

MANAGEMENT EFFECTIVENESS AND CONSERVATION INITIATIVES IN THE KILOMBERO VALLEY FLOOD PLAINS RAMSAR SITE, TANZANIA

Munishi¹, P.K.T., Chuwa¹, J. J., Kilungu², H., Moe³, S. R. and Temu¹, R. P.C.

¹Department of Forest Biology,
Sokoine University of Agriculture,
P.O. Box 3010,
Morogoro, Tanzania

²Department of Tourism and Hospitality,
Open University of Tanzania,
P.O. Box P. O. Box 23409,
Dar es Salaam, Tanzania

²Department of Ecology and Natural Resource Management,
Norwegian University of Life Sciences,
P.O. Box 5003, 1432 Aas, Norway

Corresponding Author: pmunishi2001@yahoo.com

ABSTRACT

Management effectiveness of the Kilombero Valley Flood Plains Ramsar Site (KVFPRS) was assessed to determine the extent to which management interventions in the Ramsar site have been effective in addressing threats to the wetland resources. The assessment used the World Commission on Protected Areas (WCPA) Management Effectiveness Tracking Tool (METT). This tool is composed of a set of questions that address the different steps and stages or elements of management necessary to achieve the objectives of management of the area for which it was established. We identified 16 key issues to the management of the KVFP Ramsar site out of the 30 main issues used to evaluate the management effectiveness by the WCPA tracking tool. According to managers of the Ramsar site in both Kilombero and Ulanga Districts, the management effectiveness of the KVFPRS is 39%. The %age score ranking given in this wetland reserve was low, suggesting that there has been little success in protecting the wetland. Discussions with key informants and local communities revealed that the current condition of the wetland is poor and not well managed which was attributed to poor law enforcement (34%) and inadequate implementation of planned management interventions (66%). The majority of the respondents admitted encroachment both for

agriculture (28%) and settlements (14%), illegal fishing and destruction of fish breeding sites (13%), wildfire (3%), poaching (4%), deforestation (8%) and overgrazing by livestock (31%) were the major wetland degrading activities. The adjacent communities and district management suggested clear policy and regulations (31%), the need for their involvement in the management (23%), patrols (17%), and regular environmental education (10%) as ways to mitigate wetland degradation. It was also suggested that a change in the current status of the protected area into a wetland reserve and management of livestock populations would ensure proper management and conservation of the wetland resources. Several conservation interventions/initiatives have been undertaken to counter wetland degradation including the declaration of the KVFPRS as a Ramsar Site, preparation of integrated management plan for the site and establishment of game controlled areas around the Ramsar Site. Community involvement in planning and implementation of required actions and adequate monitoring of the performance of these interventions are crucial in order to establish their effectiveness and corrective measures and will likely improve management effectiveness. .

Key Words: Management, effectiveness, Kilombero, Ramsar Site, METT



INTRODUCTION

Technology for sustainable wetland development for agriculture does not yet exist in Tanzania and productivity of most of the wetlands has been declining over time. This could be due to poor technology or poor management. While the Ramsar Convention advocates wise use of wetlands this is not yet realized in Tanzania. Further, lack of quantitative information on some aspects of wetland resources is a major obstacle to improving wetland conservation efforts. Coordination of the activities taking place on the ground in the wetlands is exceedingly difficult and the skills for undertaking wetland management are insufficient. The knowledge base about wetland resources, status and key management problems is limited and no proper policy guidance is in place (MNRT 2003). At the moment, most of the activities by local communities living adjacent to wetland ecosystems are not sustainable. The utilization of wetland resources and the practices are based on direct utilization of resources from wetland ecosystems. This has led into degradation and the drying up of a number of wetlands. Currently, there is no specific legal and policy framework regarding wetlands in Tanzania, but wetland-related issues are touched upon in a variety of laws, policies and strategies, due to the inherent cross-sectoral character of wetlands issues (MNRT 2003). The policy and legal framework surrounding wetlands can be roughly divided into the policies and laws of a sectoral nature (Wildlife, Fisheries, Agriculture and Livestock, Forestry and Minerals). Wetlands are partly covered by existing laws but the coverage is somewhat fragmented and there are large gaps and many provisions are not comprehensive; coverage is fragmented and not well coordinated (MNRT 2003). Key legislation such as that covering agriculture for example, does not specifically mention wetlands and there is direct contradictory regulations regarding wetlands, for example, in land and water legislation. Many of the newly revised policies have good intentions, though their accompanying legislations and their implementation/enforcement are limited (MNRT 2004).

