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## **Promotion of Local People's Environmental Awareness and Its Contribution to the Management of Protected Areas: Case Study of Nyungwe National Park in Rwanda**

**Manirakiza Evariste**

*University of Rwanda, Huye Campus*

*College of Arts and Social Sciences*

*e-mail: [manirakizaevvariste@yahoo.fr](mailto:manirakizaevvariste@yahoo.fr), [emanirakiza@nur.ac.rw](mailto:emanirakiza@nur.ac.rw)*

**Niyonzima Théophile**

*University of Rwanda, College of Science and Technology and*

*Deputy Director of the Center for Environment, Entrepreneurship and Sustainable Development*

*[tniyonzima@nur.ac.rw](mailto:tniyonzima@nur.ac.rw)*

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### **ABSTRACT**

*Despite people's importance in the management of protected areas, the awareness of people residing close to Nyungwe National Park (NNP) in Rwanda and their willingness to contribute to its management is still unknown. The study is mainly aimed at assessing the level of local people's awareness on the importance of the Park. It was conducted in Bushekeri and Kitabi sectors bordering the Park and involved 177 out of 1832 households, some cooperative members and leaders. A questionnaire, focus group discussions, interviews and field observations were data collection tools. Findings revealed that citizens have a low level of awareness. Also, poaching and tree-felling are the most recurrent illegal activities. Finally, it was found that poverty, ignorance, crop-raiding, the urgent lack of alternative activities to farming remain the challenges limiting people's participation in park management. Therefore, offering information through different channels and providing development projects would improve people's awareness; reduce poverty and their dependence on Park's resources.*

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### **INTRODUCTION**

A sound environment management has been proved to be the most invaluable

ingredient to sustainable development. This was highlighted by the Bruntland report which gave the most reliable definition of sustainable development.

That is “*a development which meets the needs of the present generations without compromising future generations to meet their own needs*” (Holder and Lee, 2007). This implies that for development to be sustainable, natural resources have to be kept in good conditions as people depend on them for survival. While different nations have had a strong devotion to safeguard natural resources by establishing protected areas, there is need to ensure that they are kept in good conditions. One way to do so is to instill environmental awareness among local people as the major stakeholders in environmental management so as to enhance their participation in the management of these protected areas.

The existing literature highlights the importance of local people’s environmental awareness as a tool to enhance people’s participation in environment management. In this regard, Chasca (2000) stated that with participatory and community approaches, local people are involved in decision-making and planning about natural resources. Indeed, appropriate sustainable and ecologically-sensitive policies can effectively be put in practice only when people feel to be in control of their resource-based livelihoods (Tsing et al., 1999 cited in Chasca, 2000).

There are researches carried out on Nyungwe National Park. First, Uwimana (2011) conducted a study in 2011 and found out that villagers practice illegal activities in the park like honey hunting, medicinal plant extraction, poaching, and

fruits collection. Secondly, Plumtre et al. (2002) found out that there is a conflict between communities and protected area managers due to the restriction on access to NNP and buffer zone resources and a crop raiding in the buffer zone. Despite the existence of these studies, the awareness level of the surrounding population on the role of the environment and Nyungwe National Park in particular and their willingness to contribute to its management in general is still unknown.

With the aim to highlight the need of the community participation in the management of protected areas, the present paper intends to assess the level of awareness of local people surrounding Nyungwe, one of the three national forests in Rwanda which was upgraded in 2005 to the status of a national Park. The paper also explored communication channels used to boost people’s environmental awareness; the contributions of the surrounding people to the management of the Park as well as the challenges faced keeping in mind its managerial implication of setting appropriate measures to ensure greater participation by the people.

### **Environmental Education for Environmental Awareness**

Environment awareness is underpinned by environmental education. This is considered as a cornerstone of successful environmental management. In this regard, the 1992 United Nations

Conference on Environment and Development (UNCED) emphasized the need for environmental education as a weapon that could be used by all nations to raise people's consciousness, positively change their attitudes and instill in them those values and skills that can promote effective environmental management (UNESCO, 1992 cited in Yemsi et al. 2010, p.3). In this perspective, a better education was reported to result in more positive attitudes towards protected areas as observed in Natal, South Africa (Infield, 1988 cited in Masozera, 2002). Similarly, conservation education is designed to affect people's awareness, attitudes, and behavior towards natural resources (Susan, 1999, p. 224). By the same token, Risson (1980 quoted by Schleicher, 1989 p.266) stated that environmental education provides an opportunity for making decisions and accepting their consequences.

