tied to the land. As Tanbi National Park consists in the main of aquatic habitats and human disturbance is much less in these areas.

Both West African Manatee *Trichechus senegalensis*, and African clawless Otter *Aonyx*

capensis, are known to occur in the bolons, though probably in low numbers. Both of these mammals may also use the River Gambia or the banks to travel between the Tanbi Wetlands and Mandina Complex to the south, Atlantic Hump

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backed

Dolphins *Sousa teuszii*, and Bottle

-

nosed Dolphins *Tursiops truncatus*, are sighted frequently in the River Gambia to the east of Tanbi. Though they have not been recorded in the wetland Complex itself, it is possible that they do occasionally venture into

the area along the largest bolons, and are certainly reliant at

some level upon the fish that have their nurseries amongst the mangroves

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Village	Landscape	Three Canopy	Waterways	Major Natural events			
	Independence	Now	Independence	Now			
Mandinaring Kerewan Daranka	Dense mangrove stands	Decline in mangrove, Rhun palm and Andopogonae	Dense lowland ecosystem dominated by Borassus aethiopium	Cutting of Rhone palm for settlement drives to total loss of the canopy cover	Natural flow of the river Gambia estuary basin almost pristine	All diverted and narrowed down with related soil erosion and creeks siltation	- WWII - Famine during 1960's
Lamin Abuko Fajikunda	Dense	Land reclaimed for settlement	Dense lowland canopy of Borassus aethiopium and mangrove	Only low mangrove is left	Very stable and secured	Spring water diminishing and siltation of creeks	- 1959 flood - 1980's drought
Talinding	Normal with no erosion signs and dense vegetation	Inhabited	90% cover of Borassus aethiopium at the creation, no major loss at the independence	0% of Borassus aethiopium and low mangrove		Reduced water ways Natural flow diverted	Drought during 1960-80's
Wasulung kunda Old Joswang	Dense forest	Land reclaimed	Dense Borassus aethiopium	Reduced canopy cover to less than 10%	Existing shallow water bodies	Diminishing of water bodies more flood claim, erosion and siltation	1950's and 2003 flood 24

Table 7: history of grand Predator in Tanbi and its surroundings

Village	Grand predators			Ungulate		
	Species	Trend	Last seen	Species	Trend	Last seen
Mandinaring	Leopard	Very abundant at I, decline of spring water	Leopard 35 Hyena: 26	Antelope eland derby sitatunga, giraffe, duiker	Abundant before Ind. All gone except duiker in very limited population	2005
Lamin					Small pop	
Talinding	Leopard, hyena, lion	Exist at the creation of the village Lack of spring No more grand predators		Derby, water bucks, duiker	Existed with minimal disturbances No more found	Water buck last seen 25 years ago
Old Joswang	Elephants Dragon Leopard Grass cutter	Existed at the village creation All disappeared now	All last seen before independence	Duiker Antelopes	Disappear	

Source: PRA draft report 2006

3.4.4 Status of Key Resources within Tanbi

The status of key resources exploited by communities in the wetland: fish, oysters, mangrove, shrimp and clams is assessed in Table. 8. Communities estimates that clams and shrimps population are unchanged but for other resources, they are diminishing. Kunkujang and Jatakunda communities assessed the contrary; for them mangrove and fish are increasing. These communities live eastward of the side and high mangrove remains in this area. In general the decreasing trend is noticed.

3.5. Major factors affecting of the current status of site

The major threats for the wetland are:

- Decreasing trend of rainfall
- Land claim
- Sedimentation of bolongs
- Waste dumping and littering
- Inappropriate oyster collection
- Destructive fishing methods

- Speed boats

3.5.1. Decreasing trend of rainfall

The graph below the decreasing trends of rainfall during the 20th century around Tanbi catchment area. Before 1960s, the main rainfall was around 1100mm. This event did occur since 1961; the average rainfall since independence dropped to 800mm, more than 20% decrease. The third and fourth curves show the downward moving trend of rainfall; since 1970's Banjul is receiving less than 20% of the average rainfall.

These curves confirmed PRA results that assessed that the declining trend is noticed since independence.

3.5.2. Land claim

The unprecedented increase of the human population reclaimed the major party of the palm tree and lowland ecosystem. The Rhone and palm trees are reduced: 42% of the communities consider that there are few stand remaining. The area between Fagi kunda and old Joswang seems the most affected. Land reclamation is affecting the mangrove ecosystem as well. Around Talinding and Eboutown, communities are clearing mangrove to dwell in the wetland. Private companies such as oil fuel tanks in Mandinaring, the private offices at Joswang, vegetable gardening and rice field in Bakau area are occupying the tidal area

3.5.3. Sedimentation of the bolongs

The human settlement on natural waterways and groundwater recharges zones contributed to develop gullies and soil erosion. 78% of the communities consider that the water bodies are affected by sedimentation. At Old Jeshwang, it is considered as one of the major threat of Tanbi creeks; Kubuneh creek is significantly affected by siltation.