That means lack of an overall legal and policy framework for wetlands leaves government bodies at all levels with highly inadequate tools to effectively manage wetlands in a sustainable manner and at times approaches to managing wetlands ecosystems at sectoral level remains the interpretation and discretion of the implementer. The tools for protection and sustainable management in current legislation (primarily the Wildlife Act) are not flexible enough to cater for the diverse needs of protection and management of wetlands according to the wise use principle (MNRT 2003).

This study followed the World Commission on Protected Areas (WCPA) 'framework' for assessment of the effectiveness of management practices in protected areas and protected area systems (Hockings *et al.* 2000; Persha 2004; Madoffe and Munishi 2005) to assess how effective management interventions have been in the management of the KVFPRS. Successful management effectiveness should include key ingredients such as clearly demarcated reserve boundaries, feasible management plan, secured funding, good law enforcement, appropriate and well-trained staff, and local community involvement in conservation of the reserve. Education and community outreach programmes, resource inventory, equipments, and a good system of monitoring and evaluation in place are also crucial to implementing management activities and thus maintaining the biological wealth of the wetland ecosystem.

RESULTS AND DISCUSSION

Management Effectiveness of the KVFPRS Wetland

We identified 16 key issues to the management of the KVFPR Ramsar Site out of the 30 main issues used to evaluate the management effectiveness by the WCPA tracking tool (Table 1). The management effectiveness of the KVFPRS at district level was rated 39% The higher the %age the more effective (strong) is the management and vice versa. Leverington *et al.* (2008) set a minimum standard of 45% for individual indicators. According to Cowan *et al.* (2010) management effectiveness score % of less than 33%



indicates clearly inadequate management, 33-67 % indicates basic management with significant deficiencies and 67% and above indicates sound management. According to Hockings *et al.* (2000), Madoffe and Munishi (2005), Cowan *et al.*, (2010) %age score ranking given in this wetland reserve is poor with basic management which has significant deficiencies. There is little success by the government in protecting the wetland to date. This indicates that the KVFPRS is poorly managed and therefore it stands a chance of losing its status as biodiversity conservation area if the situation is not reversed. Furthermore, the results from socio-economic survey show that 96% of the respondents perceived that the current state of the KVFP is very poor and not well managed (Munishi *et al.* 2012). Discussion with key informants revealed that the poor condition of the reserve is attributed to inadequate management by the government and poor law enforcement. Similar study by Chizyuka (2006) in Malawi's forests indicated that the vulnerability of important forests in Malawi stem from inadequate law enforcement, consumption demands on forest products, staffing problems, high levels of poverty among the general populace that was exacerbated by a poor management regime on the part of the forest authorities.

Successful management effectiveness should include ingredients such as clearly demarcated reserve boundaries, management plan, secured funding, good law enforcement, appropriate

and well-trained staff, and local community involvement. Education and community outreach programmes, resource inventory, equipments, and a good system of monitoring and evaluation in place are also crucial to implementing management activities and thus maintaining the biological wealth of the wetland ecosystem. This study identified sixteen (16) key issues to the management of the KVFPRS out of the thirty (30) main issues used to evaluate the management effectiveness by the WCPA tracking tool

Protected Area Boundary Demarcation

The boundary of the reserve was not known by the management authority and local residents and there is no appropriate boundary demarcated on the ground. Ownership to any important resource entails identity of the resource, which includes boundary demarcation. The discussions and availed data further revealed that encroachment for agriculture and settlement in KVFPRS has been exacerbated under the cover of poor and unknown boundary demarcation. The problem is further compounded by lack of statutory regulations defining the identification or demarcation of wetland boundaries. Similar findings by Goodman (2002) in KwaZulu-Natal indicated that some of the protected areas had no clear boundary demarcation while others have boundaries but not appropriately maintained that has resulted into encroachment for both agriculture and settlement into the wetland reserve.

