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## Analysis of Stakeholder's Perspectives towards Conservation of National Park, Northern Province, Rwanda

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**Abstract:** The management and sustainable use of Protected Areas Management Policy in Rwanda is of great interest to many stakeholders. This study was conducted from May to August, 2016 to find out local communities and other stakeholders perceptions towards co-management of Volcanoes National Park of Rwanda (VNP). The sample size of the study was 81 respondents including neighbouring rural community from two sectors that depend on using the VNP usually illegally and the key respondents from institutions and local leaders whose resources assist the VNP management. The findings indicated that stakeholders have different perspectives on co-management activities of VNP. Some of interviewed farmers especially those bordering VNP in Kinyi and Shingiro sectors of Musanze District showed negative attitude where they are not willing to perform agriculture on their lands because of crop destruction by wild animals from the park. Both the level of synergy and approaches used were moderate by scale used as indicated by the study findings. The study findings indicated that there is no relationship between stakeholder's perspectives and co-management of VNP ( $r=0.145$ ,  $P>0.05$ ). It was noted that stakeholders express various challenges such as lack of enough alternative solutions to the problems met by rural community and low level of participation in decision making. There is a need to find ways in which local leaders could be taken on a tour of operational and Park-people policy guidelines need to be formulated that will define roles of local stakeholders in protected area activities and programs.

**Keywords:** Stakeholders, Co-management, Volcanoes national park

### I. INTRODUCTION

Searching for viable and sustainable strategies of wildlife conservation in developing countries, which are typically rich in biodiversity, traces back to the times when the fence and fines approach, also known as American National Park model, was commonly being applied [1]. This led to the establishment of protected areas and reserves which did not condone wildlife consumptive utilization and entailed high management costs for governments, with majority of the benefits not count to local communities. To enhance the biological integrity of the parks, this model has been adjusted to the more attractive protected areas outreach model which encourages working and educating local communities about the benefits of wildlife conservation and sharing with them some benefits. Thus, there has been a shift from this 'protectionist' concept or states' centralized management strategy towards a community based model, which emphasizes on transfer of social wildlife rights and responsibilities to local institutions.

Over the past two decades, several developing countries in Sub-Saharan Africa have adopted the community-based approach, which is often implemented in form of integrated conservation and development projects. Such projects include the Communal Area Management Programme for Indigenous Resources (CAMPFIRE) in Zimbabwe, Luangwa Integrated Rural Development Programme (LIRDIP) in Zambia and Community-based Wildlife Management in Tanzania. Although this approach has helped to tackle some of the shortcomings of the centralized 'approach, it has some significant limitations to implementation and therefore some of the ICDPs have not been successful. In Kenya,

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**Vol. 6, Issue 9, September 2017**

adoption of co-management is favoured by owning titles to land. For instance, the Golini-Mwaluganje co-managed project in Coastal Province did not start off until the community members had acquired title deeds to their land a process that was mainly driven by the relatively high incidences of human-wildlife conflicts.

Centralized, top-down resource management is ill-suited to user participation, and it is often blamed for the increased vulnerability of resource dependent communities worldwide [2]. In response, co-management arrangements have emerged to secure an expanded role for stakeholder and community participation in decision making. The co-management approach seeks to create negotiated agreements between the protected areas 'managers and other interest groups, including local resource users. However, in the case of co-management, the extent of the arrangement is rather complex due to its multiplicity in participation as well as governance attributes i.e. accountability, transparency, fairness and lead [3].

As reported by Norton-Griffiths and Mburu, one important positive result of co-management is to build partnership with local communities so as to improve the condition of the wildlife resource. Par again the wildlife count by the Department of Resources Surveys and Remote Sensing (DRSRS) in 1997 also showed that management partnerships improves the level of stewardship and contributes towards resource improvement.

Though co-management can positively contribute towards successful achievement of goals of conservation and socio-economic development, co-management arrangements cannot emerge or be effective without an enabling political framework and favourable government policies. A strong political support and enabling policies would particularly create incentives for the local resource users to participate fully in management partnerships and afford them protection from powerful outsiders [3].