1.10. Socio-economic

3.5.4. Waste dumping and littering

Solid waste and industrial waste are considered as major problem for the wetlands by more than 52% of the communities throwing their waste in the park. The Greater Banjul Area domestic waste is mainly dumped at the shore of the wetland. There is no proper disposal and management system in place. Subsequently it has direct effect on human health; pollutes the ground and surface water. It impacts the wetland food chain and exacerbates acidification through occurrence of acid sulphate soil which is likely result to serious fish disease and mortality.

3.5.5. Mangrove cutting

Mangrove is the most important resource of TWNP; the park is a mixture of mangrove and creeks and salt marsh. The biological diversity of the site and the hydrological function rely on the mangrove stands. The communities are using the resource for their livelihood that includes fuel wood and house roofing. The existence of large cities around TWNP favours the commercial use of the mangrove. The mangrove situation is differently assessed by local communities.

3.5.6. Intensive Oyster collection

Twelve out of fourteen communities consider that the oyster population is decreasing and size reducing.

The drought and the obstacle of fresh water run-off from upstream to the wetland is one of the causes. The inappropriate oyster collection is another cause. The demand for oyster is increasing in relation with the population increase; subsequently, the collection is more intensive. Though collectors are no more cutting roots, the intensity of the harvest is increasing, oysters are becoming smaller and women going further in the wetland. However, the lack of boat limits women to go far inside the wetland and the rainy season biological rest is still applied.

3.5.7. Destructive fishing methods

Tanbi is one of the most important fishing grounds in Greater Banjul Area; at night hundred of boats enter the bolongs. But it is considered that the fish standing crop is decreasing in number and size because of destructive fishing methods such as: high number of fishing boats, no use of resting period and site, fishing in spawning areas, use of drag nets, use of small size mesh nets and use of surrounding nets to catch shrimps,

3.5.8. Speed Boat

Tourism facilities are well developed and tourists are using water bodies without strict rules. It has advantages by enhancing economic value of the site but drawbacks as well. At Denton bridge, boats are parked everywhere jamming waterways and causing night accidents with Jeshwang fisher folk. Speed boats are increasingly entering in the wetland around Kubuneh and Jeshwang; in particular. It is happening around the main confluence between Banjul and Lamin creek adjacent Wharf Njago which is frequented by manatees for resting and migration. Where many fish enter inside bolongs species such as manatees are perturbed by noise thus speed boat creates disturbance for such species in the Tanbi.

The wetland has real direct value for the communities living around. But the full benefit is far from reached; (i) the level of production is very low and communities are not getting optimum return value, (ii) tourism and other non consuming activities are providing very little benefit for the local people. Improving people's livelihood and conserving activities are lacking. Improving people's livelihood and conserving major ecological functions of Tanbi are the most important challenges for the wetland. There are three types of measures in this regard.

Improving production condition, preventing pollution and site degradation and protecting hotspots

The following table list solutions proposed by communities during public consultations in February 2007 to improve working conditions

Table 10: Proposed Solution for Improving Livelihood Activities and Community Management Measures

Resource user groups	Proposed solutions	Proposed management measures
Vegetable growers	-improve fencing, well, dyke/dams, storage facility - Bio pesticide	Crop rotation and use of manure, provide water
Oyster collector	- Harmonize Harvesting periods - Training of collectors - Develop oyster culture	Community Bi-laws on harvesting Period (Dec-April)
Mangroves collectors	Planting early maturing trees for fuel and roofing materials	Introduce fines and intense patrol
Fishermen	Reduce influx of fishermen in Tanbi	Confiscation of improper fishing gears
Small women business	Introduce small grants and credit union	

Source: Public Consultations' validation workshop

Together with Kanifing municipality, organize and manage sustainably domestic waste to prevent its intrusion in the wetland, put in place erosion control system, improve water flow to the wetlands are the second series of measures to be taken.

Control access to the wetland by putting in place pillars at the agreed demarcation, zoning and protecting hotspots, regulating fishing gears, controlling mangrove cuttings are the third set of measures to conserve Tanbi. Patrolling, surveillance and law enforcement shall be intensified to implement later measures.