**Table 1: Selected Critical Management Issues for the KVFPRS, Morogoro Tanzania**

Issue	Maximum score	Actual score given
Legal status	3	3
Policy, laws and regulations	3	1
Protected area regulations	3	1
Law enforcement	3	1
Protected area boundary demarcation	3	1
Resource inventory	3	1
Planning - Protected area objectives	3	3
Planning - Protected area design	3	3
Planning - Management plan	3	1
Planning - Regular work plan	3	0
Inputs - Research	3	2
Inputs - Staff numbers	3	0
Inputs - Staff training	3	0
Inputs - Current budget	3	1
Inputs - Security of budget	3	0
Process – (resource management, education and awareness programme, personnel management, management of budget, equipment, local community participation, commercial tourism and economic benefits, condition, stakeholder participation and cooperation)	3	1
Total Score	48	19
Mean Score	3.0	1.2
Percentage Score		39

Note: Score: 0 = poor, 1 = fair, 2 = good, and 3 = excellent

Management Plan

Management plan is an important tool for both short and long term wetland activities. Unfortunately, the wetland reserve has no management plan, a situation that makes most activities happen on an irregular or ad hoc basis. A management plan is very helpful in identifying clearly the expected outcomes and impacts from the management of the area and one can make future projections of resource needs. Management plan can be used to combat wetland and biodiversity loss, while ensuring that benefits accrue to adjacent communities. A study by Madoffe and Munishi (2005) in some EAMs forests reported similar findings. This is in line with Goodman (2002) argument that despite the long tradition of protected area management planning in the organization, the majority of protected areas (54%) in KwaZulu-Natal had no current management plans. Similarly, WWF (2004) reported that only 12 % of the 200 forest protected areas in 34 countries worldwide surveyed had an approved

management plan. Clearly this is a critical weakness with respect to management effectiveness and requires urgent attention.

Staff numbers and training

Staff numbers were inadequate for critical management activities (1) of the wetland. Successful execution of management activities such as planning, law enforcement, supervision and monitoring of wetland resources needs sufficient and well trained staff. On the other hand, staff training and skills was low relative to the needs of the protected area (1). Madoffe and Munishi (2005) observed in some forests that all forests had either inadequate number of staff or below optimum level. Also, training of staff was either low or was adequate but could be further improved to fully achieve the objectives of the management. Similar studies elsewhere (e.g., UWA 2002; KNP 2003; SENAPA, 2004) reported that currently, staff manpower (especially the rangers/anti-poaching unit) was still not sufficient, given the sizes of the parks, some with inadequate



training and skills thus affecting law enforcement efforts. In such a situation the reserve is poorly managed with a lot of encroachment for both agricultural and settlements, illegal harvesting, poaching and other illegal human activities, resulting into degradation of the KVFP Ramsar Site resources and loss of its biodiversity. Frontier Tanzania (2001a) revealed that the existing Kilombero Game Controlled Area which is a core area within KVFP was perceived as ineffective in achieving conservation of the area since it does not restrict land-use (agriculture, cattle-keeping/ grazing, settlement) within the valley, and the level of enforcement of restrictions on hunting is thought to be very low, mostly due to lack of man-power. Although hunting is regulated, there is no control over settlements or agriculture within the Game Controlled Area. Several farms were observed in many areas of the valley, including dry season farms in suitable areas of the interior of the floodplain. The amount of cultivation in the valley has been increasing and there is therefore a perceived threat to wildlife habitats.