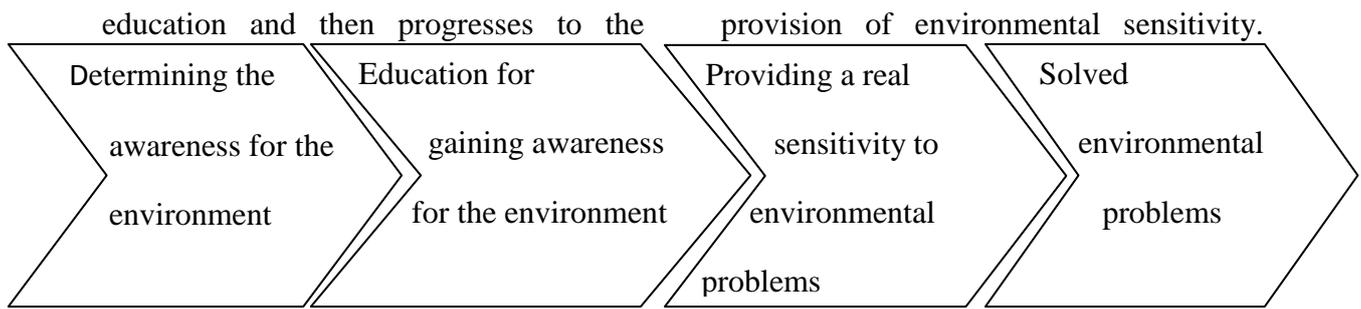
Furthermore, for the Agenda 21 of the United Nations, environmental education is important for achieving environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development and for effective public participation in decision-making (United Nations, 2004 cited in Basore 2006, pp.3-4) . This implies that from their awareness people participate in the management of natural resources. In the context of protected areas, this participation is of primary importance. As highlighted by UNEP (2011), the participation of people living around protected areas is very important to the

long-term survival of wildlife and the integrity of the system of the protected area. Putting emphasis on conservation of national parks, Hughs (1974 p. 88) stated that the educational value of national parks creates an atmosphere of thoughts that brings the person closer to an awareness of man as part of nature. This assertion means that a person's awareness about the environment will increase his responsibility with regard to its management.

### **Environmental Awareness for Environmental Behavior**

Different scholars argue that for environmental awareness to be effective, there has to be a process from knowledge acquisition to action. In this context, conservation educators suggest that any learning process necessarily for conservation action progresses from ignorance, to awareness, understanding, concern, and, finally, to action (Adam 1995 cited in Susan 1999, p.17-18). In an attempt to put much emphasis on this awareness-to-action model, Susan stated that communication should first deliver information to increase knowledge and shift attitudes about a conservation problem, and then seek to influence future behavior (Susan, 1999).

The process stated above is very similar to the model of environmental problems suggested by Cankurt et al. (2008, p. 2). According to them, solving environmental problems starts with a determination of the awareness to



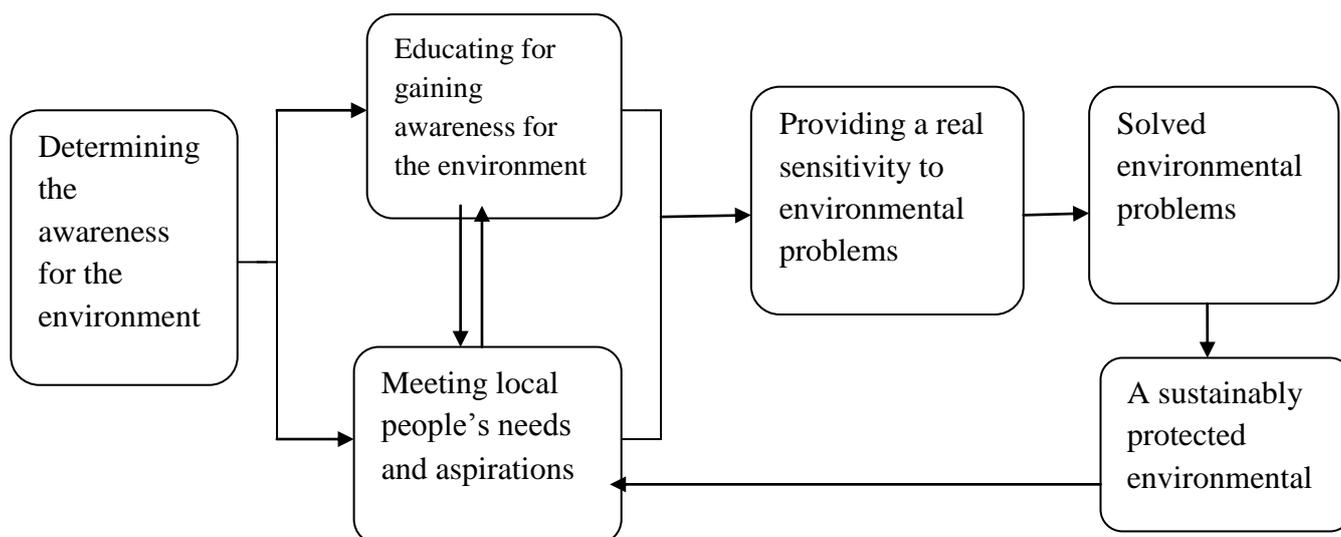
**Fig.1** Stages of solving environmental problems

Furthermore, Gouri (2007, p. 11) highlighted the importance of environmental awareness. He stated that if people are aware of the environment and its significance, they will act in an environmentally responsible manner that is supporting environmental programs. The implication is that information regarding environment has to be given a prior importance so as to get a sound environmental management.

Some scholars, however, state that a mere knowledge on the environment is not a panacea for a sound environmental management and that people's behavior might not always be positive towards natural resources. For Susan (1999), people behave badly despite their knowledge of what is environmentally good to do mainly because of lack of motivation and skills to identify appropriate alternatives to their behavior.

