NATIONAL BEST PRACTICES REPORT
Democratic Republic pf Congo (DRC)

NBI / NTEAP / MGP
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Acronymes and Abréviations

AGRED	Action pour une Gestion Rationnelle, la Réhabilitation des Ecosystèmes en danger et un Développement Durable
AMAVERU	Association des Mamans Veuves de Rumangabo
APRONA	Appui aux Projets pour la Protection de la Nature
BP	Best Practice
CODESAGOT	Conseil de Développement pour la Sauvegarde des Gorilles de Thiaberimu
DRC	Democratic Republic of the Congo
EEA	Environmental education and awareness
FAO	Food and Agriculture Organization of the United Nations
ICCN	Institut Congolais pour le Conservation de la Nature
IGCP	International Gorilla Conservation Programme
MGP	Micro Grant Project
NBI	Nile Basin Initiative
NGOs	Non Governmental Organization
NTEAP	Nile Transboundary Environnemental Action Plan
SVP	Shared Vision Programs
UNDP	United Nations Development Program
UNOPS	United Nations Office for Project Services
VONA	Voix de la Nature
WFP	World Food Programme

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Executive Summary

The Nile Transboundary Environmental Action Project (NTEAP) is one of the eight projects under the Nile Basin Initiative Shared Vision Programs (SVP) with the objective to provide a strategic environmental framework for the management of the transboundary resources and environment challenges in the Nile River Basin.

In 2007, NTEAP embarked on a major exercise to identify, review, select and document the best practice projects that have the potential to be sustainably replicated and/or up scaled within the countries of the basin. However, in DRC, the exercise has been conducted in 2009.

In environmental management, the concept of best practice is defined as the most efficient and effective series of outcomes that have proven desirable and further generate sustained impact, both on the resource base and beneficiaries and, as such, they could be further replicated or up-scaled in similar ecosystems. The results of best practice exercise carried out in DRC brought out four (4) best practices based on a number of attributes and sieve criteria. Each of them has particular and accrued benefits summarized as follows:

Construction and rehabilitation of fish ponds project in Rutshuru Territory has been selected as best practice due to the valorization of traditional fish farming system into modern one which is more productive and further contributed both to the welfare of the beneficiaries and reduced pressure of the over exploited natural resources of Lake Edward. Towards the end of the project, target beneficiaries acquired and further disseminated new and productive fish farming technology among other communities.

Promotion of mushroom (Pleutotus ssp.) cultivation in riparian community of Virunga National Park project contributed to the protection of Virunga National Park through the development of income generation activity for the benefit of riparian and vulnerable groups. The practice is very gender sensitive and vulnerable groups focused because association members are guards' spouses and widows who are all from poor families. The most innovative part of the practice is the in vitro production of mushroom seeds by women with induction training and orientation.

Support of rotary goats breeding for vulnerable households around Mount Thiaberimu project is a successful and effective participatory conservation practice, which addressed both biodiversity threats and livelihoods issues. It contributed to the reduction of encroachment over the Virunga National Park biodiversity, especially at the side of Mountain Tshiaberimu.

In addition to the environmental benefits, the practice has other advantages in terms of improving subsistence means of beneficiaries. The practice has many social benefits because it enhanced social cohesion and peaceful cohabitation among community members. Women usually bear the primary responsibility of keeping and further nursing the goats and get charge of animal production.

Tree planting and soil conservation practices around Mount Tshiaberimu project contributed to the stabilization of the watershed and retention of soil fertility and provided wood for domestic use, so it contributed in the reduction of human pressure on the natural forest of Virunga National Park, especially at the side of Mountain Thiaberimu. The practice contributed also to the restoration of vegetal cover and the improvement of soil fertility, soil erosion control, stabilization of the hydrology system and regulation of the rainfall.

Introduction

North Kivu is one of the Eastern Provinces of the Democratic Republic of Congo (DRC). The total land area of the province is: 59,483 km² out of 2.345.000 Km2 for the whole DRC. The population of North Kivu is estimated at 3,564,434 (est. 1998) and the density is 59.92/km².

Since August 2008, prevailing unrest less in the Democratic Republic of Congo (DRC), North Kivu Province, had created a humanitarian catastrophe by displacing more than 250,000, killing of innocent civilians, disrupting aid efforts and destroying critical infrastructure and the environment. Virunga National Park is the most affected by human activities. The rate of deforestation of this National Park, which forms the habitat of the world famous but seriously threatened mountain gorillas, is incredibly high. It is important to note that the mountainous Virunga-forest has an important function from a climatic perspective. The ecological functions of the tropical forest (water absorption, evaporation, carbon absorption) are important for climate regulation at local, regional as well as global levels.

In 2001, the Nile Basin countries undertook a transboundary environmental review with the aim to guide the preparation of the Nile Transboundary Environmental Action Project (NTEAP).

The NTEAP is one of the eight projects under the Nile Basin Initiative Shared Vision Programs (SVP) whose main objective is to provide a strategic environmental framework for the management of the transboundary resources and environment challenges in the Nile river basin. The project has implemented pilot activities within Nile basin countries, in collaboration with all stakeholders (local administration, NGOs, communities and schools).
Most of the implemented activities impacted positively both the environment as well as the human wellbeing in terms of income generation and poverty alleviation.