Law Enforcement

Both Districts of Kilombero and Ulanga have major deficiencies in staff capacity/resources to enforce wetland reserve legislation and regulations (e.g. lack of skills and patrol budget) (1). Adequate law enforcement by the staff is vital to the protection of the reserve and conservation of its biodiversity. Inadequacy in capacity has resulted into rampant illegal activities in the reserve with detrimental effects to the wetland. Gibson *et al.* (2004) as cited by Banana *et al.* (2004) argues that the regularity of law enforcement is the most important factor in determining forest conditions. Furthermore, WWF (2004) warns that poor governance and law enforcement which results in sanctions upon violation of laws not being applied. This reduces the motivation of rangers and encourages illegal acts by criminal groups such as those involved in illegal trade of rare species. In Kilombero valley, similar results from the districts and regional official documents and personal observations show that there is rampant poaching of elephants, buffalos and puku as well as poisoning of

lions, leopards, hyenas, vultures and other species resident in the area. The Kilombero valley was once an area of high wildlife density and rich ecosystem which gave it its international importance and designation as a RAMSAR site. Due to the lawlessness and resulting environmental damage in the Kilombero valley, the wetland qualifies to be a catastrophe and national disaster.

Current budget

It was learnt that the reserve does not have a sufficient budget for its activities (0). However, there is a 4-year collaborative project between Government of Republic of Tanzania and Government of Belgium on management of KVFP Ramsar Site that commenced in 2007. The project concentrates much on capacity building and it covers less than 30% of the villages which are meant for demonstration. No specific funds are set aside by the central or local government authorities for conservation and management of the wetland. Lack of capacity to implement wetland management in terms of human and financial resources poses a great challenge. While at national level, the budget allocation for wetland management has gradually increased, the allocations for lower administrative levels remain insufficient. Funding is inadequate and much of it comes from donors. This poses uncertainty in the absence of donors. The availability of funds and financial management is a prerequisite for effective and efficient execution of planned activities. Inadequacy of funds coupled with its irregular flows explains why the wetland reserve is poorly managed. Madoffe and Munishi (2005) observed in some forests that most of the forests had either no budget or was inadequate for basic management needs. Elsewhere, UWA (2002) and KNP (2003) reported that funds were inadequate and untimely released making law enforcement and other operations in the parks ineffective. Banana *et al.* (2004), WWF (2004) and Chizyuka (2006) further stressed that inadequate funding results in understaffing and lack of capacity to implement management plans, monitoring and law enforcement which make protected areas vulnerable to problems as they arise, thus, paving a way for human activities to undermine its biological wealth. These issues need urgent attention.



Equipment

There were some equipment and facilities but they were wholly inadequate. There were no specific vehicles for wetland management apart from those purchased by the donor funded Integrated Management Planning for the Kilombero Ramsar Site project in both districts and the management of the wetland was segmented i.e. fisheries, wildlife, forestry and agriculture. Effective and efficient implementation of working plans need adequate and well maintained equipment and facilities among other things. UWA (2002) in Bwindi Impenetrable National Park, Uganda and KNP (2003) in Kaziranga National Park, India reported that equipment is essential for management of protected areas the inadequacy of which prevent regular maintenance of protected areas. Goodman (2002) reported that there is widely expressed opinion, that substandard maintenance and care of equipment and infrastructure poses a serious threat to the sustainability of current levels of management inputs in KwaZulu-Natal.

Education and awareness programme

There is limited and ad hoc education and awareness programme (1). Whichever wetland management regime is developed for a given area, whatever community management aspect is agreed, or whether communities are required to become better custodians of wetland, a continued programme of wetland education and awareness rising will be essential. There is insufficient awareness of wetland values and functions at all levels of government and within society as a whole. This is partly because of the limited knowledge base but also because certain sectors of the society regard wetlands as unproductive wastelands. Furthermore, wetland education activities in Tanzania are only available on a limited scale. FBD (2001) and Madoffe and Munishi (2005) cited that conservation education and awareness creation to the local communities living adjacent to the forest is considered as an important tool for forest management and conservation. The Belgium Government in collaboration with the Government of the United Republic of Tanzania are undertaking as a project that supports and facilitates this awareness and

training programmes for the Village Environmental Committee and the Village Game Scouts (VGS) in 31 selected villages which is approximately 29% of all the villages' proximate to the wetland. Also, a specific wetland law and general sensitization of the general public is required for sustainable wetland management. Goodman (2002) observed in KwaZulu-Natal that the level of outreach and education programmes on restoration and prevention were not consistent with the degrees of pressures and threats experienced by protected areas. This has resulted into ecosystem degradation and loss of some important biodiversity.