The management and sustainable use of Protected Areas Management Policy in Rwanda is of great interest to many stakeholders. Human-wildlife conflicts constitute one of the most serious threats to the continued survival of Rwanda's National Parks. Participation and partnerships are becoming increasingly important for wildlife management, and is an important pillar of Rwanda's overall development strategy. The wildlife conservation and VNP management goals set out are closely harmonized with other national development goals as set out in Vision 2020 and the Economic Development and Poverty Reduction Strategy (EDPRS).

VNP is buffered, and hence local people have no access to the park and its resources, yet wild animals move out of the park into human settlements and kill livestock, and destroy crops making people to incur heavy costs in protecting their properties. In addition, rapid change of land tenure in areas neighbouring VNP, associated with land subdivision and conversion for other uses particularly for agriculture, infrastructure and urban development have exerted enough pressures on the park, limiting wildlife movement and creating serious human-wildlife conflicts.

Low level of people involvement in the management of the park has impacted negatively on their attitudes and perceptions towards conservation development to the extent that the surrounding communities use illegally the VNP such as poaching, illegal trade of raw materials and overexploitation of biological resources. Further, it is documented that where local people have not been fully integrated in protected area management, this often leads to poor relationships and open resentments.

In response, co-management arrangements have emerged to address the human settlements, serious pressures and threats they face and to secure an expanded role for community participation in decision making. The current study was conducted to find out local community and other stakeholders perceptions towards co-management of VNP, for the provision of information on how different actors with a vested the wildlife count by the Department of Resources Surveys and Remote Sensing (DRSRS) in 1997 also showed that management partnerships improves the level of stewardship and contributes towards resource improvement.

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## II. LITERATURE REVIEW

### Generality on the Analysis of Stakeholder's Perspectives

Stakeholder is any person, group or organization that is affected by the causes or consequences of an issue; or groups or individuals who affect, or are affected by the achievement of an organization's mission and while the perception is a way an individual analyses and responds to an idea (understanding, awareness and knowledge) [1]. The theory was introduced and utilized mainly in business management to improve production effectiveness and to ensure quality management, but the concepts have been widely used in other disciplines as well [2,3]. Freeman noted that stakeholders are any groups or individuals who can affect, or are affected by the achievement of an organization's mission [4].

The scholars Byrd, Cardenas and Greenwood identified stakeholder as any group of people, organized or unorganized, who share a common interest or stake in a particular issue or system [5]. Furthermore, Garrod B [6] noted that stakeholders "are groups, constituencies, social actors or institutions of any size or aggregation that act at various levels (domestic, local, regional, national, international, private and public) and have a significant and specific stake in a given set of resources, and can affect or be affected by resource management problems or interventions".

Stakeholder theory is largely used as a technique to identify and assess the importance of key players/actors, people, groups and institutions that may influence the success of an idea or a venture [5].

Generally, it is used to explain, guide and assess the structure and operation of institutions and organizations. The theory is built on the premise that an initiative or project can be successful if the various groups and individuals who have a stake in it can contribute to its accomplishment [7]. Farrington [8] found that stakeholder analysis has been developed in response to the challenge of multiple interests and objectives, such as the search for efficient, equitable

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Vol. 6, Issue 9, September 2017

and environmentally sustainable development strategies” Stakeholders “differ by the size of the stake they have in the firm” and groups can be reliably identified as stakeholders based on their possession of power, legitimacy and/or urgency legitimacy refers to the stakeholder’s relationship with the firm and/or his/her right to exercise power. Legitimacy is required to provide authority, such as in the right of a government to rule and make policy [9]. This view agrees that all stakeholder groups can affect or be affected by an action, decision or development. In addition, stakeholders can be used to illuminate the interests of all groups (especially, the marginalized groups [10].

The scholar Byrd applied stakeholder theory to identify stakeholders and the roles they play in sustainable tourism development [11]. Byrd’s study revealed that local community planners and destination management organizations were concerned about all stakeholder groups in their area, especially local residents. In order to have a sustainable tourism venture, managers and planners need to incorporate multiple stakeholder interests in destination product development. Stakeholder theory has been used to increase collaboration between different tourism resource users and institutions, especially on issues relevant to planning, development, resource utilization and management [12].

## Stakeholder Analysis

Stakeholder analysis has been widely used to improve the effectiveness of business organizations, enhance the understanding of the political ecology of water management and urban environmental management and identify stakeholder participation in trans-boundary natural resource management [9].

