

Integrating Forest People in Wildlife Management  
In Congo: Procedure Document



Germain A. Mavah

Doctoral Candidate

School of Natural Resources and Environment, & Geography Department

University of Florida

July 2014

## Table of Contents

Acknowledgements.....	3
Abstract.....	3
1. Introduction.....	4
2. Why to have a Procedure Document?.....	6
3. Integrating Local People: Strengths and Weaknesses.....	6
3.1. Strengths .....	6
3.2. Weaknesses .....	7
4. Guiding Principles of the Procedure Document.....	8
5. Strategy .....	11
5.1. Wildlife Legal Framework Arrangement and Associated Regulations .....	12
5.2. Capacity Building of Stakeholders .....	12
5.3. Environmental Education and Communication .....	13
5.4. Implementation, Monitoring and Evaluation of the Strategy.....	13
5. Conclusion .....	13
6. References Cited .....	14

## **Acknowledgements**

The research project that stimulated the development of this procedure document was carried out under a doctoral research project entitled "Conserving the buffer zone of Odzala-Kokoua National Park, Republic of Congo by integrating rural people into wildlife management." Many people have contributed directly and indirectly to the completion of this research by proving constructive comments as questions, remarks and concerns. I enthusiastically thank the Rufford Small Grants Foundation for providing the financial support to this research despite the difficult financial times. I really appreciate the support of Wildlife Conservation Society-Congo program to this research. I am also grateful for the constant support of my PhD committee members from University of Florida and Duke University. I express my gratitude to all local people including Bantu and indigenous people for their cooperation during this research. The vision of my work is to use natural resource management to affect the life of rural people (i.e. to alleviate their poverty) and the health of ecosystems in Congo basin.

## **Abstract**

Local people and/or forest dwellers have long managed and used forest resources for their own livelihoods in a particular context. Since the central government took over forest management from the people through land reform laws, local communities have suffered and forest management does not reached expected outcomes. These land reform laws have moved from the recognition of customary rights to their abolition. Consequently, these reforms have contributed to the loss of ancestral lands, led to the loss of many aspects of local people's traditional lore. They have created by default an open access use of wildlife. The efficacy and legitimacy of functioning control are largely illusionary, and in reality wildlife is an open access resource that is rapidly being depleted or locally extinct because of the mismatch between institutions and rural realities. For instance in Congo, the small hunting is qualified as a sport hunting while bushmeat is an important component of rural livelihoods. This alteration combined with economic development and technological changes have undermined local rules.

This procedure document proposes the strategy of how local people can be an effective stakeholder to address wildlife conservation issues. Based on a survey carried out in 24 villages, 270 household heads and 72 keys informants in northern Congo from July 2013 to June 2014, we established this procedure to involve rural citizens in wildlife management. Previous conservation strategies have been based on top-down approach that focuses on command-control principle. Indeed, this approach does not reached expected results. The current strategy includes i) a radical revision of wildlife legal framework and related regulations that incorporates, property rights (e.g. exclusion rights of villagers) and a formal recognition of villager hunting

zoning, ii)capacity building of rural people, local NGOs and rulers, iii) education, communication and outreach program and iv)implementation, research, monitoring and evaluation of the strategy.

Institutional arrangement is necessary to solve inadequate rules that are incapable of governing natural resources in addition to their fear of “creative destruction”(opposition to innovation) to promote effective devolution rights. The capacity building of all wildlife managers and villagers will provide skills and knowledge in conservation and sustainable use of biodiversity and rural livelihoods. Environmental education, communication and outreach programs are additional way to build capacity of officers, national NGO and villagers. The implementation of the strategy includes research, monitoring and evaluations with the support of conservation agencies. This will allow partners to learn from their mistakes and to adapt. Definitely, the success of wildlife conservation and forest livelihoods will depend on a radical revision of wildlife’s legislative framework so as to emphasize the key role of local people in managing and benefiting from wildlife through community based natural resource management.