Therefore, environmental education should be in conjunction with alternatives means of lifting people's welfare. This reflects the definition of environment management which is "a systemic and scientific approach assuring harmony between natural and anthropocentric systems to minimize the adverse impact of human activities by matching ecological capability with societal goals and aspirations" (Western and Pearl, 1989, p.264).

Therefore, based on the assertion of Susan, one can suggest that the model of environmental awareness suggested by Cankurt et al. (2008, p. 2) which starts by determining the awareness, educating for environmental awareness and providing sensitivity to environmental problems should have some supplements to be improved on as provided below.



**Fig. 2** The revised model of environmental awareness (as suggested by authors)

The model of environmental awareness provided by Cankurt et al. (2008, p.2) really presents the process of solving environmental problems from awareness determination to the stage where they can participate in solving environmental problems as responsible citizens as shown in the four top boxes. Nonetheless, the present study has proven that merely educating people may not be enough for them to protect the environment in a more sustainable way. Since effective wildlife conservation requires a decent life on the part people around the Park, educating them should be in conjunction with meeting their needs and aspirations.

**Environmental Communication Channels**

Channels of communication are essential to raising the level of environmental awareness and behavior. In this context, effective communications is essential for

influencing conservation policies and changing people's behaviors. Such channels include newspapers, magazines, radios, telephone, televisions, etc (Susan, 1999, p.2). Indeed, communication is believed to be the foundation for establishing relationships between people and the environment and enhancing environmental literacy and sustainable environmental practices (Werner n.d.).

Since the radio and television do not allow effective environmental policy implementation as they do not provide sound interaction (Yemsi et al., 2010), there is need to supplement them with other communication channels like the printed media and public meetings. In this regard, printed media may help to transfer new information and technologies (Nimish, 2011). Likewise, public meetings consist of involving the public in making decisions, collecting baseline information for making future decisions,

or simply informing the public of a decision already taken (Susan, 1999).

In our context, what is clear is that meetings with the public can be more effective when such help people take part in making decisions. The reason is that once people's opinions are considered, sound management of the park is very likely to occur. Western and Pearl (1989) mentioned that the general public must take priority in decision-making in resolving environmental crisis. They added that education of the public has a paramount importance in environmental management (Western and Pearl, 1989).

Apart from the media and public meetings, the environmental information can be passed on via workshops and trainings. In fact, in a workshop, different categories of people from the community meet in order to discuss how a particular activity can be performed; people can also have a consensus on certain issues. For Poonam (2011), effective use of

environment management and conservation programs depends on education, awareness raising and training in the relevant areas. For him, people cannot be highly motivated to participate actively in programs on environmental conservation without having an understanding of how to conserve natural resources and compelling need to do so.

## **MATERIALS AND METHODS**

The present study was conducted in two sectors bordering Nyungwe National Park mainly Kitabi and Bushekeri sectors. The first sector is located in Nyamagabe district, southern province while the second one is in Nyamasheke district, western province in Rwanda (figure 3 gives details). The two sectors have respectively 53.9228 and 63.2663 square kilometers. Within the two sectors 5 cells and 11 villages bordering the Park were purposefully selected. The figure below presents the Park, its bordering sectors as well as the sectors under study.



Therefore, **with e equals to 0.07**: 
$$n = \frac{z^2 \cdot p \cdot q}{e^2(N-1) + z^2 p \cdot q} = \frac{(1.96)^2(0.5)(0.5)1832}{(0.07)^2(1832-1) + (1.96)^2(0.5)^2} = \frac{(3.8416)(0.25)(1832)}{0.0049(1832-1) + (3.8416)(0.25)} = \frac{1759.4528}{0.0049(1832) + (3.8416)(0.25)} = \frac{1759.4528}{8.9768 + 0.9604} = \frac{1759.4528}{9.9372} = 177.05 \approx 177 \text{ households}$$

After the sample was calculated, the systematic sampling technique based on the lists of households provided by village coordinators was used to determine which households to be involved in the study. At this level, one person was chosen provided that he/she was mature enough to provide information on issues of interest. Apart from the 177 respondents equivalent to households sampled, the study also involved 40 respondents from cooperative members, 13 local leaders, and Rwanda Development Board (RDB) staff operating in the area.

Different tools were used to gather data. Firstly, the questionnaire survey was used to collect quantitative data; it was administered to 177 local people. Secondly, the study used the semi-structured interview for secondary data collection. It was held with local authorities and RDB staff operating in the study area. Finally, we made use of the Focus Group Discussions (FGDs) to collect secondary data from cooperative members. While collecting data, we also made use of field observation. This data collection technique was used to collect data that are related to some socio-economic situations of citizens in the area. In this regard, we made direct observations of land sizes as well as some crops in them. We also observed certain

behavior manifested by some respondents while giving answers and their proximity to the Park. All these helped us to come up with a clear understanding on how citizens view the Park.

The data of the present study were analyzed by means of the Statistical Package for Social Sciences (SPSS) version 16. Subsequently, descriptive statistics were used to summarize data quantitatively. With regard to qualitative data, answers to each item of the questions were thoroughly looked at to find different emerging patterns of responses and themes. Then, we made use of the results from respondents to show the magnitude of their answers in relation to the situation under study.