Stakeholder analysis is defined by many authors. For example the definition by [13] used stakeholder analysis as “a tool or set of tools for generating knowledge about actors- individuals and organizations so as to understand their behaviour, intentions, inter relations and interests; and for assessing the influence and resources they bear on decision making or implementation processes”. Showing the interests and influences of the different individuals, classes and organizations with respect is an important step in this integrated assessment process. As a result stakeholder analysis is a useful tool for managing stakeholders, and identifying opportunities to mobilize their support for a particular goal.

In addition, stakeholder analysis by Brown et al. [14] is defined as a system for collecting information about classes or individuals who are affected by decisions, categorizing that information and explaining the possible conflicts that may exist between important classes, and areas where trade-offs may be possible. According to stakeholder analysis involves three steps:

- Identification and selection of stakeholders: This can be based on review, observation, interviews and questionnaires based on their interest in the ecosystem.
- Prioritization of stakeholders: This could be done through data review, interview and questionnaires. Here prioritization is based on the relative level of influence and degree to which they are affected.
- Stakeholders involvement: Here the involvement could be through data gathering techniques such as interviews, questionnaires, workshops, local platforms. There are three forms of involvement; namely consultation, participation and collaboration.

In this thesis, the stakeholder analysis method by was used as it includes all forms of involvement in the integrated assessment procedure. Early in the process, the main stakeholders were identified as it is important in all steps the assessment, to identify the main relevant services, valuing of goods and services and decision making in planning and management of ecosystems.

## Parks and Protected Areas in Africa

In 1990, the World Parks Commission set a goal of protecting 10% of the planet's surface. In Sub-Saharan Africa, over a million km<sup>2</sup> of land has been set aside as national parks and game reserves, yet they have been remarkably unsuccessful at protecting wildlife [15]. This can only happen at the expense of displacing and compressing rural

# International Journal of Innovative Research in Science, Engineering and Technology

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Africans into smaller and smaller areas, along with increased impoverishment and habitat degradation in the compressed areas. The IUCN iv classification of protected areas covers 6 categories ranging from extreme protection (Categories Ia–III) with Category II a national park, to conservation/management interventions in (Categories IV–VI) with Category VI allowing a “sustainable flow of natural products and services to meet community needs [16]. Unfortunately in Africa, there are few protected areas under Category VI.

In Africa alone, it is estimated that there have been from 14 million to as many as 39.5 million internally displaced persons (IDPs) from creation of parks and protected areas.

## The Stakeholder’s Attitudes on Co-Management of National Parks

### Conservation attitudes towards a co-management of national parks:

Conservation is as old as the establishment of the first world known national park in the United States. This was aimed at mainly preserving wildlife for leisure and natures’ beauty. The scholars Chanda et al. [17] define attitude as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour” Also, an attitude is regarded as the tendency to feel toward or react to a given object or subject in a certain way. Attitudes have different dimensions as they can show how individuals feel, think and behave as well as what is being liked or disliked or what actions are performed toward something.

Clarkson M [18] noted that if residents hold beliefs about the effects of tourism, they know if they like or dislike these effects the level of reaction is likely to depend on the importance that they place on the perceived impacts and the likelihood of it affecting their quality of life. Conversely, other studies have also shown that local residents were likely to indicate positive attitudes towards conservation and tourism, particularly when they were satisfied with accrued benefits [19].

### Community concern and participation in co-management of parks:

The increased positive relationship between people and the park in areas where projects have been operating over the past 10 years is a good sign, as seen in a recent experience from Bwindi, Uganda for example. Co-planning should take this into account and also contribute to the support of community-friendly law enforcement activities in parallel with supporting the local communities [20]. Making the links clear as to why policing is important and that in the long term it can benefit people is needed so that they better appreciate the role of park authorities. Importantly, should community conservation efforts include community use or management there is still a pressing need for monitoring and enforcement of regulations to ensure sustainable harvesting limits are adhered to [21].

Residents are generally concerned with the participation associated consequences of tourism growth in their respective communities. Findings in the literature has identified that residents were concerned with increased traffic congestion. Participation (Use Levels) as ability of stakeholders search as local people to participate in decisions which affect them and which depend upon access to power, resources and knowledge. Visits to a national park environment are important because they give people the opportunity to interact with the natural environment through activities such as nature walks, horse riding, game drives, sightseeing and wilderness camping. Such activities “provide experiences that are emotionally and spiritually rewarding. However, lack of participation in park-resource management hashed adverse effects on local individuals’ perceptions and attitudes toward tourism development, subsequently leading to less support for parks. The level of support for park-based activities is related to increased participation in tourism and recreational activities [22].