## **1. Introduction**

The management of natural resources deals with the problems, issues, and needs associated with biodiversity conservation, local people and rules. Indeed, depending on the type of property regimes, state, private or communal, the cause of resource degradation is associated to the nature of its institutions. Acheson (2006) argued that there is no universal solution to the problems of resource management, but the rules should depend on the circumstances. These conditions include internal and external factors to the regulations, users, and resource. These interrelated features amplify the complexity of natural resources management. In the case of wildlife as common pool resource, its two characteristics cause serious problems, i) subtractability (i.e. the amount of the resource used by one person cannot be used by another) and ii) difficult exclusion of people from their use (Ostrom, 1990). The solution to managing common-pool resource is to establish rules limiting resource use in the interest of long-term sustainability. The challenge is how to design optimum rules that bring agreement between decision-makers and users depending on the circumstances. Acheson (2006) argues that the primary reason for conservation failure is that they cannot devise effective rules.

In Congo as well as around central Africa countries, local people have long managed and used forests for their own livelihoods in a particular context (Bahuchet, 1992). Since the central government took over forest management from the people through land reform laws, local communities have suffered by the lack of authority and forest management has undermined. These land reform laws have moved from the recognition of customary rights to their abolition.

Consequently, these reforms have contributed to the loss of ancestral lands, led to the loss of many aspects of local people's traditional lore and created by default an open access use of resources such as wildlife. However, informally, rural people still think that they are the owners of land because that is the legacy of their ancestors. The efficacy and legitimacy of functioning control are largely illusory, and de facto wildlife is an open access resource that is rapidly being depleted or locally extinct because of the gap between institutions and rural realities (Barnes and Child, 2014). For instance, the small hunting is qualified as a sport hunting while bushmeat is an important component of rural livelihoods. This alteration combined with economic development and technological changes have undermined forest dwellers' control over forest resources. These changes may lead to several threats to wildlife and its habitats including: human population growth, increase of demand for bushmeat, proliferation of guns and wire snares, the lack of alternative livelihoods, increase of commercial poaching (i.e. elephant), and bushmeat poaching (Wilkie et al., 2006; Poulsen et al. 2009). This modification in usage patterns of wildlife may cause market failure and undermine local legitimacy, participation, motivation, authority and/or traditional controls over wildlife affecting its sustainability. Poulsen et al. (2009) point out that the total biomass of bushmeat recorded in five logging towns in northern ROC was positively related to their populations. Wildlife is one of the central means of local people's livelihoods with an estimated 88% of households consuming bushmeat (Poulsen, 2009; Mbete et al., 2011).

*“Scientists now widely acknowledge that we live in a world dominated by humans, and therefore, the scientific underpinnings of conservation must include a consideration of the role of humans” (Kareiva and Marvier, 2012: 962). “We must admit that our legal system of private property plus inheritance is unjust-but we put up with it because we are not convinced, at the moment, that anyone has invented a better system” (Hardin, 1968:1247).* The following two quotes illustrate that conservation strategies should 1) consider villagers as an effective component of wildlife management (i.e. with full legitimacy) beside rulers and conservationists (Clark et al, 2012; Kareiva & Marvier, 2012) , 2)so far we do not have functional regulations surrounding CPR policy in general and particularly of wildlife.

We need to seek other opportunities, such as community based natural resource management (CBNRM), and adapt. The implementation of CBRNM which is at the core of this document is a panacea, but rather that we do know that national legislation on wildlife and hunting is suffering from incoherence and impracticality in the Congo. An approach based on collective action such as CBRNM is among optional solutions to address wildlife issues as a form of private collective ownership (Wade, 1987; Ostrom, 1990; Murphree, 1994; Hanna et al., 1996). Abensperg-Traun (2009) shows that in the developing world, many plants and animal species listed on the appendices of the Convention on International Trade in Endangered Species

of Wild Flora and Fauna (CITES) live outside protected areas where the use of wildlife is more an imperative than a choice. Thus, successful conservation of wildlife populations in Congo requires; fair and effective resource regulations that are clearly communicated and understood by resource users; the implementation of adaptive management strategies; enforcement of wildlife laws; and importantly participation of rural communities that depend on wildlife to support their livelihoods.