## RESULTS

### Socio-economic Situation of Respondents

Findings of the study showed that majority of respondents were young, the age ranging from 20-35 years, representing 38.4%, while the number of middle-aged and old respondents was 53 and 56 that is 29.4% and 31.6 % respectively. Concerning their education level, a good number of local people had

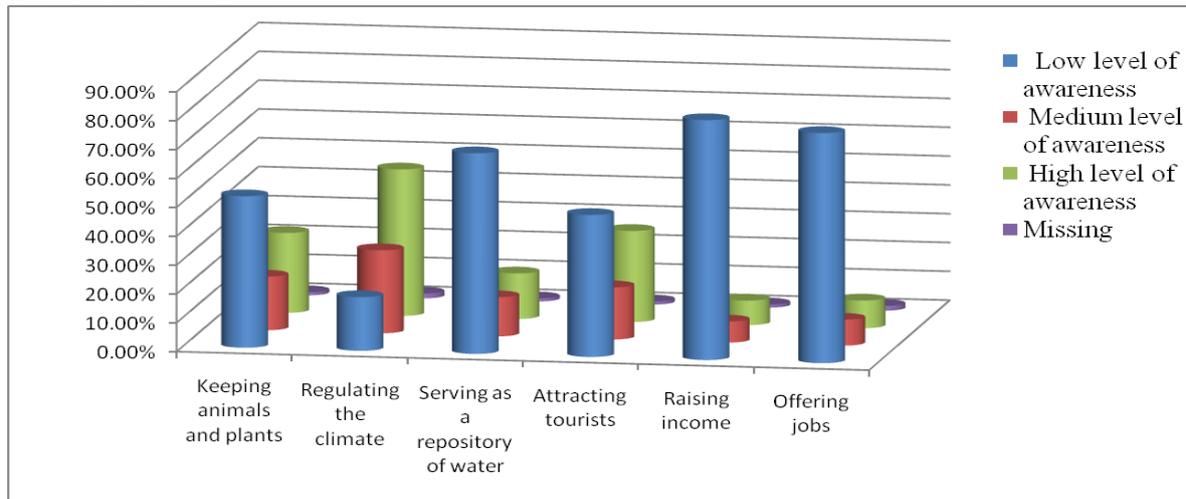
attended primary school (49.7%), while 47.5% were illiterate. Very few people had secondary and university forms of education, the percentages being 2.3 and 0.6 respectively. Also according to the professions of the respondents, it was shown that majority of them were merely farmers (94.4%); others combined cultivation and others like construction building, park guarding and tea harvesting.

In addition, information on their land sizes was provided. Among 177 respondents only 82, that is 46 % had legal land size transcript papers. Among them, 46.3% had land below 25 ares, 17% had land sizes ranging between 26 and 50 ares, while 9.7% had land sizes between 51 ares and one hectare. Only 26.8 % had land sizes above one hectare. About 82.5% of respondents were not satisfied with their land sizes, while 84.7% were not satisfied with their land production. In addition to the information from respondents' transcript papers, we

made direct observation of respondents' land sizes and also found out that their plots are very small as their houses are close to each other. Furthermore, in some areas, the land is not fertile given the way the crops appeared.

The study also provided the results on respondents' ownership of livestock. These results showed that 45.8% did not possess anything. It was also evident that the ownership of cows was greater than the possession of goats, sheep and pigs with (15.2%). However, only 0.6% had more than one cow. With regard to goats, 5.6% had one goat while only 4% had more than one. As far as the possession of sheep is concerned, 0.6% had one sheep and 3.4% had more than one. Also, results showed that 8.5% owned one pig, while 2.8% had 2-3 pigs. Finally, 9% keep cows in combination with small livestock, while 4.5% just combined small ones.

**Level of Awareness**



**Fig. 4** Level of awareness of local people on the importance of Nyungwe National Park  
**Source:** Field survey, January-February 2013

Figure 3 displays local people’s level of awareness on the importance of Nyungwe National Park. A big number of local citizens showed a low level with regard to the role of keeping plants and animal species (53.1%); 18.6% of respondents proved to have a medium level, while 27.1% had a high level. Secondly, the role of Nyungwe National Park to regulate the climate seems to be commonly known among citizens with 51.4% of respondents having high level of awareness, 28.8% having a medium level. Only 18.6% had a low level of awareness on the importance of the Park on this aspect. Thirdly, 68.3% of respondents had a low level of awareness on the role of the Park as a repository of water; 13.6 % have a medium level, while only 16.4 % have high level of awareness. Fourthly, many respondents proved to have a low level of awareness with regard to tourist attractions, 48 %