### Guided visioning and social network towards co-management of national parks:

Guided visioning is a building trust, view of the future on winch the stakeholders are aware. When a conflict situation is especially adversarial, it is important to start with trust- and confidence-building measures. Some level of trust is necessary for stakeholders to be able to agree to a solution, rather than just fighting over positions. Build personal

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

relationships, when interacting with stakeholders at a personal level can be an effective way to let people know that their interests are being heard and understood, how one individual, who does monumental work in this particularly trying situation, has made an impressive effort to know everyone around the protected area personally, the ability and willingness to invest the time to develop individual relationships with people of all points of view may be one of the keys to his accomplishments [23]. It may be difficult of course to know or include everyone who has an interest in a protected area. An alternative to trying to reach every single person is to rely to a large extent on community leaders. This can be accomplished by building relationships and trust with stakeholders and other authorities that have authority and credibility in the community in terms of co-management process [24].

Both the social network and resource management literature discuss ways in which networks influence individual actors or stakeholders and groups. For example, research on the strength of ties between actors shows how strong versus weak ties relate to different kinds of outcomes. As Brass DJ [25] notes: the strength of a tie is a (probably linear) combination of the amount of time, the emotional intensity, and intimacy (mutual confiding), and the reciprocal services which characterize the tie. The advantages of strong ties for resource management are obvious: Stakeholders with strong ties are more likely to influence one another, and thus, creating strong ties among diverse stakeholders can enhance mutual learning and the sharing of resources and advice [26]. Benefits of strong ties may be countered, however, by the redundancy of information that typically runs through such ties, as stakeholders who have shared a strong tie for a long period of time tend to have the same information and knowledge regarding resource management [27].

## General Information about National Parks

### National park management:

Management, in general terms, refers to the direction or controlling of actions and activities. It is an expression that usually implies responsibility and accountability. There are many views regarding the management of protected areas. One of the most influential conservation biologists in North America Reed Noss, argues that although management of national parks is a form of control, ecological management is however necessary in many areas in order to preserve its biological diversity, especially when the area is inflicted by a variety of disturbance regimes. In opposition to this view is Neil Evernden, (a professor of environmental studies at York University) who contends that any type of management is a form of 'domestication'. Rick Searle, however advocates any combination of approaches that ensures the most restoration and maintenance of wildness is viable [28].

Alternatively, management of national parks can also be viewed as being essentially the management of people, such as the introduction of visitor quotas to manage the inflow of people [29]. The main management tool of national parks is primarily the Management Plan. It is a fundamental document, as it should direct the management of the park for a designated period, usually between 10 to 15 years. Each management plan commonly expresses a 'core vision' that the park managers aim to aspire through broadly described actions [30].

### Accountability, responsibility, power and governance toward co-management of national parks:

"Efficient co-management through downward accountability" Commitment to international nature conservation policy demands increased participation, which could be implemented through decentralization or co-management. This follows a general trend from government to governance. Co-management arrangements are also increasingly seen as forms of governance, which opens them to the criticism that accountability becomes blurred when public-private relations are characterized by informality and negotiations [31].

Collaborative management or "co-management" of protected areas entails the sharing of power and responsibility for protected area planning and management between the government and local resource users. Co-management is

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

grounded in a partnership arrangement that combines state control with local, decentralized decision-making and accountability and that, ideally, combines the strengths and mitigates the weaknesses of each [32].

All stakeholders in co-management of national parks should have the same chance to put issues on the agenda, to question, to interrogate, to propose solutions and to employ the full range of expressions available to everyone else. All have equal access to all relevant arenas. Degree of discretion in especially way is a power. Power is a critical element in conflict resolution. Each stakeholder's decisions about how they approach the conflict will depend to a large extent on their view of the power they have and the power balance among the various stakeholders. For example, a group that feels powerless to influence an outcome through a bureaucratic decision making process may choose to use illegal activity or armed force instead.