## **2. Why to have a Procedure Document?**

To advocate the participation of local people in wildlife conservation, we need to set up a strategic document as a procedure to follow. The goal of this process is to suggest how local people can be an effective stakeholder to address wildlife conservation issues. It deals with the problems, issues, and needs associated with biodiversity conservation, local people and natural resource management. Based on a survey implemented in 24 villages, 270 household heads and 72 keys informants in northern Congo from July 2013 to June 2014, we established this procedure to involve rural citizens in wildlife management. Previous conservation strategies have been focused on top-down approach that is based on command and control strategy (Holling & Meffe, 1996). Indeed, this approach does not have reached expected results.

As opportunity, this strategy explores local solutions for local wildlife challenges as the integration of rural people in conservation strategies. It seeks to promote bottom up approach. Following the preliminary results of my research, the implementation of the strategy includes the strengths and weaknesses to integrate local people in conservation strategies, the extent of usefulness of design principles (Ostrom, 1990) for understanding or managing CBNRM in Congo and the strategy including a set of axes. I do believe that fitting governance to local ecology, and how rules are formed and adapted, and whether users regard the system as legitimate and equitable, is the way to resolve these wildlife issues in the Congo.

## **3. Integrating Local People: Strengths and Weaknesses**

### **3.1. Strengths**

Our primary results have shown that:

- 1) In the buffer of Odzala Kokoua National Park, wildlife is one of the main sources of food; demand for it cannot change without alternative source of meat. Depending on the distance to the large cities, the majority of local people are seriously concerned about the sustainability of wildlife even though very few people still think that “wildlife cannot be finished because they are using it since their ancestors”. In other words, there is a positive correlation between the concern for wildlife extinction and the closeness to the big cities. Due to the importance of

wildlife in these rural areas, the pressure of hunting on forest mammals is progressively increasing.

2) Our study has confirmed (depending on the season) that the sources of animal proteins of forest peoples include mainly bushmeat and the fish with a very few domestic animals.

3) Local people don't participate in the enforcement of modern wildlife laws, and that their traditional rules have been undermined by new centralized regulations related to the land tenure, since villager territory is not formally owned by anyone other than the state. It has been indicated that people with positive attitudes toward an activity will be more likely to participate in it (Bagherian et al., 2009).

4) A recent study on elephants' status has shown that over the past decade, about 60 % of all forest elephants have been killed for their ivory in central Africa (Maisels et al., 2013). Hence, our concern focuses on where these flagship species have been poached? Inside or outside protected areas. If in the second case, involving rural people in the debate is strength to reverse dramatically this threat to elephants' populations.

All these points are considered as strengths to take action. They confirm our fear of wildlife extinction, if we cannot adopt a precautionary approach that incorporate forest dwellers for the benefit of ecosystems' health and human livelihoods such as community based natural resource management (CBNRM).

### **3.2. Weaknesses**

During our informal meetings, emerging perceptions include: i) rural people don't understand conservation (perceptions of some key informants), ii) what is community conservation (some people have asked us)? iii) Can rural people conserve wildlife (this was a question asked by many wildlife managers)? However, to involve people in conservation strategies such as CBNRM, we need to take into account some weaknesses such as:

1) The lack or weak political decentralization, this is likely an obstacle to promote CBNRM,

2) The fear of creative destruction (opposition to innovation), fear of change leads people to think, leave everything as it is. Rulers may also have fear of innovation that will lead to a loss of their power,

3) Our results have shown that even though people recognize that the sustainability of the wildlife resources is threatened, but abrogate the responsibility for solving these problems to government where the de jure power and responsibility lies. They did not demonstrate that they understood how to resolve the current problems with a CBNRM-type property rights based solution. They have had no exposure to solutions that to some may appear a radical departure from current centralized conservation practice, so in the words of Narayan (2000) they "don't have capacity to aspire" to ownership, they don't know what they don't know.

4) Local people revealed that although they were highly cooperative on social issues, this capacity did not extend to productive activities where the experiences with the cooperative movements were generally negative. Overall, local people were accustomed to believing that government was the only actor who can bring change to the management of their natural resources.

These weaknesses are the consequences of the nature of wildlife institutions. North (1990) argues that the capacity of social groups to act in their collective interest depends crucially on the quality of the formal institutions under which they reside. These limitations illustrate the circumstances in which are embedded wildlife regulations. To effectively manage wildlife, should first tackle with these obstacles following the principles of common pool resources.