In 2007, NTEAP embarked on a major exercise to identify, review, select and document techniques and processes that have the potential to be sustainably replicated and/or up scaled. In support of this process, a regional workshop was held in Kigali in August 2007 in order to enhance the capacity of the National Coordinators in the identification and selection of the best practices in their respective countries. The first phase of best practice exercise had not been accomplished because of insecurity in the project sites and also DRC National Project Coordination was vacant when the best practices exercise was condcuted in Rwanda and Burundi.

The present best practice documentation, undertaken since the end of April 2009, covered five projects, based on the fulfillment of a number of basic attributes and a comprehensive Sieve Process. The following are the best practices visited: (a) construction and rehabilitation of 5 fish ponds in Rutshuru Territory; (b) promotion of mushroom cultivation (Pleutopus sp. and Ganoderm); (c) reforestation and environment education; (d) support of rotary goats breeding for vulnerable households around Mount Thiaberimu (Virunga national park); and (v) tree planting and soil conservation practices around mount Tshiaberimu. We have to point out that, the BP exercise has been conducted in DRC during an insecurity period and within a limited time so that it was impossible, at the time, to review projects which are located in unsafe places.

The sieve scores used for selecting the above best practices are:

- contribute to environmental conservation and poverty reduction (15)
- effectiveness/significant impact (15)
- innovativeness (10)
- efficiency (10)
- replicability and up-scaling (10)
- sustainability (10)
- environmental education and awareness (EEA) (10)
- inclusiveness (Gender sensitivity and vulnerable groups) (10)
- enhance regional cooperation (10)

The table (annex 1) shows how all selected best practices were ranked according to the merit score (out of 100) of each best practice.

2. Best Practice Concept: Basic Definition

Generally, the art of best practice asserts that it is an effective outcome (s) brought about a particularly design, a technique, a process, a methodology and finally delivered with few complications. Operationally, in environmental, the concept of BP, is literally defined as the most efficient and effective of series of accomplishment that have proven desirable and sustain impact both on the resource base and beneficiaries which could further be replicated in other areas, advisably with record multiplier value. Specifically, as a conduct for knowledge management, the best practice concept facilitates wide exchange of information, enhances trading of sustainable good operating systems and promotes regional cooperation.

3. Best Practice (1): Construction and Rehabilitation of Fish Ponds in Gisigari, Bukoma and Busanza Groupements in Rutshuru Territory

3.1. Background:

The ppulation of Rutshuru territory is facing deficiency in animal protein and the permanent malnutrition rate is estimated at 45.4%. The existence of old and abandoned fish ponds containing very few fish are creating proper conditions for mosquitoes breeding and the spread of malaria and bilharzias instead of providing fish. So, population health was weakened both by insufficient protein intake and diseases. The project consists of construction and rehabilitation of 5 fish pond among which 4 are located in Gisigari and Busanza groups. Main activities are the acquisition of equipments, herb cutting and reed, canalization, construction of dike, fingerlings sowing and the training of beneficiaries.

3.2. Problem Statement:

There has been a lack of fish in the city of Goma and locally because of the decrease of fish production in Lake Edward which is the main source of fish found in the city. The number of fishermen had increased drastically from 25,000 before the war to 150,000 thereafter in Lake Edward. Consequently, the production of the lake decreased due to over exploitation. The size of captured fish had also decreased from 1.5 kg in 1972 to 0.2 kg at present. A part from the lake, there were a number of fish ponds in Rutshuru Territory that had been abandoned because of the prevailing war in the region. The deficiency of fish is one of the causes of malnutrition in the province of North Kivu in general and in Goma and Rutshuru Territories in particular. Two possible ways of coming out of the insufficiency in fish are : the first is to ensure a sustainable exploitation of Lake Edward; and the second is the development of fish farming through the rehabilitation of old fish ponds and the construction of new ones.

3.3. Justification for selection (innovativeness)

The development of fish farming is the most appropriate way to provide fish to consumers than the development of fishery in Lake Edward where it is not easy to ensure fair exploitation because of the insecurity situation in the area. The current fish farming system is executed with new and innovative techniques of breeding and feeding and requires permanent care in terms of hygienic conditions, eradication of predators and toxics plants within fish ponds, so that the productivity of fish ponds remains high. Fish are fed using local products like waste of local breweries, sorghum and rice, gourds, green avocados, cassava leaves and so on. In the past time farmers did not know that fish farming should be managed day to day by providing necessary cares as it is done for cattle, goats and pigs.

Also, the practice encouraged mono-specific fish farming in order to avoid competition and predation, because in the past time fish farmers used to mix many species of fish in the same pond.

3.4. Technical Approach: Design and Methodology

There are two possible ways to ameliorate the situation of insufficiency in fish: firstly, to ensure a sustainable exploitation of Lake Edward; and secondly, the development of fish farming through the rehabilitation of old fish ponds and the construction of new ones. Fish farming was most appropriate way to provide fish to consumers than fishery in Lake Edward where it is not easy to ensure fair exploitation because of the insecurity situation in the area. To that effect, the project has introduced the construction and rehabilitation of 5 fish ponds among which 4 are located in Gisigari and Busanza areas (see plates 1 and 2). The current fish farming system is executed with new and innovative techniques of breeding and feeding and requires permanent care in terms of hygienic conditions, eradication of predators and toxic plants within fish ponds in order to ensure high productivity.