Some power is real, some is perceived. The protected area manager who is involved in a conflict resolution process needs to understand the relative power both perceived and real of the stakeholders involved in the conflict. Co-management is a governance approach that mixes elements of public and private institutions, thus complementing formal political governments. Decentralization focuses on both the representative assemblies and administrative organs of these formal institutions. Both co-management and decentralization aim for broadened participation at the lower administrative and/or ground level. The decentralization framework analysed here includes three dimensions: actors, powers and accountability relations [33].

At the national level, a central responsibility for nature conservation works and coordinates different forms of protection, which implies the production of guidelines and national programs. Funding for promoting is administered by and runs national parks. The Forestry Board is responsible for the protection of biotopes in forested lands and works through agreements on nature conservation. National parks are established to conserve a large continuous area of a certain landscape type in its natural or essentially unchanged condition so the decision to designate a national park is made by the Government with the agreement of Parliament and stakeholders [34].

## **Systems of communication towards co-management of national parks:**

Communication emphasizes the importance of dialogue, participation, local support and local management in nature conservation, in line with international trends outlined earlier. This indicates a change in Swedish nature conservation policy, where also regional development, e.g. tourism, is favoured once again [35].

However, participation in nature conservation work remains more sporadic than systematic and regular. He points to the policy's emphasis on 'support' or 'anchoring' which implies finding methods to increase understanding and acceptance locally. This is explicitly stated that the Government's environmental objectives are certainly not negotiable, but the forms to achieve them may be subjected to dialogue; the aim is to provide for both dialogue and the exchange of information on nature conservation work that is currently ongoing. There are many different kinds of power, including power of position (having authority, being in a position to make or influence decisions), power of knowledge (having information), personal power (being personally forceful/persuasive), economic power (having financial resources); political power (having a supportive constituency or access to political leadership), legal power (having a "good" legal case, expert legal counsel, or access to courts);coercive physical power (having police or military backing, or weaponry), family power (being from a well-connected family), and group power (being a member of an ethnic, religious, or other type of group that has power or, for example, being male in a male dominated society).

There are often extreme differences in power between different stakeholders. In attempting to resolve a protected area conflict it is especially important to involve both those with substantial power especially those with the ability to thwart the implementation of a proposed resolution to the conflict and those who are the least powerful. Therefore all these must be accomplished when the stakeholder's members work together as synergy team.

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

## **A sensitization initiative and community education towards co-management of national parks:**

In 26 (21.1%) of the publications, authors found that provision of education, awareness, and outreach programmes to local communities neighbouring the park was responsible in some cases for successful conservation of biodiversity [16]. A study by Ormsby and Kaplin in Masoala National Park in Madagascar found that 93% of residents living near the park were aware of the existence of the park and expressed positive opinions about the park, attributing this to the education and awareness programmes that the park administration had provided.

Education and awareness activities play a vital role in building support for protected areas in general and for particular management actions. Sensitization is highly significant in terms of future interventions [36]. A study in Bwindi Impenetrable National Park in Uganda also confirmed that environmental education enhanced management effectiveness in the parks.

According to Hoole and Berkes F; local people as stakeholders and protected area users may not be aware of the conservation values associated with the area. It is unrealistic to expect them to support protection measures or accept compromises that may be necessary to resolve a conflict unless they have a sense of those values. Therefore, education and public relations are key elements in most conflict resolution processes. Educating the public about the potential benefits associated with a protected area can be an important tool in avoiding and resolving protected area conflicts, especially over the long term, and can be critical in gaining support for the establishment of a protected area in the first place.

In addition, educating the public about their responsibilities as protected area users can be critical in safeguarding protected area resources. In situations where protected areas have been established without prior public education, consultation, or dialogue with local communities regarding the reasons for and benefits of the area, the predictable outcome is conflict, especially when there is a negative impact on local communities associated with the protected area [37].