#### **4. Guiding Principles of the Procedure Document**

Wildlife in Congo is a common pool resource (CPR). The framework of CPR theory includes resource systems, community systems, rules in use, and external factors. All these constructs interact to produce an outcome. I can understand that the management of CPRs is institutions matter and that local people, as well as state governments, can successfully manage resources through common property regimes varying in scale and space in accordance with the concepts of that theory. Thus, CPR issues are embedded in socio-ecological systems. The major common characteristic of common resources is that the outcomes of utilization are collective, not individual. The transaction cost and collective action approaches central to new institutional economics lead to social arrangements that regulate human behavior (North, 1994; Williamson, 2000; Ostrom, 1990). Therefore in the context of CPR, Ostrom (1990) after investigating the question about why institutions have succeed, failed or are weaken depending on the settings, establishes the conditions under which these institutions will work best and specifies “design principles” which include the need for clear resource boundaries, relative socio-economic homogeneity among users, sanctions, rules, monitoring, etc. The intent of these conditions is how to well organize to avoid the adverse outcomes of independent action. As annotates above, these principles are at the core of regulating human behavior at the local community level in the use of CPRs such as wildlife.

In the context of wildlife management in Congo, I ask are these principles useful to manage CBNRM in ROC. In Congo, there is an overlapping formal and customary claim to forest resources; rural people are still informally thinking that they are the owners of land because that is the legacy of their ancestors, whereas formally land is state property. With regard to the framework of CPR, communities, resource systems, rules and external environment

interact to produce a given outcome such as participation in wildlife management. To assess the usefulness of CPR principles to promote CBNRM in Congo, I want to analyze the current Congo's wildlife institutions performance in terms of strengths and weaknesses to achieve a success or failure compared to the design principles of CPR (Table 1). This table includes design principles, current Congo wildlife institutions performance and associated factors in terms of strengths and weaknesses. I also incorporate some recommendations to make the design principles useful in the CBNRM management in Congo to guide the procedure.

**Table 1:** Design principles as guides of the procedure document

#	Design principles (Ostrom, 1990)	Current Congo wildlife institutions performance and associated factors		Recommendations
		Strengths	Weaknesses	
1	Clearly defined boundaries: Individuals or households who have rights to withdraw resource units from the CPR must be clearly defined, as must the boundaries of the CPR itself	Community boundaries (villagers, households are known) (i.e. who can have rights)	Resource boundaries are informal by the lack of national zoning	To make the principle 1 useful to manage CBNRM it requires to develop a national zoning to establish jurisdictional, functional, spatial, ecological or temporal systemic relationships
2	Congruence between appropriation and provision rules and local conditions: Appropriation rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and provision rules requiring labor, material and/or money.	Villagers use seasonal migration for hunting purposes (i.e. traditional wildlife management strategy)	Inappropriate wildlife legal framework to the reality in the field and unrealistic provisions related to types of hunting, nature of species and capture technologies permitted, dates of opening and closing of hunting seasons, etc.	To make the principle 2 useful to manage CBNRM it requires to re-examine regulations governing the types of hunting, nature of species to hunt, capture technologies permitted, dates of opening and closing of hunting seasons, etc. in accordance with local conditions
3	Collective-choice arrangements: Most individuals affected by the operational rules can participate in modifying these operational rules.	Rural people have their local knowledge of wildlife management and know their traditional rights to control access to land and wildlife	Command-control approach Lack of devolution rights Lack of democracy in rules making (participatory approach)	To make the principle 3 useful to manage CBNRM it requires institutional arrangements devolve rights to local people as a way of their empowerment to participate in rules making process
4	Monitoring: Monitors, who actively audit CPR conditions and appropriator behaviors, are accountable to the appropriators or are the appropriators.	Rural people know very well their traditional territories. Easy to find out who is outsiders during the monitoring	Current wildlife regulations lack local legitimacy since state is the de jure owner of land (i.e. forest dwellers perceive that land is for no one)	To make the principle 4 useful to manage CBNRM, we need to develop a local entity or institution that can control access to forest and wildlife and can monitor wildlife rules and take into account local knowledge
5	Graduated sanctions: Appropriators who violate operational rules are likely to be assessed graduated sanctions (depending on the seriousness and context of the offense) by other appropriators, by officials accountable to these appropriators, or by both	Traditional knowledge of natural environment management exists such sacred sites, taboos and temporal and spatial use of some zones	Lack of national zoning Mismatch between provision rules and local conditions. Current formal regulations are unrealistic compared to the local conditions (i.e. principle 2)	To make this principle effective to manage CBNRM in the Congo, as stipulated in the principle 2, institutional arrangements must match provision rules to local conditions (i.e. traditional knowledge of natural environmental management, mapping sacred sites and other important zones)
6	Conflict-resolution mechanisms: Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators or between appropriators and officials.	Currently in Congo, at the village level there are some opinion leaders and/or traditional knowledgeable people	There are not recognition of traditional authority by formal regulations Lack of social legitimacy	To make this principle effective, decentralization and devolution of rights must be effective Institutional arrangements must take into account the role of traditional authorities and institutions.
7	Minimal recognition of rights to organize: The rights of appropriators to devise their own institutions are not challenged by external governmental authorities.	There is currently a formal recognition of local associations. There are several churches as social organizations in rural areas	Social movement is a new initiative in Congo since about ten years ago social movements were illegal in Congo. The lack of capacity building in collective actions	To make successful this principle we first need institution arrangements that devolve rights and take into account local knowledge, second to build capacity of local people and then to provide education and awareness campaign to local people.
8	Nested enterprises: For CPR that are part of a larger system, the appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises	Informal boundaries are clearly recognized by rural people. De fact rural people are still believing that they are the owners of forest and its resources	The lack of effective decentralization and devolution of rights render ambiguous the effectiveness of nested institutions	To make effective this principle we need decentralization, devolution of rights, and national zoning that allocated particular zones to particular activities and inside polygon and outsiders users