The department of Parks and Wildlife Management as well as surrounding communities will take major role to achieve these objectives by negotiating with stakeholders on management practices, collecting resources to implement the planned activities and enforcing the law protecting the area.

The Department of Parks and Wildlife Management has recruited 14 staff to contribute to the wetland surveillance. Communities are equally involved in policing and resources protection from low 5% (Banjul and Daranka) to full participation in Kunkujang Jattaya

1. General Information

1.1. Context: National Policy, international conventions

The Banjul Declaration and the Wildlife Conservation Act of 1977 are origin for The Gambia's commitment to the protection and the management of the country's natural environment. During 1990's Government of The Gambia took many actions towards better management of the environment, in particular many protected areas were created and environment and biodiversity strategies action plans adopted. The Gambia Environmental Action Plan (GEAP, 1992) and the National Biodiversity Strategy and Action Plan (NPSAP, 1999), both emphasize biodiversity conservation as a critical element of achieving this goal.

NBSAP's identified priorities for biodiversity conservation include, inter alia:

- increasing national capacity to support biodiversity conservation and sustainable use efforts (scientific and technical);

- increasing the representatively of protected area coverage, specifically coastal and marine habitats; and
- promoting a multi-sectoral integrated approach, which emphasizes the involvement of local communities in protection and management activities.

These priorities were taken into consideration during the preparation of the revised national biodiversity/wildlife policy objectives (as well as DPWM's strategic plan for 2000-2005). In this strategic plan, The Gambia aims to:

- increase the total protected land area from 3.7% to 5%, including samples of all major habitats represented in the country, and
- actively involve communities in the management of wildlife and biodiversity and to promote sustainable use of their associated habitats and ecosystems (both within and outside protected areas).

To meet this aim seven (7) national parks have been created: Niimi National Park, Bao Bolong Wetland Reserve, Kiang West National Park, River Gambia National Park, Tanbi National Park, Tanji and Bijilo Island Reserve and Abuko Nature Reserve, representative set of terrestrial, riverine, coastal and marine habitats. The protected areas cover 45,772ha which represents 4.1% of the territory. Most of the areas are recognized as Site of Regional and International Importance.

In this regard, Bao Bolong Wetland Reserve and Tanbi National Park have been designated as Wetlands of International Importance or Ramsar site.

A site protection is not only geographically indicating the boundary but also defining management tools. The Gambia Wildlife act as well as international conventions on biodiversity such as Ramsar Convention, Convention on biological diversity and World Commission on Protected Areas (WCPA) commission strongly recommends developing and implementing management plan and rules for each protected area.

In 1997, the Department of Parks and Wildlife Management of The Gambia carried-out ecological survey in most of the protected areas. From these studies results, management plans have been

SECTION II: EVALUATION & MANAGEMENT ACTIONS

1. ZONING

For effective management of the site, and also to ensure that both wildlife and local people's needs are catered for, a zoning scheme is advocated. Five main zones are envisaged.

(i) Core zone (Zone A)

The core zone is a mangrove swamp with many creeks; communities identified three major Creeks the and near 20 small creeks belongs in the wetland. The hotspots indicated in map 3 confirm the importance of the area for marine and estuarine species conservation. The swamp is a nursery as well as spawning ground for fish; the dead end belongs in particular. The mudflats are feeding areas for birds, recruiting zones for crustacean such as shrimps and clams. All features in the core zone (water body for fish, manatees, mollusks, mangrove forest covering overall functioning of the system) play important role in western Africa marine eco-region. Tanbi is considered as a site of regional importance by PRCM panel of experts as shown in map 4. It is a key area of high biodiversity due to its size and intactness and due to the avifauna present. This area is suffering habitat degradation and restrictions on the use of the mangrove need to be implemented. In the short term fuel wood collection should be allowed to continue at a subsistence level. It is known that there is currently some commercialization of this resource. This practice should be actively discouraged, as should the taking of live mangrove for any activities. Other activities such as fishing and oyster harvesting should also continue at a subsistence level. There should however be no harvesting of the roots of the mangroves. Sport fishing should be

allowed to continue and all activities should be monitored. There island exist within the core zone. Landing on the island should be discouraged and any development prohibited.

(ii) Controlled Zone, Part 1 (Zone B)

This area comprises of a buffer zone on the periphery of zone A. the width of the buffer zone will vary from 100 to 200m depending on its location and proximity to settlements. Current traditional use of the zone (e.g. subsistence farming) should be allowed to continue, but be monitored. Particular effects should be made to control bush fires and encourage tree planning of native species. The use of agro-chemical should be stopped in the long term being replaced by selective pesticides/herbicides. This use of fire in farming operations should also be stopped and composting actively encouraged.