## **Conflict resolution mechanisms towards national parks:**

Conflict management is a non-violent process that promotes dialogue and negotiation. It implies: taking care of disagreements before they generate hostility, helping the institutional actors to explore a multiplicity of options for agreement and subsequently, select an option everyone can live with, recognizing and intervening in the underlying causes of conflict, with a view to preventing them in the future. Modern processes of conflict management are quite close to the processes used to negotiate a co-management agreement; both express the same values (dialogue, transparency, pluralism, fairness, etc.), have the same main constituents and can be facilitated in similar way [38]. Protected areas are refuges of tranquillity and peace, yet they are also places where conflict occurs. In a world in which the bio-physical environment and socio-cultural systems are changing rapidly, conflicts involving protected areas are inevitable. It is important to emphasize that conflict is not necessarily bad [39]. Conflict can represent the productive interaction of competing interests and values, an ever-present function in a dynamic society. Conflicts that are properly addressed can be opportunities for problems to be identified and solved, and progress achieved. Many conflicts, however, can become counterproductive and destructive, leading to detrimental results and hostile relationships. Protected area staff faces the challenge of trying to respond to conflicts so that unproductive consequences can be avoided while human well-being and the natural environment are protected [40]. Conflicts can be resolved in a variety of ways. One side may defeat the other side through armed combat. Or a formal legal or institutional mechanism such as a court proceeding or legislative action may be utilized to resolve the conflict. The conflict resolution framework described in this Handbook is oriented toward informal, voluntary, collaborative approaches that can be used either to supplement formal mechanisms or as stand-alone processes. The assumption behind the framework is that a good conflict resolution process is one in which stakeholders (those individuals or groups who are directly involved in the conflict, or who may be affected by how the conflict is resolved) have the opportunity to really understand each other's needs develop a range of alternatives for how to address those needs, and reach a mutually agreeable solution. The emphasis is on communication. Another way to think about this kind of conflict resolution approach is as joint problem

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

solving or decision-making when there is disagreement, something we all do every. Some scholars consider conflicts to be one of the major reasons for the emergence of co-management [41,42].

## National Parks of Rwanda

Although Rwanda is a small country (26,338 km<sup>2</sup>), the country has a remarkable variety of ecosystems and a variety of flora and fauna. Rwanda's vegetation is a regional mosaic comprising Guinea-Congolese and Sudanese vegetation types which includes savannah with grasses, bushes and trees; mountain rainforests and mountain meadows; forest galleries, swamps and aquatic vegetation [43].

Rwanda has three National parks including Akagera National Park, Nyungwe National Park and Volvaoes National Park. Akagera National Park borders with Tanzania, is above all, big game country! Herds of elephant and buffalo emerge from the woodland to drink at the lakes, while lucky visitors might stumble across a leopard, a spotted hyena or even a stray lion. NNP is Rwanda's newest and largest national park. It is situated in the southwest of the country and, along with the contiguous Kibira National Park in Burundi, lies in Africa's most biodiversity region, the Albertine Rift. The park straddles the Nile and Congo River basins and is crucially rich to Rwanda's water supply: 70 per cent of the country's rain falls in Nyungwe. It is home to a wide variety of flora and fauna, including approximately 100 species of orchids; 13 species of primates, including chimpanzees, blue monkeys and large colonies of Angolan colobus; almost 300 bird species, including a number of enigmatic turacos; and a number of other species of mammals, reptiles and insects. Tourism is growing by approximately 30 per cent per year; in 2010 the park welcomed approximately 4,000 visitors. Tourists are drawn to the recently opened canopy walk, chimpanzee and colobus-tracking opportunities, hiking trails and birding. There is, however, currently no mechanism in place to monitor growth in tourism, nor is there a concerted tourism strategy for Nyungwe. VNP lies in North-western Rwanda and borders Virunga National Park in the Democratic Republic of Congo and Mgahinga Gorilla National Park in Uganda. The national park is known as a heaven for the mountain gorilla. It is home to five of the eight volcanoes (Karisimbi, Bisoke, Muhabura, Gahinga and Sabyinyo). The park was the base for the zoologist Dian Fossey.

## Importance of VNP:

At International level, VNP is part of the Albertine Rift, a very important geological and ecological structure in the region of eastern and central Africa. As such, the park is a home to a bigger number of the fauna and flora species that are endemic to the sub region. The park has the privilege of sheltering Mountain Gorilla, which is one of endemic and endangered species that lives only in two massive forests of Bwindi impenetrable National Park and the Virunga Mountains of which the VNP is part.

The diversity of ecosystems in VNP and its endemic richness gives scientific, national and international community extended opportunities on research are either fundamental or applied [42]. At national level, climate regulation and ecological services: Regional Natural forests play an important role on the regulation plan of precipitation. Precipitations generated from volcano area feed many water sources and rivers at national and regional level. Although VNP is the smallest national Park in Rwanda, it represents a real economic resource in the real sense. Gorilla visits generate several millions of dollars every year directly or indirectly and Gorilla trips develop the whole sector of travel agencies, hotels, restaurants, and different tourist operators essentially contributing to the national economy [42].