## 5. Strategy

This procedure is based research evidences to negotiate with decision-makers how villagers can be part of wildlife conservation policies. To implement this strategy document, we have to seek a full support (i.e. financial and logistic) from wildlife international conservation agencies. During this study, WCS-Congo program was very impressed about this topic (i.e. wildlife conservation and human livelihoods). This strategy is a tool to advice the involvement of wildlife conservation into local livelihoods by empowering local communities to control and regulate hunting on their land. It helps wildlife managers be informed about potential necessary components to reach this goal. The substance of the procedure includes:

- Wildlife legal framework arrangement and associated regulations (i.e. land tenure);
- Capacity building of rural people, local NGOs and decision-makers.
- Environmental education and communication program;
- Implementation, monitoring and evaluation of the strategy

This procedure is designed to help alleviate threats to wildlife via enacting several strategies including establishment of long term monitoring datasets, establishing importance of bushmeat in the livelihoods of rural peoples, developing potential and environment for local collective action, and investigating the impact of proposed new policies for natural resource management. The implementation of strategy will lead to the specific results (Table 2).

**Table 2:** Strategic axes and expected results

Main themes	Outcomes
Wildlife legal framework arrangement and associated regulations (i.e. land tenure)	<ul style="list-style-type: none"> <li>- Local people have property rights including exclusion rights</li> <li>- Formalization of villagers' hunting zones</li> <li>- Clear and measurable local management systems through genuine devolution for rights and responsibilities (villagers know who can hunt in their territories and hunting methods).</li> <li>- Rationalization of benefits sharing including transparency, gender equity for income from forest resources management, ecotourism, Safari hunting, etc.</li> </ul>
Capacity building of rural people, local NGOs and rulers	<ul style="list-style-type: none"> <li>- Local people are trained to recognize threats to wildlife, potential solutions and obstacles, and consequences of wildlife extinction (i.e. environmental interpretation), organizational structures /collective actions and alternative sources of food and income.</li> <li>- Officers are trained in partnership mechanisms, hunting pressure indicators, conflicts in natural recourses management, benefits sharing</li> <li>- Local NGO are trained in technical assistance to local people, effective management skills (human , financial and logistic resources) and local NGO are effective brokers between macro-level and micro-level</li> </ul>
Environmental education and communication	<ul style="list-style-type: none"> <li>- Environmental education and communication plan is available, implanted and monitored</li> <li>- Partnership in wildlife conservation is effective with local people as an effective steward of wildlife resources</li> </ul>
Implementation, monitoring and evaluation of the strategy	<ul style="list-style-type: none"> <li>- Monitoring of zoning by local people</li> <li>- Outsiders are excluded</li> <li>- Alternative sources of food and income are promoted as means to reduce pressure on wildlife</li> <li>- Monitoring of hunting pressure indicators</li> </ul>