(iii) Controlled Zone, Part 2 (Zone C)

This area includes the coastal land north of the Banjul highway and land around Mandinari Point. Current traditional use of the zone (e.g. subsistence farming) should be allowed to continue, but be monitored. Any development proposal must be preceded by an environmental impact assessment, and if development is approved, mitigating measures must be put in place to ensure the biodiversity of the area is maintained

(iv) Land Management Zone (Zone D)

This are includes all other sections of the wetland complex and comprises mangrove, bush scrub land, forest and farmland. This portion of the reserve is considered sensitive in terms of likely effects of human activities (e.g. agricultural practices). Current traditional use of the zone (fishing and subsistence farming) should be allowed to continue, but be monitored. The land use patterns in this area have mapped out, and the appropriate management measure and controls should be put in place to minimize any possible adverse effects (e.g. deforestation, soils erosion, agro-chemical run off) of land uses practices in the wetland ecosystem. Particular effects should be made to control bush fires and encourage tree planting of native species. The use of agro-chemical should be stopped in the long term being replaced by selective pesticides/herbicides. This use of fire in farming operations should also be stopped and composting actively encouraged.

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(v) Settlements

This area comprises the villages within and on the close periphery of the area. Management efforts within these areas would be directed at rationalizing waste disposal to minimize pollution, protecting waterways and controlling soil erosion. These communities empowered to managed through all PA regimes the biodiversity of the country especially the protected areas.

Management objective: logical framework matrix

MANAGEMENT PLAN OBJECTIVES

The management plan defines the protected area rules of management and investment to be made to protect the site. The management includes:

- Zoning
- Objective 1: Maintain Ecological processes of Tanbi Wetland
- Objective 2: Enhance human benefits

4.1. Overview

Tanbi National Park is composed of 5 zones

- Core zone (Zone A)
- Controlled Zone, Part 1 (Zone B)
- Controlled Zone, Part 2 (Zone C)
- Land Management Zone (Zone D)
- Settlements

Objective 1. Maintain Ecological processes of Tanbi Wetland

Specific objective 1.1: Enhance Tanbi conservation status

Outputs

- Rules and regulations developed and enforced
- Surveillance, patrol and anti-poaching strategy developed and implemented put in place
- Capacity of TWC Staff and Governance body enhanced
- Revenue collection and sustainable financing in place
- Number of park staff increased

Rice growing ar

Specific objective 1.2 Develop conservative actions

Outputs

- Tanbi watershed restored/protected
- Sustainable use of fisheries developed and implemented
- Monitoring system of species and research program put in place

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- Regular reporting and publishing
- Public awareness and environmental education

Objective 1.3: Develop a co-management strategy

Outputs

- Overseeing bodies (SMC, CMWG, etc.) strengthened
- By-laws set and implemented by communities
- Fishing regulated and controlled (shifting fishing systems, biological rests, ban of bad fishing nets, etc.)
- Communication, Education and Public Awareness strategy developed and implemented

Objective 2: Enhance human benefits

Specific objective 2.1: Develop communities' development activities

- Communities needs and services facilitated
- Adult literacy program in place
- TWC Volunteers organized and capacity enhanced
- Solid waste management system in place
- Long term policies to implement MDG in place around Tanbi
- Skill training for women attained

Specific Objective 2.2: Develop Income generating activities

- Modern beekeeping system in place and community well trained to manage it
- 1000ha of organic and high yield gardening in place
- High value and sustainable oyster production in place
- Community ecotourism put in place
- A credit Union for women is in place

Other alternative livelihood activities

4.3.Objective1: Maintain Ecological processes of Tanbi Wetland

Specific objective 1.1: Enhance Tanbi Conservation status

Outputs

- signage put in place
- Rules and regulations adopted and enforced
- Surveillance system (infrastructures, logistics and trained personnel) put in place

Specific objective 1.2 Develop conservative actions

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Outputs

- Tanbi watershed restored/protected
- Sustainable use of fisheries developed and implemented
- Monitoring system of species and physical features implemented

- Regular reporting and publishing

Objective 1.3: Develop a co-management strategy

Outputs

- By-rules set and implemented by communities
- Fishing effort regulated and controlled
- Overseeing bodies in place
- Communication strategy implemented