Involvement of local communities

The local communities have significant input into discussions relating to management but no have direct role in the management (1). During socio-economic survey (Munishi *et al.* 2012), about 23% of the local people interviewed across the sampled villages stated that their involvement in the sustainable management of KVFP RS is very crucial. One of the major constraints to natural resources management in Tanzania is lack or insufficient involvement of local communities at all stages of development and implementation. The involvement of the public has been beneficial in identifying natural resource problems and in developing sustainable and acceptable solutions. The objective is to develop and extend practical methodologies for wetland resources management by local communities. In keeping with current conservation thinking that emphasizes the involvement of local communities, a proposal was made by WWF in the early 1990s for the initiation of a community-based conservation scheme with a pilot project on the northern side of the valley. However, this project fell due to lack of funds and also because the proposed project was felt to be too large to be workable. More capacity building is required at district and grassroots levels to enable communities to increasingly take up the responsibilities of wetland management under the decentralized system of governance. This can address the funding constraints and inadequate staffing. Mayeta (2004) suggested that involvement of local communities in the conservation of natural resources could reduce the chances of resource



abuse because the practice imparts sense of ownership and benefit sharing at local level.

Kiziranga National Park (KNP) (2003) and Serengeti National Park (SENAPA) (2004) reported that poor collaboration and involvement of local communities has resulted into high poaching and encroachment rates in India and Tanzania respectively. Improved communication with local communities is likely to lead to a much better understanding of the value of the protected area, a greater degree of participatory management and acceptance of the protected area and hence improved management effectiveness (Goodman, 2002). Furthermore, involving local communities in decision making motivates conservation because the communities will feel that the forest belongs to them (FBD 2001; FORCONSULT 2003; Madoffe and Munishi 2005). Meinzen-Dick and Knox (1999) as cited by Banana *et al.* (2004) claimed that participation in decision-making is the most critical form of participation in natural resources management. A study by Madoffe and Munishi (2005) in some EAMs forests reported that most of the forests either don't involve the local communities or the communities have some discussions relating to management but no direct involvement in the resulting decisions. Madoffe *et al.* (2006) further argued that one could not overlook the role of human being in forest degradation and therefore the need for involvement of the local community in natural resources management. As poverty and population growth are the main force degradation, people's participation could be an important tool in the reduction of the losses. Furthermore, Chizyuka (2006) suggested that communities living adjacent to protected areas need support to develop a general appreciation for natural resources conservation to meet their basic food and income requirements.

Resource inventory

Information on critical habitats, species, ecological processes and cultural values of the protected area is not sufficient to support planning and decision making. There is no national inventory of wetlands to guide management in addition to general lack of scientific information and serious lack of knowledge about wetlands. The existing

wetland inventory does not provide comprehensive data required for management purposes. Even available research data is not accessible especially to the local communities. One of the management objectives of the wetland is to ensure that biological diversity is adequately conserved. The knowledge base about wetland resource biodiversity, status and key management problems is limited and no proper policy guidance is in place. However, various surveys and research work carried in the wetland were not specific to the management of specific species. IRA (2001) concurs with the need for a detailed and exhaustive inventory of the existing natural resources in the protected areas. For example Malimbwi and Zahabu (2000) argue that, there is a need to know what is in the forest reserve in terms of vegetation and other biodiversity. Goodman (2002) on a similar issue in KwaZulu-Natal reported that although most respondents felt that there were up-to-date natural resource inventories in place almost 40% felt that these were inadequate for their protected areas. In this regard, important (threatened, rare, endemic) species inventories were felt to be incomplete, and in many instances medium scale (1:50 000) soil and vegetation classifications maps were not available, thus, calling for more efforts to address this need.

Resource management

Very few of the requirements for active management of the critical habitats, species, ecological processes and cultural value are being implemented. Management of the wetland resources against fires, poaching, encroachment, lumbering, fishing, grazing, invasive species, was thus neither planned nor coordinated together by conservators. This calls for an integrated management approach for the wetland resources to reverse the current poor state of the wetland ecosystem and deterioration of the biodiversity values.