Plate (1): Dikes of "Shauri lako" Fish Pond

Plate (2): Active Fish Pond

The main objective of the project is to help the population of North Kivu Province in general and that of Rutshuru Territory in particularly to come out of the insufficiency of fish protein and to improve their livelihood through increasing fish production. The project strategy is five fold: firstly, empowering fish farmers with new productive techniques; secondly, fully involving beneficiaries in the whole process of fish production; thirdly, promoting mono-specific fish farming in order to avoid competition and predation; and fourthly, valorization of local an cheap material in fish feeding; and fifthly, further enhancing the capacity of women in fish farming.

The implementation strategy of the project included: (a) sensitization and awareness raising of local population on new ways to come out of insufficiency of protein; (b) building tha capacity of fish farmers through study visits and training on improved and more productive techniques; (c) active community involvement in fish ponds rehabilitation and production;

(d) promotion of mono-specific fish farming in order to avoid competition and predation; (e) promotion of environment protection through the planting trees around the fish ponds; and (f) empowering women through fish commercialization activities. The main activities carried out include the following:

- study visits of fish farmers;
- training of fish farmers;
- equipments acquisition;
- construction/rehabilitation of fishponds which include herb cutting, canalization and dike construction;
- sowing of fingerlings;
- feeding are providing necessary cares;
- selling of fish by women; and
- planting of trees around fishponds.

The direct project beneficiaries are fish farmers and community living in Rutshuru Territory, specifically in Gisigari, Bukoma and Busanza groupements. The main stakeholders are NTEAP/MGP, ICCN; ICGCP; Provincial Division of Fishery/Ministry of Agriculture; Local administration (Rutshuru Territory and localities); CBOs and local fish farmers**.**

3.5. Partnership

NBI/NTEAP/MGP; ICCN; ICGCP; Provincial Division of Fishery/Ministry of Agriculture; Local administration (Rutshuru Territory and localities); CBOs and local fish farmers**.**

3.6. The Essence of Best Practice*:* Benefits and Lessons learnt

Physically, the project of fish ponds rehabilitation contributed to increased fish production in 5 fish ponds covering an average of 8 hectares surrounded by around 60 hectares of trees. The project contributed to the perpetuation of the best species of fish and reduction of the over exploitation of Lake Edward. Tree plantation around fish ponds proved to be important in the restoration of the vegetation and protection of the entire environment.

The project has some other socio-economic benefits: (a) fish farmers acquired useful knowledge related to innovative techniques of fish breeding and tree planting where 50 farmers were trained in fish pond construction, management of association and cooperatives and the development of the network; (b) promotion and dissemination of fish farming activity in the area by producing and providing fingerlings to other farmers in order to replicate the practice, so that in the upcoming years fish production will increase and fish will be available on the

market at an accessible price; (c) income generation and poverty reduction where the owner of one fish pond could harvest 4000 kg of fish and gained a lump sum equivalent to US$ 2,100. The other benefits of the project were the transformation of traditional fish farming system into new and improved system. On the gender perspective the project succeeded in engaging vulnerable groups, both men and women, particularly widows, orphans and absolute poor.

Plate (3) : Women in Shauri Lako Pond Selling Fish

Environmentally, the practice (project) contributed to the perpetuation of the best species of fish and reduced the over exploitation of Lake Edward. Tree plantation around fish pond is important to restore the vegetation and protect the entire environment.

3.6.2. Sustainability:

The sustainability of the practice is guaranteed by the following elements:
(a) beneficiaries acquired the needed technical knowledge; (b) the interest and motivation of beneficiaries to expand the practice by providing free fingerlings to others farmers; and (c) the practice is generating revenue for self financing. The fact that the practice is being replicated by others is a good indicator for its sustainability.

3.6.3. Replicability:

The replication and the up scaling of the best practice are possible and can be facilitated by the techniques acquired and the availability of low cost labor that is why the owner of “Shauri lako” fish pond is constructing another pond. Three other farmers are interested in the practice and got fingerlings from the first fish farmer. Nevertheless, some precautions should be taken. As stated in design and methodology point, the pond should be well technically designed with appropriate inlet and outlet water system in order to guarantee a good aeration of the pond. The undertaking of the practice at a large scale needs support form donors and Government.

Plate (4): Women of Shauri Lako Pond Sharing Fish for Sale

3.6.4. Limitations and Challenges:

The main limitations to the development of fish farming activity in the area include: (a) the prevailing insecurity in the region; and (b) insufficiency of resources to engage all the target groups.

3.6.5. Conclusion:

The sustainability of the practice is guaranteed by the following elements:
(a) target groups acquired improved fish farming techniques; (b) beneficiaries are interested and motivated to expand the practice by providing free fingerlings to other farmers; and (c) the practice is generating revenue for self financing. Both replication and up scaling of the best practice are possible and can be enhanced by the above mentioned elements. However, some precautions should be taken during the replication of the practice namely, ponds should be well technically designed with appropriate water inlet and outlet system in order to guarantee a good aeration of the pond and fish population should be regularly nourished with appropriate food and hygienic conditions.