4.3.1. Description of targeted feature

Tanbi is a wetland of International Importance but surrounded by densely populated settlements. The loss of biodiversity is noticed along with population increase; in fact, lowlands of Tanbi wetland's catchments are entirely taken by buildings and farms. Nonetheless, Tanbi has high richness of biodiversity and is considered in 2005 by PRCM board of experts as a site of regional and international importance for coastal and marine species (habitat for key species such as manatees, dwarf and Nile crocodiles, humpback dolphins, nursery and spawning ground of fish and invertebrates aquatic species, etc.) Hence, TWC is classified as wetland of International Importance since 2006. With the mangrove and mudflat ecosystem rich in organic matter, Tanbi contributes to regulate the hydrological system of the Gambia River embouchure thus Tanbi is protecting Banjul Island (one meter above sea level height) from flood and sea level rise. The coast line from central Senegal to Guinea is called the land of river which is a network of estuaries including Tanbi National Park where upland nutrients transit to the ocean to maintain marine food chains of Western Africa Marine Eco-region (WAMER). Along with the Canary current up-welling system, the delta and estuaries make the WAMER one the richest marine eco-region of the globe. The Tanbi 4800ha green mangrove swamp forest is one of the rare carbon sink of Greater Banjul Area that provides beautiful scenery making it a potential recreational site as well. The ecological services and functions listed above appeal to their continuation and to level off threats.

4.3.1. Factors (natural and human) influencing the features

The major threats to the wetland as stated in chapter 3.5 are anthropogenic:

- Land claim
- Sedimentation of bolongs
- Waste dumping and littering
- Mangrove cutting
- Inappropriate oyster collection
- Destructive fishing methods
- Less water flowing to the wetland

The countries sharing Gambia River basin through OMVG are planning to build a hydroelectric dam upstream in next few years, it could reduce the species move along the river and the disturbance of water supply could impact the ecological system processes downstream such as Tanbi estuary.

Rainfall decreasing trend noticed since late sixties is a natural and human factor affecting the wetland. 10 to 30% less rain impacts ecological processes in the estuary but non controlled human settlement reduces quality and quantity of water drained to the river and ocean.

The rainfall decreasing trend is somewhat linked to climate change; the temperature increment disturbs heat exchanges in the atmosphere and its related events such as rainfall. Sahel drought though natural might have been enhanced by global climate change that have local effect. Indeed, coastal wetlands such as Tanbi are one of the most sensitive features to the rising temperature of earth and rising sea level. Hence, climate change with its direct and induced effect could influence the trend of Tanbi National

Park.

4.3.3 Solutions

Human factors influence the evolution of Tanbi National Park; thus rules and regulation are to be taken to control the negative effects. Six major groups of solutions will be taken to ensure the maintenance of the ecological function of Tanbi wetland.

4.3.3.1 Specific objective 1.1: Enhance Tanbi conservation status

1. The area needs to get strong protection such as classifying the site as a National Park and enforcing national and international laws and conventions pertaining to the status of the site Ramsar Convention, CBD and CCC.

Tanbi Wetland National Park has been designated as wetland of international importance since 2006; yet, because of the threats, it is planned to get a higher status for that is to classify as National Park for the whole area covered by tidal waters before 2009. With communities hotspots of key species identified, dead-end bolongs are recognized as nursery and spawning sites for fish species, clear signage will be put in place to catalogue them as non take zones. Regular surveillance by DPWM staff in collaboration with communities will be enforced.

To stop human encroachment and solid waste dumping, a buffer zone between the park and the residential area allocated to organic vegetable gardening and wetland forestry will be delimited all around the wetland and protected.

To enforce the zoning and users rules, Tanbi Management team will put signage along the perimeter and clear delimitation of the protected area

2.The Tanbi Management team will be equipped to carryout regular surveillance actions to enforce the law
This set of solutions lead to specific objective 1.2.; four outputs are expected to be achieved before 2009.

Specific objective 1.1: Enhance Tanbi conservation status Outputs

- Tanbi wetland Designated as National Park
- Clear demarcation and signage put in place
- Rules and regulations adopted and enforced
- Surveillance system (infrastructures, logistics and trained personnel) put in place

4.3.3.2. Specific objective 1.2 Develop conservative action

1. Natural conditions of Tanbi Wetland functioning such as water flow, salt and acid intrusion, habitats for key life stages (fish spawning grounds, nurseries, bird feeding area, manatees and turtles sites) are disturbed by human settlement in and around, in this regard mitigation measures will be taken to restore and/or protect major ecosystem functions.

2. The biodiversity described in the above chapters and the sensitivity of the area required regular monitoring of the species and habitat of Tanbi Wetland. Hence a regular ecological monitoring and reporting of the conditions will be put in place.