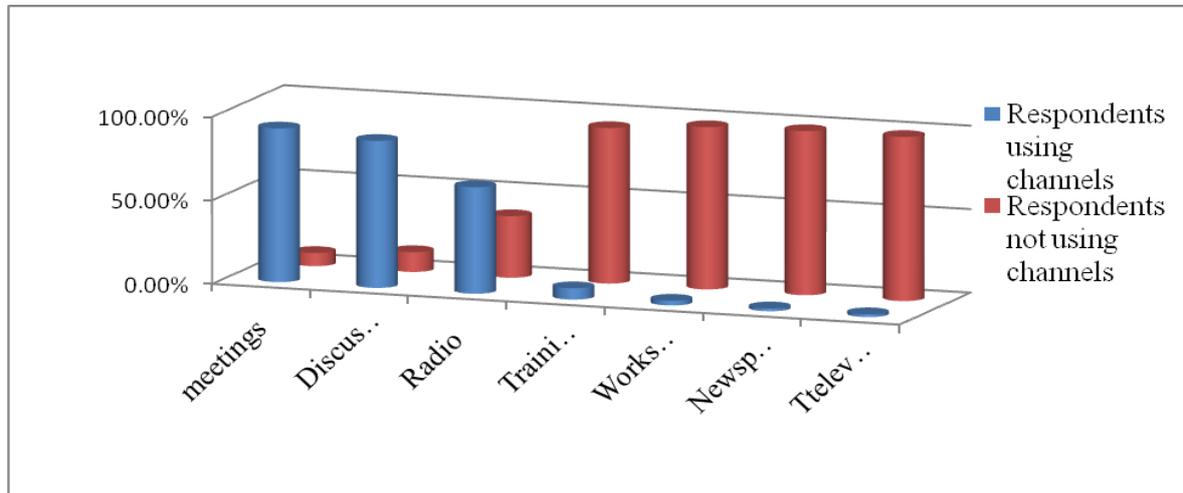
have a low level; 17.5% have a medium level while 33.3% have a high level of awareness. Fifthly, the figure shows that many respondents had a low level of awareness in raising income in households (83%); 7.3% of respondents have a medium level, while only 7.9% had a high level. Lastly, the importance of the Park to create jobs among surrounding citizens seems to be ignored. The 80.8% of respondents have a low level of awareness; 9% having a medium level, while only 8.5% had a high awareness level.

From the results above, it is evident that local people have different levels of awareness on certain aspects of the importance of Nyungwe National Park. In fact, the majority of citizens surrounding the Park have a low level of awareness with regard to the role of the Park to keep animals and plant species, being a

repository of water, attracting of tourists, raising household income and creating jobs. On the contrary, results proved that

respondents have high level of awareness in terms of the importance of the Park to regulate the climate.

### Communication Channels Accessed



**Fig. 4 Communication channels used**  
**Source:** Field survey, January-February, 2013

Figure 4 displays the results on communication channels through which citizens get information on the environment in the two sectors under study. The main sources of information which are the most accessed are public meetings, discussions with their fellows and the radio representing 92.1%; 88.1% and 63.8% respectively. These are followed by trainings (6.8%), workshops (2.8%) while newspapers and television are the least accessed ones in the study area with 1.7% each.

Results from focus groups indicated that cooperative members get information about the environment through public meetings, radios and discussions with

their fellows as ordinary local citizens. In addition to these channels, however, they stated that they get trainings organized by RDB and handouts. Similarly, this was also asserted by their leaders. Therefore, trainings as a communication channel used to boost information among cooperative members are an exception in comparison with the remaining citizens who are not members. The reason is that they carry out activities in connection with the Park, namely, handcraft and bee-keeping; hence, they certainly get much training.

The use of public meetings was also common among local authorities. In fact, 9 out of 13 respondents interviewed said

they use meetings to provide information about the environment. In addition, 2 of the interviewees stated that public meetings and radio are the means through which citizens get information, while another respondent mentioned that she combines them with visits to deliver environmental messages to local citizens. Also another respondent said that the environmental information is delivered via other means like posters. As it was noticed, communication channels like newspapers, television, trainings and workshops were not highlighted by local authorities as means from which people can get information. Therefore, there is a coincidence with the answers given by local citizens as these channels are the ones to which they have less access.

As far as answers from RDB staff are concerned, one of the three respondents interviewed stated that they use public meetings, media and environment clubs among youth to deliver information about the environment. Two interviewees added that they use clubs in schools and other means such as drama by some national comedians, and posters.

### **Frequencies of Environmental Information through Communication Channels**

Findings of the study revealed that a big number of respondents who attend public meetings (44.1%) do sometimes hear about environmental management, while only 7.9% of respondents always get such kind of information. Concerning radio, 40.7% of respondents never get

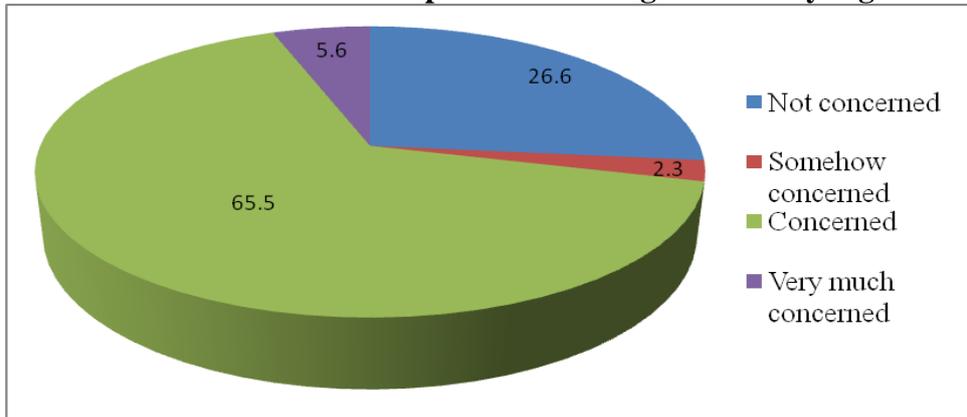
information on environment management on the radio, 3.4% always get the information. It was also revealed that 98.3% of respondent never read the information in newspapers while 98.9 had never heard it on television. Only 1.7% and 1.1% of respondents had rarely got the information respectively in newspapers and television. Similarly, it seems trainings and workshops on the environment are not offered. This is because 94.4% and 98.3% had never received any information respectively through trainings and workshops. Finally, the information on the environment is frequently shared among fellows in comparison with other communication channels following public meetings and the radio.