4. Best Practice (2): Promotion of Mushroom (Pleutotus ssp.) Cultivation in Riparian Community of Virunga National Park.

4.1. Background:

People living around Virunga National Park used to eat wild mushroom that grows naturally in the bush or forest. This traditional picking of spontaneous wild mushroom for household's survival is one of the reasons of encroachment of the riparian communities over the Virunga National Park and consequently deterioration of the natural resources inside the Park. In additional, after the war, guards of Virunga National Park were not paid their salaries, hence they were not motivated to effectively protect the Park from poaching.

The right way thought for protecting natural resources and conserving the biodiversity of the National Park was to promote alternative sources of subsistence, such as mushroom cultivation. The project introduced such activity for women (wives of park guards) living around the Park in order to avoid/reduce pressure on park biodiversity (see plates 1 and 2). In fact the project provides protein to households, generates revenue to the beneficiaries and reduces pressure on the National Park resources.

Plate (1): AMAVERU Members/Spouses of Guards Trained in Mushroom Cultivation

Plate (2) : Sample of Mushroom Produced by AMAVERU Members

4.2. Problem Statement:

After the endless war, guards of Virunga National Park were neglected and were not paid their salaries. So that they were reluctant to effectively protect the Park from poaching of wild animal and tree cutting. The right way of protecting natural resources of the Park is to promote alternative sources of subsistence for riparian communities, including the park guards and their families. The promotion of mushroom cultivation by wives of park guards and widows is one of the most appropriate practices that address efficiently the issue of encroachment and poaching. In fact it provides protein to households, generates revenue to the beneficiaries and reduces pressure on the National Park resources.

4.3. Justification for selection (innovativeness):

People living around Virunga National Park used to eat wild mushroom that grows naturally in the forest. This traditional picking of mushroom was always a mean to encroach over the natural resources inside the Park. The present practice is innovative because it brings positive changes in the behavior of the local communities by introducing mushroom cultivation practice in order to reduce encroachment/poaching and dependency of local communities vis-à-vis the National Park resources. The practice also motivates the park's guards whose families are provided with subsistence means through their wives. The most innovative practice is the in vitro production of mushroom seeds by women following a capacity support programme.

They are the first ones in the region doing such scientific activity, which is uaually done by scientists in sophisticated laboratories.

4.4. Technical Approach: Design and Methodology

The main objective of the project is to protect Virunga National Park and its biodiversity through the promotion of alternative sources of subsistence for the benefits of riparian community, specifically in Rumangabo village. It is in this regard, “Mushroom Cultivation Project” has been undertaken by members of AMAVERU Association who are wives of the guards of the Virunga National Park.

The project strategy is three fold: firstly, motivate park guards whose families are provided with alternative source of subsistence; secondly, reduce the pressure and the encroachment over the natural resources of the Park; and thirdly, the acquisition of scientific knowledge such as mushroom seeds production in vitro, by vulnerable groups.

The implementation strategy of the project include: (a) sensitization of wives of park guards and widows of Rumangabo village, operating under “AMAVERU Association” in order to participate in Virunga National Park protection;
(b) provision of training on mushroom production, especially seeds production; (c) supply of the right equipment; and (d) participation of all stakeholders in the area including local community, local administration, NGOs and publics institutions involved in National Park protection.

The main activities carried out include:

- identification of direct beneficiaries;
- training of members of AMAVERU association;
- purchase of laboratory equipment and other material for mushroom production;
- raising seeds by members of the association;
- commercialization of mushroom.

The direct project beneficiaries are wives of Virunga National Park guards and widows and their respective families living around the park, specifically in Rumangabo village. The main stakeholders are NBI/NTEAP/MGP; ICCN; IGCP; WWF Kacheche; local administration and community of Rumangabo village. All of them are supporting the same activity either technically or financially.

Plate (3): Spouses of guards and widows trained in mushroom cultivation

4.5. Partnership:

NBI/NTEAP/MGP; ICCN; IGCP; WWF Kacheche; and local administration. All of them are supporting the same activity either technically or financially.

4.6. The Essence of Best Practice*:* Benefits and Lesson Learnt

First of all the project makes vulnerable groups including widows and wives of guards, contributing effectively to the protection of a fragile ecosystem like Virunga National Park and its natural resources (fauna, flora and water) through the provision of alternative source of revenue. Secondly, the net income of park guards' families was improved by mushroom cultivation, while the guards were then fully motivated to protect the park. Thirdly, illiterate people had been trained and acquired seeds production in vitro (in laboratory) which is a scientific and sophisticated activity (see plates 4 and 5).

Plate (4): Trained Women Showing Seeds they Produced in the laboratory

Plate (5): Some laboratory Equipment and Material for Mushroom Production Process

The other benefits from the project were as follows: (a) reduced poaching practice and safe tourism within the National Park; (b) reduced risk of poachers and guards who were hunting each others; and (c) mushroom cultivation was an efficient income generating activity: 10 kg of mushroom produced per day sold for US$ 50, hence beneficiaries were able to gain the equivalent of US$1500 per month. Because of the high demand for good quality mushroom, beneficiaries were expecting to up scale the activity, but unfortunately they were impeded by the war. Finally, the practice is very gender sensitive and vulnerable groups focused.

4.6.2. Sustainability:

When the activity is operational, the income generated can be utilized to sustain further production. The availability of permanent and high demand is a guarantee of market for mushroom products.