The second set of objectives related to these two solutions aims to develop conservative actions.

Specific objective 1.2

Develop conservation actions

Outputs

- Tanbi watershed restored/protected
- Sustainable use of fisheries developed and implemented
- Monitoring system of species and physical features implemented
- Regular reporting and publishing

4.3.33. Objective 1.3: Develop a co-management strategy

To improve resource users' conditions within Tanbi, new sustainable techniques and activities will be put in place. They will get benefits while applying new restrictive management rules

A significant part of the communities living around Tanbi Wetland rely on the resources to make their living. They are collecting oysters and other crustaceans, harvesting mangrove, tapping palm trees, cultivating rice and vegetables, hunting threatened species, fishing in Tanbi wetland. Despite hard labour, the income gained from the resources is very low; indeed, these resources users are often among the poorest within the communities. The reasons of this condition are:

- Lack of set of rules for sustainable use of resources and poor knowledge of the threats linked to the current practices
- Use of techniques that add little value to products,
- Lack of resources (technical know-how and financial) to devote themselves to alternative sustainable activities

The conservation of Tanbi wetlands shall address the improvement of the livelihood resources' users. The communities' organizational capacity to police the wetland and resources uses will be strengthened through awareness and education program, trainings and equipment of stakeholders in co-management.

3. A regular awareness program targeting communities, resources users, decision makers, school children will be carried to ensure that stakeholders are aware Tanbi functions and contribute to the protection of this sensitive area.

Objective 1.3:

Develop a co-management strategy

Outputs

- By rules set and implemented by communities
- Fishing effort regulated and controlled
- Overseeing bodies in place
- Communication strategy implemented

4.4 Objective 2: Enhance human benefits

Specific Objectives 2.1: Develop community development activities

- Communities services facilitated
- Adult literacy program in place
- TWNP Volunteers organized and capacity enhanced
- Solid waste management system in place
- Long term policies to implement MDG in place around Tanbi

Objective 2.2 Implement an Income generating activities program

- Modern beekeeping system in place and community well trained to manage it
- 1000ha of organic and high yield gardening in place
- High value and sustainable oyster production in place
- Community ecotourism put in place
- A credit Union for women is in place
-

Objective 2.2 Implement an Income generating activities program

- Modern beekeeping system in place and community well trained to manage it
- 1000ha of organic and high yield gardening in place
- High value and sustainable oyster production in place
- Community ecotourism put in place

A credit Union for women is in place

4.4.1. Description of targeted featured

Tanbi wetland encompasses two parts, the site under tidal water and the lowland cultivated by women. The tidal or core zone is a low mangrove swamp, a decreasing trend of resources such as oysters and fish is noticed; threatened species remain but in low numbers. Human activities are the major causes of this trend.

Vegetable gardening and rice cultivation dominate inside the lowland but yields and production are low and in constant decreasing trend. The last survey of the area shows that this cultivated area covers more than 1000ha and around 5000 women are working inside. The area is experiencing salt intrusion, acidification and siltation of sandy particles. Deforestation and human settlement contribute to worsen the situation.

The cultivation techniques are poor (hand tools, no fertilizers, local seeds and without facilities that retain water). Although Greater Banjul Area is relying on the importation of vegetable, the lowland perimeter around Tanbi has a potential to significantly contribute to Gambia's self-sufficiency in agricultural products.

The settlements area around Tanbi is one of the densest in the country; the lack of environmental plan to control solid waste, erosion, sanitation and many other impacts negatively the wetland by increasing pollution

4.4.2 Solutions

The solution in the swamp area is to introduce new sustainable uses such as beekeeping, oyster-culture, and ecotourism while applying by-rules to the users

Specific Objectives 2.1: development activities

The lack of solid waste management system is a major threat to the wetland. All communities as well as industries are dumping in the mangrove area of the wetland. Actions need to be taken to stop dumping.

- The first action to be taken is to clean all around the wetland. The management team, in partnership with Banjul and Kanifing Councils, and the communities will clean the solid waste existing within the wetland.
- The management plan will facilitate the implementation of dumping bin in the villages; a sensitization program will be carried-out to encourage community to dump at designated sites
- The nation and the mayoral offices are supposed to organize regular collect system.
- Tanbi staff will patrol to stop any illegal dumping (industrial or domestic within the wetland)

The high density of the population around the wetland implies the implementation of MDG goals in this site. In particular, Tanbi manager will work together with education department to raise literacy level. In partnership with community, and adult literacy program will be developed with all beneficiaries of income generation activities. The major objective of the management plan is to ensure the conservation for longer term benefit. In this regards, a capacity building and environmental protection awareness program will be implemented for DPWM staff as well as for volunteers in the communities.