## **5.1. Wildlife Legal Framework Arrangement and Associated Regulations**

In Congo, land tenure and wildlife regulations are highly centralized. Their mismatch to local circumstances combined to their lack of effective enforcement has created by default an open access use of wildlife resources. Transforming wildlife institutions will require a technical understanding of the nature of resource in relation to property rights, a pragmatic political understanding of what is possible and what changes will be resisted, and the ability to encourage stakeholders to solve what is emerging as a critical problem in which all stakeholders are losing.

Our findings have shown that modern land tenure and wildlife regulations undermine local ability to control access to hunting, because local people have a good understanding of their traditional (informal) rules or wildlife regulations, but cannot implement them because wildlife was nationalized directly and indirectly (i.e. is on “land for everyone”, and therefore no one can exclude outsider) and this has undermined customary rights since the early 1960s. Resolving these challenges at the local level the issue is unlikely while local people still believe that the responsibility for acting lies with the Government. Rowcliffe et al. (2004) argued that people will not comply with laws for the protection of some species of large mammal without enforcement. However, laws will remain on paper if they are not supported by enforcement capacity and/or local legitimacy and understanding.

Overall, institutional arrangements should have a bundle of rights including exclusion rights based of formal zoning with rural people as effective wildlife stewards. This first step of procedure is the phase of policies development and legislation to provide a legal framework for the introduction of participatory wildlife management as CBNRM. This will follow by capacity building of actors.

## **5.2. Capacity Building of Stakeholders**

Our research suggests that Congo needs a new legal and institutional approach to the serious problem of unsustainable hunting and livelihoods that need to be supported by capacity-building, skills training, and other empowerment initiatives into rural development programs. Positive outcomes depend on sound (devolutionary) policy and leadership at macro level, capacity-building and facilitation at meso-level, and effective governance and management at micro-level which, if not designed carefully, holds within it the dangers of elite capture.

This strategy will advocate for the development of local organizations which are the participatory wildlife management approaches. Through these organizations local people will be trained to specific topics. This will allow them to be more capable to control and regulate hunting and to monitor hunting pressure. We must know that depending on the richness in forest ecosystems, wildlife cannot provide sufficient incentives for local people to control bushmeat

hunting as it is the case in Southern African countries. Thus, to provide forest dwellers finance support and to seek the way to diversify rural economic activities, they will train in promoting other alternatives activities. As well as ; benefits sharing from sustainable forest management will incorporate as incentives. Local NGO as well as rulers will be educated in specific themes. The capacity building of all wildlife managers and villagers will provide skills and knowledge in conservation and sustainable use of biodiversity and rural livelihoods.

### **5.3. Environmental Education and Communication**

Environmental education and communication program is an additional way to build capacity of officers, national NGO and villagers. This is very important to support institutions and to provide assistance to communities when implementing new legislations. The implementation of this axis will need planning activities. These activities will include inter-related topics from restrictions to sustainable livelihoods.

### **5.4. Implementation, Monitoring and Evaluation of the Strategy**

When implementing the strategy, we will promote monitoring and evaluations which will allow people to learn from their mistakes and to adapt. To implement this strategy document, we have to seek a full support from international conservation NGO such as WCS-Congo program. The implementation of strategy will lead to the specific outcomes (Table 2).

## **5. Conclusion**

The success of wildlife conservation and forest livelihoods will depend on a radical revision of wildlife's legislative framework so as to emphasize the key role of local people in managing and benefiting from wildlife through community based natural resource management. To avoid repeating the mistakes of the past, strategies related to community based natural management should be sustained by adequate theoretical framing that includes economics, governance, empowerment, monitoring and adaptive management. It is important that practitioners communicate with local users to understand why the current legal framework is not working, to understand local people's livelihood priorities, and to understand how to resolve current problems by combining the best of traditional practice and modern institutions. We propose a robust decentralization strategy that combines effective institutions and the development of local management capacity at the local level coupled with technical support and oversight from a strong central level the local level can't work without the support of the central

level and, counter intuitively, officials are likely to become more important and influential if, by devolving power, they create effective management at the local level.