4.6.3. Replicability:

The replication and up scaling of the present best practice is possible. However, it needs more material and equipment. Trained women are well equipped to train many others in communities surrounding Virunga National Park. The practice will have a positive and effective impact both on the environment and the communities when the practice is up scaled and replicated around the entire National Park. There is a need of more funding from donors and the government.

4.6.4. Limitations and Challenges:

The major risk is the insecurity in the region which obliged sometimes the resident to flee away from their localities.

Other limitations are the insufficiency of funds for up scaling the practices, the insufficient materials and equipment (water tank, refrigerator, generating set, solar panel and laboratory material) and the degeneration of seeds.

4.6.5. Conclusion:

The most innovative practice is that illiterate people had been trained and acquired seeds production techniques in vitro (in laboratory), which is a scientific and sophisticated activity. The project contributed efficiently to the wellbeing of guards' families so that they were motivated to protect Virunga National Park. Income generated by the project can be utilized to sustain the production. The project would bring in positive and effective impact both on the environment and the communities when it is finally up scaled and replicated around the entire National Park.

5. Best Practice (3): Support of Rotary Goats Breeding for Vulnerable Households around Mount Thiaberimu (Virunga National Park)

5. 1. Background:

The proponent, APRONA (Appui aux Projets pour la Protection de la Nature/Support to projects for Nature protection), in collaboration with local communities decided to support vulnerable households by providing rotary goats breeding as an alternative source of revenue. This was done in order to avoid poaching and deforestation of protected areas in the locality of Kyabirimu having a total population of around 50,000 inhabitants. The project planned to distribute 400 goats to 200 households and 20 improved males for the whole community as a rotary loan. Expectation from the project is the reduction of poaching and deforestation, the recovery of women dignity and poverty reduction. At the long term, the project will contribute to regulation of the rainfall, the protection of natural forest and the whole biodiversity by riparian communities.

5.2. Problem Statement:

Communities living around Mount Thiaberimu are encroaching over Virunga National Park by cutting trees for domestic fuel wood use and carpentry. So, they are destroying the vegetation and the whole biodiversity of the park. Twenty five (25) sources of water were also seriously affected by drought because of human activities. The main purpose of the project is to protect Virunga National Park biodiversity and water resources and to address at the same time socio-economic issues within riparian communities (community conservation approach). So, a rotary goats' project has been thought to efficiently address the prevailing environmental and socioeconomic challenges.

5.3. Justification for Selection (innovativeness)

The present project has many innovative practices such as: (a) money based revolving credit system is well known in the area, but not yet in kind like that with revolving goats, which said too be new in nature in the area; (b) traditionally, the owners of goats or other type of livestock are men, but with the present practice women are the owner of goats and this makes them to restore their respect and dignity by men and the whole community; (c) local communities are exploiting alternative sources of revenue instead of encroaching over Virunga National Park; (d) treatment of goats' diseases using modern veterinary medicines is an innovative practice, because people were used to traditional treat by some well known plants species.

5.4. Technical Approach: Design and Methodology

The main objective of the project is the protection of Virunga National Park by recessing the encroachment on its resources (fauna, flora, water and soil). This is done through a community participatory approach motivated by the profitable goats breeding initiative as an appropriate incentive. The project strategy is three fold: firstly, reduce the encroachment on the National Park and its resources through the provision of alternative source of protein and revenue to riparian community; secondly, engage communities in national park protection and natural resources conservation; and thirdly, poverty reduction among riparian communities through the development of the Goats Breeding project.

The implementation strategy of the project included: (a) wide consultations and participation of all local stakeholders (NGOs, CBOs, churches, local authorities and communities) in the assessment of needs on the ground and the identification of the most appropriate intervention to address those needs; (b) set appropriate measures and structure for the proper and sustainable management of the project with full participation of the community; (c) capacity building of the community in the field of goats breeding techniques; and (d) valorization and improvement of traditional knowledge both in goat breeding and diseases control.

The main activities carried out include:

- put in place local monitoring committee;
- launch training in breeding techniques and in environment protection;
- purchase and distribution of 420 goats to women without discrimination;
- purchase of veterinary inputs and recruitment of community based veterinary technicians;
- technical support of beneficiaries by veterinary assistance; and

- monitoring and evaluation both by the Local Monitoring Committee and the veterinary technicians.

The direct project beneficiaries are 200 households living in Burusi village within the locality of Kyabirimu that counts around 50000 inhabitants. The main stakeholders are MG/NTEAP/ NBI, for financial and technical support; UNDP, UNOPS, FAO who provided breeding goats, Provincial Department of Agriculture, BOAD for treatment of child diseases, IDP and IGCP who provided office equipment including computers and WFP.

Plate (1): Generation of one Rotary Goat

Plate (2): Goats Beneficiaries Thanking Thanking NTEAP Representative

First of all, the proponent (APPRONA) identified needs on ground with participation of all local stakeholders (NGOs, CBOs, churches, local authorities and communities). At the end of large consultations, participants agreed on "Goats breeding" as priority activity because it is a traditional and most preferable practice by the communities. It has to be pointed out that interminable war in the region decimated goats and other livestock. Secondly, the proponent organized a training on breeding techniques and on diseases control that commonly affect goats in the area. Traditional knowledge related to breeding and diseases control has been valorized and seconded by veterinary medicines. For example, Aloe vera is used to control dermatomes and wounds; Vernonia amygdalina is used to control many diseases and worms; etc.