With regard to the frequency of meetings held with the intention to talk about the environment, 5 out of 13 local authorities (1 from Bushekeri Sector and 4 from Kitabi Sector) interviewed said that they sometimes hold public meetings with such an intention. In addition, 4 interviewees from Kitabi said meetings of such a type are rarely held. Finally, 2 interviewees from Bushekeri mentioned that they rarely hold meetings on environment, while the remaining 2 respectively from Bushekeri and Kitabi Sectors said they often hold these meetings. Even some of village coordinators stated that meetings on the environment are held by RDB staff after the monthly common works known as “Umuganda”. These staff gave their responses to the frequency of meetings on the environment they hold with local

people. In this regard, 2 out of 3 interviewed said these meetings are held once or twice a month. One of them added that there can be some organized

events once a term. Another interviewee said that information on the environment is given every day by Park guards and community conservation agents.

**The Contribution of Local People in the Management of Nyungwe National Park**



**Fig. 5 Feeling of concern in the management of the Park**

Source: Field survey, January-February 2013

As presented in figure 5, many respondents felt concerned with the management of the Park. In fact, 65.7% out of 177 respondents agreed that they are concerned; in addition, 5.6% of the respondents felt very much concerned and 2.3% somehow felt concerned while 26.6% out of 177 felt not concerned at all. These stated that the Park management is the responsibility of RDB staff, conservation animators and local leaders.

**Challenges to Local People’s Contributions to the Protection of Nyungwe National Park**

Both local authorities and RDB staff interviewed highlighted challenges which may impede the contribution of local people to the protection of Nyungwe

National Park. In this regard, 6 out of 13 local authorities interviewed stated that poverty was the most common impediment followed by crop raiding without any compensation (3 out of 13). Also other 3 interviewees combined poverty and crop raiding, while another one added the lack of follow-up by jurisdiction institutions, poverty and crop raiding. Direct observation made proved the seriousness of the issue of crop raiding. Likewise, all the three RDB staff interviewed mentioned poverty and the culture of doing illegal activities. To these impediments, a limited number of development projects, the high pressures of the population and change in local authorities were also referred to.

Apart from poverty and crop-raiding, another challenge which impedes the contribution of local people in the management of the park are illiteracy and low level of education. In fact, as presented at the outset of this section, 47.5% of respondents were illiterate. Among those who were literate, 49.7% had a primary school level. Only 2.3% had a secondary school education, while 0.6% had a university education. Consequently, they may not easily understand messages given to them through meetings and other communication means with regard to the role of the Park. Indeed, this situation is very likely to increase their dependence on park resources as they cannot find any alternative job to generate personal income.

## **DISCUSSION**

### **The Socio-economic Situation of Respondents**

The situation of local people about age, education and profession clearly shows that citizens living around Nyungwe National Park are generally still young without any advanced education and generally have no other profession apart from cultivation. This might have a negative impact on the Park as they cannot easily earn their livelihoods apart from relying on land resources. Yet, too much dependence on land resources may lead them to resort to the Park in case they do not get enough crop yields. In addition, results showed that the majority of local people are not satisfied with both their land sizes and land production

levels. This situation implies that they cannot satisfy their basic needs; consequently, they may not contribute meaningfully to the management of the Park. Furthermore, the possession of livestock in the study area is not common as the number approaching the half of people do not possess anything. Yet, the possession of livestock especially the small ones could help the community increase their harvest by using the organic manure while growing crops to satisfy their basic needs. This situation might deepen their poverty level and hence increase the independence on the Park especially in terms of meat.

### **Level of Awareness**

From the foregoing results, it is evident that local people have different levels of awareness on certain aspects of the importance of Nyungwe National Park. In fact, the majority of citizens surrounding the Park have a low level of awareness with regard to the role of the Park to keep animals and plant species, being a repository of water, attraction of tourists, raising household income and creating jobs. On the contrary, results proved that respondents have a high level of awareness in terms of the importance of the Park to regulate the climate.