The hydrological studies identified the widespread of erosion in the street system around Tanbi. The planning intends in five years period to reduce at 50% gullies in greater Banjul area road system. The planning intends to contribution to reduce women overload of household activities by the facilitating the building of drinking water facilities such pumps and/or wells. The co-management specific objective described above participates to community's development activities as well. The outputs of this specific objective are:

- Co-management strategy in place
- Adult literacy program in place
- Gullies and eroded street system reduced
- Solid waste management system in place
- Communities welfare and communication facilities put in place
- Long term policies to implement MDG in place around Tanbi

Objective 2.2 Implement an Income generating activities program

- Modern beekeeping system in place and community well trained to manage it
- 1000ha of organic and high yield gardening in place
- Community ecotourism put in place
- A credit Union for women is in place

- 1) Output 1: Modern beekeeping system in place and community well trained to manage it A

process leading to implement honey production facility will be put in place. It comprises:

- Training mangrove cutters and key communities living around the wetland in modern beekeeping methods,
- Facilitating a loan scheme to put a significant number of beehives in the near mangrove,
- Favouring the build of a professional organization
- Putting in service an extension team to monitor the launch of the production
- Running a small honey processing facility
- Promoting the commercialization of new products

2) Output 2: 1000 ha of organic and high yield gardening in place The vegetable gardening in the buffer will be supported. In particular,

- Gardeners will be trained on the use of organic pesticide and fertilizers,
- A credit saving scheme will be put in place to widespread the use of good seeds and introduce tools that ease women's working conditions
- Facilities will be built to secure gardens, improve the soils conditions, ensure water supply
- Build commercial capacity of gardeners
- Ensure

3) Output 3: High value and sustainable oyster production in place

The management plan intends to improve oyster production around Tanbi

- Oyster collectors will be taught to make artisanal tools such as gloves, socks, etc. to improve their working condition
- A facility that put value on fresh oyster that enable producers to sell to hotels and restaurants will be implemented in a partnership that include fisheries, tourism industry and collectors
- Modern method of conservation of dry oyster opening to abroad market will be facilitated
- All the components comprise: training, organizational management capacity building, credit saving program,
- Oyster farming with new available techniques

4) Output 4: Community ecotourism put in place

Tanbi wetland is suitable place for ecotourism. Hotels are using the site in this regards; cruising, bird sighting and boat speeding are the main tourist activities within Tanbi. The site management team does not have benefit from the current activities because the actors are paying entrance fees. The hotels to stop unsustainable activities such a boat speeding and raises entrance fees

Communities know the place and can identify key species sites and timetable. During the PRA they clearly spot high biodiversity sites and even guided management team to find key species such as crocodiles and manatees in their habitats. Most of the knowledgeable people are hunter or fishermen that are will to share their capacity and to work closely with conservation community. The management intends to accompany the reconversion of these hunters and develop specific ecotourism programs.

The new community ecotourism actors will be trained in tourism guiding, a credit will support them to acquire small boats, and ecotourism routing will be mapped and published widely in relation with Gambia Tourism Authority. At least two routing (one for manatee sighting, another for bird watching and cruising) will be implemented. Hence, the new circuit will be exploited by the reconverted communities living

around Tanbi.

5) Output 5: a credit Union for women is in place

Poverty is recognized as the driving factors for resources uses; the plan intends to contribute to alleviate it. The activities above are designed in that purpose but are only targeting direct users. A credit/saving program will be put in place for women's small businesses. The objectives of the credit/saving are (i) to develop non resources uses around Tanbi, (ii) enhance good partnership between communities and the new park, (iii) create saving programs to promote autonomous and local financing programs

TABLE 2H: Year Work Plan for Tanbi Wetlands National Park

Activity	Year					Budget GMD
	1	2	3	4	5	
Infrastructure Development						15,200,000
Walking suspended bridge						5,000,000
Guard posts,						200,000
Office buildings,						10,000,000
Staff Quarters						6,000,000
Camp						5,000,000
Guard quarters						1,000,000
RECURRENT						
Salaries and allowances						6,500,000
1 manager						200,000
2 deputies						300,000
30 staff						1,000,000
Activity allowance						5,000,000
Infrastructure						10,000,000
Office, Camp, working bridge, guardposts,						10,000,000
Repairs and maintenance						2,000,000
Vehicle repair, housing maintenance,						2,000,000
Administration						6,000,000
Fuel cost						1,000,000
Vehicles						2,000,000
Boats						1,000,000
Logistics						2,000,000
Total Budget						45,700,000