Breeding techniques training comprised inter alia construction of goat shed, feeding infrastructures, feed (diet), reproduction, hygiene and sanitation. Besides, veterinary technicians should be trained before distribution of goats in order to be updated and make them more effective when it comes to livestock monitoring and treatment. A committee of wise men has been also put in place in order to monitor the care given to goat by beneficiaries, and to help resolve the conflicts among the first batch of beneficiaries and the following batches. A framework of collaboration with local authorities has been established for the security of the project. After that, improved Billy goats have been distributed to households (one for two households).

Medicine against endo-parasites have been also distributed for prevention measures and finally a good explanation on the in kind revolving system was given to beneficiaries. After distribution of goats the veterinary technicians have been tasked to provide regular monitoring.

5.5. Partnership:

Partners in the project are MG/NTEAP/ NBI, for financial and technical support; UNDP UNOPS, FAO who gave breeding goats, Provincial Department of agriculture. APPRONA gets other support from other partners like BOAD for treatment of child diseases, Pooled Fund from multi donors for IDP and Conservation agencies such as IGCP who provided office equipment including computers. WFP gave support for household gardening.

5.6. The Essence of Best Practice: Benefits and lessons learnt

The project is a successful and effective participatory conservation practice, which addressed both biodiversity threats and livelihoods issues. It contributed to the reduction of encroachment over the natural resources mainly the protection of biodiversity of the Virunga National Park, especially at the side of Mountain Tshiaberimu side. Communities had been sensitized and had become motivated protectors of the National Park through the implementation of some socio-economic activities to the benefit of the local community. The increase in the households' revenue helped beneficiaries not to invade the National Park by cultivating inside it. This is very important for natural forest regeneration and for the maintenance of vegetation cover that is necessary for water resources regulation. The project also contributed to enhanced environmental conservation by taming beneficiaries who initially had hostile attitude towards the National Park. This demonstrated a successful example of the advantages of community conservation approach in the management of protected areas. In addition to the environmental benefits, the practice had other advantages in terms of improving subsistence means of beneficiaries as follows:

- 400 goats distributed to 200 households and 20 Billy goats hosted by local committee of monitoring. Currently, beneficiaries are at the third phase of rotary, so that the current total number of available goats in the area is more than 1000 goats;
- The increased number of goats in the area is an important source of manure for agricultural production, which contributes to the economy of the area. Goats are also source of protein in daily diet of the population;
- The average price of one goat is US$ 60 dollars. Since one household has four goats, this is worth of US$ 240 dollars from goats' breeding, which usually increases as the number of goats increases;

- The rotary goats distribution among beneficiaries enhanced social cohesion and peaceful co-existence among community members;
- The project also restored the hope for good future for the victims of the relentless war whose cattle has been totally destroyed;
- Farmers acquired knowledge and techniques that help them to integrate agriculture to livestock;
- Households were able to pay school fees and attend to primary health care for their children;
- Children who are looking after goats after the schooling day were well protected from juvenile delinquency; and
- Women were more proud of themselves and were considered in their households and among community members as bread winners.

5.6.2. Sustainability:

The sustainability of the practice is guaranteed by the following elements:
(a) beneficiaries acquired a diverse knowledge like breeding techniques, disease control, integration of livestock into agriculture etc..; (b) goats breeding is an indigenous practice that only needs to be improved; (c) local community got good understanding of the importance of goats in their socioeconomic life, so they are committed and motivated to sustain the practice. The presence of veterinary technicians from public administration is useful for extension, monitoring and sustainability of the present practice.

5.6.3. Replicability:

Replicability and up-scaling of the present best practice is encouraged by the good results and the self control of the system/approach of rotary goats in kind credit. Neighboring communities are very interested in the practice and expressed their willingness to implement it in their respective villages. The CBO, APPRONA, in collaboration with local initiatives of development are planning the replication and up scaling of the practice in other villages. However, they need financial support from donors and the government to cover the need of many villages surrounding the Virunga National Park.

5.6.4. Limitations and Challenges:

The major challenge prevailing in the area is the precarious security situation. Other challenges are related to the insufficiency of funds for replication and up scaling of the project and the identification of beneficiaries among many vulnerable and poor people.

5.6.5. Conclusion:

The rotary goats' project is a real best practice, since it efficiently addresses both the environmental threats and the livelihood challenges. The replication and up scaling of the practice around the whole area surrounding the Park could increase its effectiveness. However, it is necessary to be strategic during the identification of the target beneficiaries in order to avoid conflict and jealousy among community members. Veterinary care and close monitoring system should be ensured, especially during the first four months in order to pursue beneficiaries to provide good feed and proper feeding of the animals. Zero grazing should also promote through provision improved fodders. The sustainability of the practice is guaranteed by the following elements: (a) beneficiaries acquired a diverse knowledge such as breeding techniques, disease control and integration of livestock to agriculture; (b) goats breeding is an indigenous practice that only needs to be improved; and (c) local community got good understanding of the importance of goats in their socioeconomic life, so they are committed and motivated to sustain the practice.