Monitoring and evaluation

It was learnt that there was some ad hoc monitoring and evaluation, but no overall strategy and/ or no regular collection of data for monitoring purposes. Monitoring requires baseline data which does not exist though there are plans to do this under the project



'Integrated Management Plan for the Kilombero Ramsar site. A study by Madoffe and Munishi (2005) in some EAMs forests found a similar observation in all forests of the Eastern Arc Mountains except few. The authors further argued that monitoring and evaluation ensures that management obstacles are discovered and solutions sought promptly. Banana *et al.* (2004) concurs with these findings and reports that due to reduced monitoring and law enforcement caused by lack of manpower in the DFO's office together with perverse incentives for local councillors to protect forest resources, one would anticipate widespread illegal harvesting of forest products and degradation of the resource. Further discussions with management authority revealed that an establishment of wetland inventory and monitoring activities as well as strategic studies is very important in support of policy development.

Economic benefits assessment

It was observed that there was a significant or major flow of economic benefits to local communities from activities in and around the Kilombero valley flood plains though unrecorded. The existence of multiple economic benefits accruing from the wetland has kept population increasing around the wetland which was the case before its gazettement as Game Controlled area. The current economic activities in the reserve include lumbering, fishing, beekeeping, hunting and rice plantations. With the introduction of a hunting block in the reserve, the local communities earn income through participation in tourism activities as labour force during the hunting season. Also, the 25% of the retention fund from the hunting fees was allocated back to the villages surrounding the protected area for protection and other village development programmes. A similar study by UWA (2000) in Bwindi Impenetrable National Park, Uganda reported that all rangers were employed from the areas surrounding the park, and park initiated community tourist camp for community income and revenue sharing scheme was in place.

Protected areas policy and legislations

Currently, there is no specific legal and policy framework for wetlands in Tanzania but

wetland-related issues are touched upon in a variety of laws, policies and strategies due to the inherent cross-sectoral character of wetlands issues. It was observed that lack of an overall legal and policy framework for wetlands leaves government bodies at all levels with highly inadequate tools to effectively manage wetlands in a sustainable manner. Wetlands of Tanzania are partly covered in existing laws, but the coverage is somewhat fragmented (MNRT 2003). There are large gaps and many provisions are neither comprehensive nor well coordinated. Access to these pieces to the general public is therefore constrained. The policy and legal framework surrounding wetlands are roughly divided into the policies and laws of a sectoral nature (Wildlife, Fisheries, Agriculture and Livestock, Forest and Minerals among others) and those of a more general and cross-sectoral nature (Water, Environment and Land). The sectoral policies are generally most concerned with their core areas, but do recognize the need for cross-sectoral regulation, albeit without specifying sufficiently where and how to do this. Abila (2002) stated that the major drawback of wetland conservation in Kenya has been the lack of clear policies guiding utilization. The Ramsar Convention recognizes the right of the contracting parties to formulate their national wetland policies in a manner that is appropriate to their respective national circumstances stressing on wise use of wetlands.

For all communities surveyed (Munishi *et al.* 2012), 31% of the respondents claimed that formulations and implementation of clear policy and regulations are the only way forward to sustainable wetland management. Many wetland areas such as KVFP experience rapidly growing population with poor people moving into the areas in search of livelihood opportunities. This leads to a strong economic pressure for conversion of wetlands to other functions with only limited considerations given to the sustainability of the changes and that necessitate clear policies and legislations to support their management.