This procedure document is an ongoing and dynamic process. During its implementation, lessons learned from its monitoring and evaluation will provide ongoing feedback to continuously improve the integration of local people in wildlife conservation strategy. To cope with the emerging issues, we should adopt the adaptive management approach. Thus, as an innovative instrument, this procedure should be flexible. Therefore, throughout its performance, we assume that making mistakes is normal but we have to learn from them and adjust.

## 6. References Cited

- Abensperg-Traun, M. (2009). Sustainable use of wild species and incentive-driven conservation in developing countries, with an emphasis on southern Africa. *Biological Conservation*, 142(5), 948-963
- Acheson, J. M. (2006). Institutional failure in resource management. *Annu. Rev. Anthropol.*, 35, 117-134.
- Bahuchet, S. (1992). The Situation of Indigenous Peoples in Tropical Forests. Apft pilot report.
- Barnes, G., & Child, B. (Eds.). (2014). *Adaptive Cross-scalar Governance of Natural Resources*. Routledge.
- Clark, C., Poulsen, J. R., Mavah, G. A., Moukassa, A., Nsosso, D., Kimbembe, K., & Elkan, P. W. (2012). *Land-use planning in a co-management context: Establishing access regulations that promote biodiversity conservation and support local livelihoods* (pp. 63-85). Wiley-Blackwell, Oxford, UK.
- Hanna, S.S., Folke, C., and Maler, K.H. (1996). Property Rights and the Natural Environment In: Hanna, S.S., Folke, C., and Maler, K.H. Rights to Nature, 1-10.
- Hardin, G. (1968). The Tragedy of the Commons, *Science*, New Series, 162(3859), 1243-1248.
- Holling, C.S. and Meffe, G.K. (1996). Command and Control and the Pathology of Natural Resource Management, *Conservation Biology*, 10(2), 328-337.
- Kareiva, P. & Marvier, M. (2012). What is Conservation Science? *BioScience*, 62(11), 962-969.
- Maisels F, Strindberg S, Blake S, Wittemyer G, Hart J, et al. (2013). Devastating Decline of Forest Elephants in Central Africa. *PLoS ONE* 8(3), e59469.doi:10.1371/journal.pone.0059469
- Mbete, A.R., Mboko, B.H., Racey, P., Ntsakala, M.A., Nganga, I. and Doucet, L.J. (2011). Household bushmeat consumption in Brazzaville (Congo). *Biol. Sciences*, 4(2), 187-202.
- Murphree, M. (1994). Communities As Resource Management Institutions, International Institute for Environment and Development, *Gate Keeper Series*, 36, 14p.

- North, D.C. (1990). *Institutions, Institutional Change and Economic Performance* New York: Cambridge University Press
- North, D. (1994). *The New Institutional Economics and Development*
- Ostrom, E. (1990). *Governing the commons: The Evolution of Institutions for Collective Action*, Cambridge: Cambridge University Press, Pp. 280.
- Poulsen, R.J., Clark, J.C., Mavah, G. and Elkan, P. (2009). Bushmeat supply and consumption in a tropical logging concession in northern Congo. *Conservation Biology*, 23(6), 1597-1608.
- Rowcliffe, J. M., De Merode, E., & Cowlishaw, G. (2004). Do wildlife laws work? Species protection and the application of a prey choice model to poaching decisions. *Proceedings of the Royal Society of London. Series B: Biological Sciences*, 271(1557), 2631-2636.
- Wade, R. (1987). The management of common property resources: collective action as an alternative to privatization or state regulation. *Cambridge Journ. of Econ.*, 11, 95- 106.
- Wilkie, S.D., Morelli, A. G., Demmer, J., Starkey, M., Telfer, P. & Steil M. (2006). Parks and people: Assessing the human welfare effects of establishing protected areas for biodiversity conservation. *Conservation Biology*, 20(1), 247–249.
- Williamson, O.E. (2000). The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature*, 38(3), 595-613.