The completed project, supported by MGP/NTEAP, is a real best practice because it addresses both the environmental threats and livelihood challenges. The replication and up scaling of the practice around the whole area surrounding the Park could increase its effectiveness. However, it is necessary to be strategic during the identification of the target beneficiaries in order to avoid conflict and jealousy among community members. Thus it is important to bring together the beneficiaries and get them to understand the approach in collaboration with the support committee. It is necessary also to ensure the veterinary care and do rigorous monitoring, especially during the first four months, and pursue the beneficiaries to provide good feed and feeding of the animals.

6. Best Practice (4): Tree planting and soil conservation practices around Mount Tshiaberimu

6.1. Background:

The project consists of implementation of two community nurseries in the northern part of Virunga National Park around Mountain Thiaberimu, mainly in two villages that are: Ngitse and Burusi. Material was provided by the project; whereas maintenance was under the responsibility of development committee members grouped in a platform called CODESAGOT. When seedlings were available, they were distributed to local associations' members of the platform in priority, and seedlings were transplanted in community fields, around watersheds, along roads and individual fields.

Basic data indicated that Mountain Thiaberimu is the home of mountainous Gorilla in the northern part of Virunga National Park. The area is an excellent place for market oriented household gardening. The population density is 150-250 inhabitants/km^2. Consequently, there is insufficiency of fertile lands for cultivation and shortage of wood for energy and home construction.

6.2. Problem Statement:

The area around Mountain Tshiaberimu is characterized by a high population density (150-250 inhabitants/km^2). People are living essentially on agriculture where there is lack of land for cultivation and wood for domestic use. So, people were encroaching over the natural resources around Mountain Tshiaberimu (Virunga National Park), resulting in the destruction of natural forests and the whole biodiversity of the Park (fauna and flora) in order to satisfy their primary needs. The human activity constitutes a threat on the biodiversity of the Park especially on remaining natural forest and Gorilla of Mountain Tshiaberimu. The illegal entry of local population inside the National Park has created conflict between communities and ICCN supported by local authority, because of poachers.

Plate (1): Mountain Thiaberimu Showing Serous Loss of Trees

6.3. Justification for selection (innovativeness)

Normally reforestation activities were practiced in Ngitse and Burusi villages by individuals, but the community approach of reforestation is an innovative practice in the area. Other innovative practices in those two villages include agroforestry and techniques that combine soil erosion control and fodder cultivation.

6.4. Technical Approach: Design and Methodology

The project implemented two community nurseries in the northern part of Virunga National Park around Mountain Thiaberimu, mainly in two villages that are: Ngitse and Burusi. Material was provided by the project whereas maintenance was under the responsibility of development committee members grouped in a platform called CODESAGOT. When seedlings were available, they were distributed to local associations members of the platform in priority, and seedlings were transplanted in community fields, around watersheds, along roads and individual fields.
The main objective of the project was to prevent the degradation of natural forest of Mountain Thiaberimu located in Virunga National Park by providing alternate source of wood to the community living in Ngitse and Burusi villages. Additional incentives such as market oriented household gardening, piggery and poultry have been promoted. The project strategy is four fold: firstly, eradicate deforestation of Thiaberimu Mountain; secondly, reduce soil erosion within the fields and on the watersheds; thirdly, engage communities in tree plantation activities both the homestead and hill sides; and fourthly, strengthen the capacity of local stakeholders.

The implementation strategy of the project included: (a) involvement of local community and all stakeholders (ICCN, Church, schools, local authority and CBOs); (b) capacity building of the community, especially community based ecology facilitators; (c) implementation of community nurseries; (d) supply of free seedlings; and (e) lunching of environmental competition meeting at schools level in order to sensitize young men in the area on environmental issues.

The main activities carried out included:

- sensitization of stakeholders;
- training of facilitators in ecology and some community members in forestry, soil erosion control techniques and productive techniques;

- establishment of two nurseries for communities in the villages of Ngitse et a Burusi (see plates 2 and 3);

Plate (2): Forestry and Agroforestry nursery in Burusi village

Plate (3): Forestry nursery in Ngitse village

- distribution and planting tree seedlings at hillsides, along roads, at schools, etc. (see plates 4, 5 and 6) ;
- implementation of contours and quickset hedge in the fields; and

Plate (4) Trees Planted at Watershed in Burusi

Plate (5): Trees Planted in Ngitse

Plate (6): Trees at school in Ngitse

Plate (7): Hedge for Erosion Control

- establishment of market oriented household gardens

The direct project beneficiaries are people living living in Ngitse and Burusi villages within the locality of Kyabirimu that counts around 50,000 inhabitants.

Plate (8): Trees Planted at School in Ngitse Area

6.5. Partnership:

Partners in the project are NBI/NTEAP/MGP, for financial and technical support; UNDP UNOPS, the Gorilla Organization provider of incentive/motivation to nursery workers and logistic support and the development of pigs breeding that provides manure for soil fertilization. MAIDENI contributing in sensitization, CODESAGOT and local administration that helped in preventing poaching.