Since aspects of the importance of the Park are many, causes of this low level differ. The reasons of their low level of awareness in terms of the role of keeping animals and plant species might be caused by crop-raiding by animals from the Park which at times overwhelm people in many parts of the study area. As

a result, they do not consider the Park as a place where animals are kept but rather as a place where they stay and come at any time to raid their crops. As a proof, one interviewee said that they face the challenge of their crops raided without any compensation. The implication is that people close to the Park cannot meet their development aspirations. Consequently, they may learn about the roles of the Park at meetings or on the radio but do not attach any importance to them since they contradict with their own interest. In this regard, a subsistence farmer places higher priority on maximizing food security than protecting the fauna. Putting emphasis on the importance of interests of Parks upon people, William et al. (2001) highlighted that the survival of protected areas depends on the fact that they benefit the local community. Indeed, McNeely asserted that long-term survival of protected areas in developing countries will be jeopardized if needs, aspirations, and attitudes of local peoples are not accounted for (McNeely, 1990; Ghimire and Pimbert, 1997 cited in Masozera, 2002, p.33).

Furthermore, people close to the park have low level of awareness in terms of the importance of the Park with regard to attracting tourists. This might be caused by the fact that they may have not found any interest in tourism. It may not have impacted on their lives as individuals. Also they may not have visited the Park as a tourist activity to increase knowledge and awareness. On the contrary, the results of the study revealed that local people have a high level of awareness in

terms of the importance of the Park to regulate the climate. This is because this role of the Park matches with their aspirations as farmers. Hence, they are aware that the Park provides the rain and prevents drought.

Also many respondents proved to have low level of awareness in terms of the importance of the Park serving as a repository of water, raising household income and offering jobs. To begin with, having a low level of awareness with regard to the role of serving as a water repository stems from the fact that only a small number of them had an advanced level of education, others having just primary or no education at all. As a result, they did not know that the Park is the main source of water in the country. Secondly, the low level of awareness on the role of the Park on raising income might originate from the fact that people do not get enough harvest hence not satisfied with their land production though they are aware that it provides rain. Indeed, field observations showed that some people were still mixing crops like maize and cassava, a situation which can reduce the harvest. Finally, having a low level of awareness on the importance of the Park to offer jobs is related to the fact that respondents were virtually farmers without any complementary jobs.

Cooperative members in focus groups discussions highlighted that the Park plays a role of attracting tourists and regulating the climate. In addition, some groups viewed the Park as a place where bees draw honey. An analysis of their

answers showed that contrary to ordinary citizens, cooperative members are very much aware that the Park does serve as a tourist attraction. The reason might be that they have met tourists at their places of work or heard about them in trainings contrary to ordinary people who stay in their farms merely doing cultivation.

Cooperative presidents gave their views with regard to the awareness levels of their members and other people and justifications. In that regard, they unanimously reported that their cooperative members had a medium level awareness while non-members had a low level (1 out of 5) and a medium level (4 out of 5). Justifications of their views on the level of awareness of cooperative members were the fact of not entering the park and reporting threats. With regard to non-cooperative members, cooperative presidents stated that there had been reduction in threats but people were still being reported for having entered the Park.

Local authorities and RDB staff interviewed asserted that the level of awareness of local people with regard to the importance of the Park is generally low and reported that people living close to the park face the issue of animals which always raid their crops and this may reduce their awareness level on the importance of the Park. In addition, it was reported that there are still people who enter the Park at night while others consider the Park as their cultural inheritance and may wish to enter it whenever they are in need. Therefore,

given the level of environmental awareness and the challenges faced, it is clear that people need to know the importance of the park in different aspects in order to contribute to its sustainability. In this respect, Gouri (2007, p. 11) stated that if people are aware of the environment and its significance, they will act in an environmentally responsible manner supporting the environmental programs.

### **Communication Channels Accessed**

Public meetings were the only communication channel which is predominantly used to instill environment awareness among local people. This might be because they are means which gather a big number of people. The lack of adequate number of televisions and newspapers might be caused by poverty among local citizens hence having public meetings as the sole means of communication they can fully have access to. This finding coincides with the view of Hughes (n.d), who said that meetings are ways used to supplement the media where it is not accessible by people because of poverty and illiteracy. It is important to mention that the lack of newspapers may lead to the lack of information among those who are literate and hence contribute to ignorance.

Therefore, communication channels used to instill information are not varied, public meetings remaining the most common. Yet, the diversity in terms of access to information is very prominent to facilitate clear understanding among people especially in the area of

conservation. In this regard, Susan (1999, p.19) stated that techniques for conservation communications must be multifaceted to influence knowledge, attitudes and behavior. Indeed, the media is an important tool in education for sustainable development and awareness creation. The key advantage of the media is its ability to reach different audience simultaneously with uniform messages (REMA 2010, p.18). To this, Hughes added that public awareness boosted by the media will create a sound environmental decision-making (Hughes, n.d.).

### **Frequencies of Environmental Information through Communication Channels**

Findings of the study revealed that information on the environment is not frequently passed on to local citizens via communication channels. Indeed, meetings intended to talk about the environment are not frequently held. It seems they take place on particular occasions to instill knowledge on other government policies especially after the “Umuganda”. The reason may be that meetings gather many people and hence local authorities take this advantage to talk about different policies including environmental issues. Ishimwe (2012) carried out a research on an assessment of integration of indigenous people in conservation of protected areas in Rwanda and came up with the same findings. She found out that sensitization campaigns on park conservation take place in ordinary meetings with many

agenda other than solely dealing with conservation. Nevertheless, we can mention that meetings which are merely addressing environmental issues could leave people who live near the park with a sound reflection and understanding as they can take enough time hence giving them chance to offer their views.