Action Plan

Maintain Ecological Integrity of Nuimi National Park Wetland

Specific Objectives		Activities	Inputs/Tools	Cost USD	Timeframe	Responsible
Strengthen the management effectiveness of Nuimi National Park	- Rules and regulations strengthen and enforced	Develop and Implement SOP	Parks Staff, Stationery, Expert	10,000	Year 1 (first quarter)	Surveillance Unit
		Training on SOP	Personnel, stationery, Resource Personnel, Facility hire			Research and Development Unit
		Recruit additional rangers	Salary	50,000		Director
	-Surveillance, patrol and anti-poaching strategy revised and implemented	River patrol, Land patrol, confiscation campaign, Revision of anti-poaching strategy	Motorized Boat, boots, bicycles, binocular, Vehicle 4x4 pick up, telescope, camera, GPS, Cell phones (CUG)	150,000		Surveillance Unit
- Capacity of Tanbi Staff and Governance system enhanced	Staff training,, Park committee meeting,	Resource Personnel, Stationery	60,000		Directorate	

Specific objective 1.2 Consolidate appropriate conservation measures	Park infrastructure improved	Ranger posts, Observation tower, trails, and borehole	Specification, Contractors,	300,000		Directorate
	-					
	- Regular reporting and publishing	Quarterly report, Checklist of species, factsheets	Expert, portal, checklists	15,000		
	- Organise replanting campaign with local communities	Procurement of seedling, planting exercise,	Personnel, transportation	10,000		Nuimi Manager
	Rice growing areas desalinated	Restoration of salinized areas Salt tolerant rice varieties introduced	Desalinizing materials, Consultant, experts, personnel	200,000		Research and Development
	Sustainable use measures for fisheries management, developed and implemented - Fishing regulated and	Confiscation of illegal fishing gears, Regular patrol,	Boats, bicycle, motorbike, vehicle, Episode production, Airtime	50,000		NNP rangers

	controlled (shifting fishing systems, biological rests, ban of bad fishing nets, etc.)					
	- Research and ,monitoring program develop strengthened	Monitoring of: <ul style="list-style-type: none"> • Waterbirds • Seaturtle • Manatee • Dolphin • Land mammals • Other Key species • Management effectiveness • Economic evaluation • Other socio-economic survey 	-Personnel, -Stationary -Staff -Research materials (such as GPS, software for data analysis, boat, fuel, Drone etc)	150,000		Directorate
Objective 2 Enhance protected area governance at site level						
2.1 Promote Co-Management	- Park management committee strengthened	Quarterly meetings	Personnel, Stationery, transport	10,000		Park Management
	- By-laws set	Management plan familiarization meeting,	Personnel, Stationary,	100,000		Directorate

	and implemented by communities	Needs assessment, Development of By-laws	Expert, transport			
Objective 3: Enhance human benefits						
Specific objective 3.1: Develop communities' development activities	Communities needs and services priorities identified and supported	Needs assessment, Capacity building on entrepreneurship, Provision of seed money,	Personnel,	500,000		Directorate
	- TWNP fishermen organized and capacitated as volunteers	Formation of fishermen association -Capacity building on resource management -Provide them with voluntary identity card	Personnel -Stationery -Transport -ID card maker	200,000		Directorate
	Creating fire belt	Training communities and staff	materials (gloves, rakes, wheelbarrow, cutlass, trucks)	15,000	Annually	NNP Staff

Specific Objective 3.2: Develop Income generating activities	- Modern beekeeping system in place and community well trained to manage it	-Training -Provision of seed money -Identify potential market	Training manual Expert Start-up funds Markets	70,000		Park Manager
	- Village banking for women established	-Organized women groups -Training -Provide Seed money	-Funds -Experts -Bank Accounts	400,000		Park Manager
	- Organic and high yield gardening promoted	-Assessment of gardens -Raising awareness -Provision of organic manure	-Experts -Resource personnel -Funds	200,000		Research and Development Unit
OBJECTIVE 4. Communication, Education and Public Awareness promoted						
Specific objective 4.1 CEPA strategy develop and implemented	Public Awareness and Environmental Education	Develop strategy, implement key priorities, Procure awareness tools such as T-shirts and caps, flyers, Procure awareness tools such as T-shirts and caps, flyers,	Personnel, stationary, Airtime, Audiovisual Aid, Episode Production,	300,000		Directorate

		posters, billboards posters, billboards, Community sensitization				