6.6. The Essence of Best Practice: Benefits and lessons learnt

The afforestation and soil erosion control activities were stabilizing and retaining soil at watershed, enriching soil and providing woods for domestic use. So, the porject contributed to the reduction of human pressure on natural forest of Virunga National Park, especially at the side of Mountain Thiaberimu. The project was found to restore the vegetal cover, improve soil fertility, stabilize the hydrology and regulate the rainfall of that area. The achievements of the project in soil erosion control and reforestation reported as follows:

- 54 environmental facilitators had been trained among whom 70% were women; 1,500 households, 500 young men 3,280 farmers had been sensitized and implemented hedges in their fields;
- 2 nurseries community based nurseries were prepared from which 80,000 seedlings of Eucalyptus, Acacia, Grevilea, Cassia, Caliandra, Sesbania, Pinus, Arocaria, Acrocarpus and fruits species were produced and transplanted on 17 hectares;
- Around 6,747,400 stumps of Penisetum purpureum had been planted along contours as quick hedges on 12 hectares poretcting a total surface protected of 29 hectares;
- The total income from all household gardening was estimated at US$ 6,300 per season; and

- The increase in crop production in the area due to integrated techniques of erosion control was visible and encouraged many farmers to adopt the practice.

It is important to highlight the following additional achievements: seeds of market oriented gardening produced had been distributed to farmers. Among these seeds were: 1,000 kg of potatoes; 1,000 gm of cabbage; 1,000 gm on onions; 500 gm eggplant and 1,500 gm of carrots. For potatoes production, 1000 kg of seed potatoes brought about 10, 000 kg yield of potatoes tubers sold at US$ 0.2 per kg that makes US$ 2,000 per cultivation season. For cabbage production 1,000 gm of seeds brought about 10,000 kg yield of cabbage at the price of US$ 0.1 $ per kg, that makes US$1,000 per season. Concerning onions, 1,000 gm seeds brought about 6,000 kg of onions that generated US$ 1,800 (US$ 0.3 per kg). For carrots production, 1,500 gm seeds brought about 15,000 kg of carrots that was sold for US$ 1,500 (US$ 0.1 per kg). The estimated total income from all market oriented gardening produced per season was US$ 6, 300.

Regarding gender sensitivity, seventy percent (70%) of the environmental facilitators trained by AGRED were women, and are doing a good sensitization on environmental issues, especially those related to soil erosion control.

6.6.2. Sustainability:

The sustainability of the practice is based on the mastery of techniques and motivation of local communities. The climate of the area is suitable for trees species utilized in reforestation and agro forestry. The existence in the area of a technical school of agroforestry is bringing about a number of technicians each year. This constitutes a big asset to ensure permanent technical backstopping for the community. The increasing of crop production in the area due to integrated techniques of erosion control was so visible and definitely that encourages many farmers to adopt the practice.

6.6.3. Replicability:

Beneficiaries well mastered the practice and they were able to replicate and up-scale it. People from the two pilot villages were so motivated to walk for 15 km in search for the source of seedlings for forestry and agro forestry plantations and stumps of Penisetum purpureum for quick hedge establishment in their fields. The demand of seedlings and stumps for soil erosion control is high so that, AGRED, the proponent, failed to have enough resources to satisfy all demands. Government and donors should be actively involved in order to provide adequate resources for replication and up scaling of the practice in many villages surrounding Virunga National Park and elsewhere as needed.

6.6.4. Limitations and Challenges:

The main limitation is the precarious security situation in the region. Other limitations include the insufficiency of funds for replication and up scaling of the practice, resistance or reluctance of the population vis-à-vis the integration of agroforestry trees with food crop, lack of experience sharing and study tours among CBOs involved in similar activities, thus limiting the synergy of interventions.

6.7. Conclusion:

This project is viewed as a best practice, since it addresses soil erosion control with the objective to increase crop production. The demand for seedlings and stumps for soil erosion control is high so that the proponent does not have enough resources to satisfy all demands. People from the two pilot villages are so motivated that they can walk for 15 km to search for forest seedlings and stumps of *Penisetum purpureum* for quick hedge establishment in their fields. Community work should be encouraged in order to produce more seedlings in tree nurseries and organize massive tree planting on roadsides, pathways and hillsides, because the region is mountainous with steep slopes, very fragile soil and high rainfalls. The sustainability of the practice is based on the mastery of techniques and motivation of local communities. The climate of the area is suitable for trees species in reforestation and agroforestry. The existence in the area of a technical school of agroforestry is bringing in a number of technicians each year. This constitutes a big asset to ensure permanent technical backstopping to the activities supported by the community.

There is a clear need for up scaling and replicating the practice in the region for a more enhanced impact on soil erosion control because the region is mountainous with steep slopes, very fragile soil and enjoys high rainfalls. This appeals for more financial support from donors and the government.

Annex (1): Ranking of Best Practices

Best practices	**Sieve Criteria**									**Total marks**
	Envir. Conserv. and poverty reduction (15)	S. Impact (15)	Innovative (10)	Efficiency (10)	Replicability /up-scaling (10)	Sustainability (10)	Envir. Educat. & Awareness (EEA) (10)	Inclusiveness (10)	Regional cooperation (5)	**100**
Rotary goats breeding for vulnerable Housheols…	12	12	8	9	9	9	8	9	-	76
Construction & rehabilitation of fish ponds…	12	12	9	9	8	8	8	8	-	74
Tree planting and soil conservation practices…	13	10	8	8	8	8	9	8	-	72
Promotion of mushroom (Pleutotus ssp.) cultivation…	10	9	9	8	8	8	9	10	-	71