The lack of information regarding the environment on radio and television might originate from the fact that people do not know when the programs are delivered or are not interested at all. Also, newspapers are not circulated in the rural areas. Despite this situation, these media are believed to be effective. In fact, newspapers could be a tool to deliver new information, whereas the radio and television could be used to disseminate quick information (Nimish, 2011).

Trainings and workshops on the environment are not frequently provided. This is because they are cost-intensive in terms of preparation and organization. Yet, they could be the ones to provide a sound understanding on environmental issues. In this regard, people’s active participation in environmental conservation programs requires an understanding of how to conserve natural resources and willingness to do so (Poonam, 2011).

### **Local People’s Contribution in the Management of Nyungwe National Park and Challenges**

The feeling of the responsibility to protect the Park is not very much

common among all people living around the Park. A number of challenges to the effectiveness of the Park management were given. These include poverty, crop-raiding and illiteracy and low level of education. In fact, with poverty and crop raiding, local people have other concerns rather than the park protection. In this perspective, some scholars gave their views. To start with, William et al. (n.d.) stated that a subsistence farmer places higher priority on maximizing food security than on protecting the fauna. Secondly, Ekpeyong, (n.d.) cited in Yemsi et al. (2010, p.2) asserted that the poor and the illiterate are often more interested in issues related to their daily survival than environmental management.

Therefore, there is strong need to raise the feeling of concern among all local people as permanent and adjacent stakeholders in the management of the Park. This can be done by placing emphasis on lifting their socio-economic welfare. In this context, on their work on Conservation and community, Adam and Hulme (n.d., p.15) mentioned that conservation goals should be integrated into the development objectives of meeting human needs. Likewise, Hughes (1974) argued that the future brightness of wildlife or any other source is possible only if it is seen within the context of welfare of the total environment. Furthermore, reducing poverty as a major cause of environmental problems is a necessary and central condition of any effective programs addressing the environment (Anantha, 1996).

The implication of the situation above is that effective wildlife conservation requires a decent life on the part people around the Park. Since local people are overwhelmed by poverty, ignorance, etc, it is of paramount importance that the phase of educating them be coupled with meeting their needs and aspirations. These include lifting their social and economic welfare and responding to their problems. In addition, the new model provides that by solving environmental problems, there will be a sustainably protected environment. In turn, this will have a positive effect on local people. Therefore, the environmental management of the Park will be sustainable. In a more general way, with the revised model in practice, the management of natural resources will be more collaborative and sustainable. Indeed, collaborative management will be effective when local people can benefit from the protected resources by trickle-down effect.

## **CONCLUSION**

Despite the fact that environmental awareness is a crucial step toward the success of environmental management, the findings of the study revealed that citizens residing around Nyungwe National Park have low level of awareness on the Park's potential for keeping animals and plants species, being a repository of water, attracting tourists, raising household income and offering jobs and regulating the climate. However, communities were generally reported to have only a moderate level of awareness. Despite this, some people could enter the

Park at night, use it as their cultural inheritance and do some illegal activities, the most prevailing ones being poaching and tree felling. Hence, the first hypothesis stating that citizens living around Nyungwe National Park do not have high level of awareness with regard to the importance of Nyungwe National Park was confirmed. Among the causes of illegal activities, poverty was common among respondents. It was connected with ignorance and hunger, lack of jobs, enough land and alternative firewood, enough development projects and considering the Park as a cultural inheritance. It was also reported that poverty is exacerbated by crop-raiding by animals from the park.

From the study, it was also found out that public meetings, fellow conversations, and the radio were communication channels which were accessed by most local people contrary to television, newspapers, trainings and workshops. For the sake of boosting environmental awareness via these channels, citizens stated that they sometimes get information on the environment through public meetings. They added that they rarely get it on television and radio, while workshops and trainings to spread the information among them were not provided. The second hypothesis, citizens living around Nyungwe National Park do not get enough information communication channels to get knowledge on the environment, was therefore confirmed.

With regard to the contribution of citizens to the management of the Park, the study

revealed that a good number of people expressed their feelings of concern of the management of the Park, while others stated they were not concerned at all. Those who felt that there were concerned said that they contribute by reporting information on illegal activities, not entering the Park and giving advice to their fellows with a will to enter the Park; with these contribution, illegal activities still happen though. In the end, poverty, crop-raiding without compensation, ignorance and the culture of doing illegal activities were reported as major challenges which impede the contribution of local people to the management of Nyungwe National Park. As a conclusion, the third hypothesis stated as the contribution of citizens to the management of NNP is limited was confirmed.

Therefore, to increase the level of awareness of people living close to Nyungwe National Park and ensure a sound management of the park, a number of alternative solutions can be applied. First, there is a need to make use of different communication channels so as to instill information on the role of the park to local people. This should be coupled with strengthening the policy of education for all in the area. Second, due to the fact that people are overwhelmed by poverty, setting and supporting development projects through the EDPRS in the area adjacent the park remains imperative. There is also a need to compensate damages to the crops by animals from the park. In the final analysis, the role of media in

environmental management, socio-economic as well as crop-raiding impact to environmental management should be dealt with.

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