Condition and value

Many of important biodiversity, ecological or cultural values are being severely degraded (Majority of the respondents interviewed



(96%) had perception that the status of the wetland is very poor. Field observations and further discussions with key informants confirmed the current situation of the wetland to be highly degraded

Conservation Initiatives

The government has pioneered several conservation interventions to counter wetland degradation including the declaration of the KVFPRS as a Ramsar Site, preparation of integrated management plan for the site and establishing game controlled areas around the Ramsar Site. The sustainability in future implementation of these projects is questionable as they are donor funded. There are no planned activities under the local government to continue implementation of the conservation activities

CONCLUSIONS AND RECOMMENDATIONS

Management effectiveness of the Kilombero Ramsar site is still low and efforts to improve the management are important. Central to enhancing management effectiveness is to improve management planning, ensure adequate and implementation of protected area policy and legislation, clear boundary demarcation, proper law enforcement. Further improving resource availability for management such as – mainstreaming the management of the area into national/district budgetary process, regular and implementable work plan continuous education and awareness programme and local people involvement, monitoring and evaluation of achievements of management activities are important elements for improving the management effectiveness of the Ramsar Site. Other activities include regular resource inventory and monitoring to develop trends, resource management, valuation of wetland resources, equitable benefit sharing, adequate staff and capacity improvement for staff and adequate equipment for management purposes.

Future monitoring of the management interventions already initiated is important in order to establish their effectiveness and corrective measures. Community involvement in management may prove successful given the dependency of the local people on the wetlands.

REFERENCES

- Abila, R. 2002. *Utilization and economic valuation of the Yala swamp wetland, Kenya*. Proceedings of the workshop held at the 2nd International Conference on wetlands and development, Dakar Senegal, November, 1998. 96pp.
- Banana, A.Y., Gombya-Ssembajjiwe, W. 2004. *People and Forests: communities, Institutions and Governance*. Gibson CC, McKean MA, Ostrom E. editors. Cambridge, MA: MIT Press; 2000. pp 87-98.
- Chizyuka, H. 2006. WWF assessment reveals uncertain future for Malawi's forests: The Rapid Assessment and Prioritization of Protected Area Management Effectiveness in Malawi. *World Wide Fund for Nature*. Newsroom 6th June 2006.
- G. I. Cowan, Nobusika Mpongoma, P Britton, (eds) 2010. Management effectiveness of South Africa's protected areas. Department of Environmental Affairs, Pretoria
- Goodman, P.S. 2002. Assessing management effectiveness and setting priorities in protected areas in KwaZulu-Natal. *Bioscience* 53: 843-850.
- Hocking, M., Stolton, S. and Dudley, N. 2000. *Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas*. IUCN, Gland, Switzerland and Cambridge, UK. 121pp.
- Madoffe, S.S. and Munishi, P.K.T. 2005. *Forest Condition Assessment in the Eastern Arc Mountain Forests of Tanzania*. A Consultancy Report Submitted to Conservation and Management of the Eastern Arc Mountain Forests: Eastern Arc Mountain Strategy (GEF/UNDP). Morogoro, Tanzania. 116pp.
- Madoffe, S.S., Hertel, G.D., Rodgers, P., O'Connell, B., and Killenga, R. 2006. Monitoring the health of selected eastern arc forests in Tanzania. East African



- Wildlife Society, African Journal of Ecology. 44: 171-177.
- Malimbwi, R.E. and Zahabu, E. 2000. Report on Reconnaissance Inventory of Chome Forest Reserve. FORCONSULT, Faculty of Forestry and Nature Conservation, SUA. 16pp.
- MNRT 2003. *Environmental Support Programme (ESP). Sustainable Wetlands Management (2004 – 2009) Report Plan.* 67pp.
- MNRT 2004. *An Issue Paper for the Formulation of the National Wetlands Strategy.* Wildlife Division, Ministry of Natural Resources and Tourism, Dar es Salaam, Tanzania. 99pp.
- IRA 2001. *Baseline Study of Lakes Sagara and Nyamangoma Wetlands and the Surrounding Environment in the Muyovozi/Malagarasi Ramsar Site, Western Tanzania.* Report submitted to SIMMORS Wildlife Division, Ministry of Natural Resources and Tourism, Dar es Salaam, Tanzania. 139pp.
- Persha, L. 2004. Threat reduction assessment (TRA) notes and methodology changes.
- Stolton S, Hockings, M, Dudley, N, MacKinnon, K, Whitten, T and Leverington, F. 2007. 'Reporting Progress in Protected Areas, A Site Level Management Effectiveness Tracking Tool: second edition.' World Bank/WWF Forest Alliance published by WWF, Gland, Switzerland.