At local level, VNP is very important to the neighbouring communities. It provides them with vital ecological services ranging from watershed protection, rain formation, climate control and soil erosion control among others. Some community members have benefited directly from VNP through direct employment as park rangers, trackers and guides. Others have received regular income from tourism as porters, and through selling of arts and crafts, honey and other products to tourists. A healthy forest provides benefits to both forest habitats and human. This includes maintaining the conditions for a viable watershed, which in turn provides clean water.

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

## Conservation of VNP:

For the conservation of VNP, RDB undertakes different activities through the different operational departments. Main activities at park level include. Firstly, the RBM combines activities of enforcing protection laws and monitoring of both illegal activities in the park and keeping healthy the fauna and flora of the park. It also serves as planning tool through the identifications and mapping of illegal activities and other specific situation in certain zone of the park. Secondly regulated tourism concerns activities of organizing and keeping rules of tourism while entering the park for gorillas and other attractions. Organizing refers to the customer care and giving information on important sites inside and outside the park. Thirdly, the community aims to ensure an active and effective participation of neighbouring communities in the conservation of VNP.

Among others the main tasks are to: improve relations with local communities, develop environmental education, reduce conflicts related to wild animals, develop a system of park benefits sharing, develop a program of sharing revenues from tourism, involve communities in development of tourism, ensure coordination with strategic partners and contribute to poverty reduction.

## III. METHODOLOGY

### Research Design

The study used the exploratory research design to generate the required information. This design gives a description of variables based on field generated data and literature reviews. According to Burns, an exploratory design allows the researcher to make a comprehensive inference about the investigated variables in the target population. It also allows an analysis of results with a view of generating new ideas about phenomena like perceptions of local people towards conservation and the overall management of wildlife resources.

### Study Area Description

The VNP geographically covers two parts: the western made of two volcanoes, Karisimbi (4507 m) and Bisoke (3711 m), and the eastern part made of Sabyinyo (3634 m), Gahinga (3434 m) and Muhabura (4127 m). The zone adjacent to the park is made of five districts and divided into two topographic units: the volcanic region and the Crête Congo-Nile region.

There are a number of caves in the Park and also in the neighbouring environment. Based on the topographic map details [43], the highest altitude of the zone outside the Park is 2400 m, 2550 m, 2600 m, 2800 m and 2850 around Gahinga, Sabyinyo, Muhabura, Karisimbi and Bisoke volcanoes, respectively.

The afro mountain Forests of VNP enable climatic regulation in the region as far as precipitation is concerned. There is rainfall throughout the year but with two heavy rain seasons; the longest being from February to June with a peak in April while the shortest is from September to December with a peak in November.

This pattern of rainfall is characteristic of the Inter-tropical Convergence Zone known to be ideal for agricultural activities. The annual temperature averages depend on altitude, decreasing by 0.65°C every 100 m. The volcanoes chain in Rwanda is endowed with three permanent lakes such as Bisoke, Ngezi and Malalo. In addition, some swamps and wetlands exist between volcanoes. The VNP vegetation, litter and porous sub-soil are very important in water movement control. The VNP is considered as the Water Tower for the neighbouring region due to abundant precipitations that are received almost throughout the year. There is a mean of 220 million m<sup>3</sup> of water per year over the 16000 ha of the Park [44].

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

## Sampling

### Sampling design:

Purposively, targeted 2 sectors which have in total 792 households have been selected. They include Kinigi (512 households), and Shingiro (280 households). These two sectors are the neighbouring rural community that depend on using the VNP usually illegally and so are subject to the park outcome. The key respondents (institutions and local leaders: 18) stakeholders whose resources assist the VNP management were also interviewed (Fig. 1).



Fig. 1. Selected sectors during sampling.

### Sample size and sampling procedures:

**Purposive sampling:** This study adopted purposive sampling procedure. A sample of n households of peasants has been selected by using the formula of KOTHAR:

$$n = \frac{z^2 \times p \times q \times N}{d^2(N - 1) + z^2 \times p \times q}$$

Where, n=sample size, N=size of population (number of households), Z=coefficient normal distribution, q=probability of failure, d=margin error, p=probability of success.

After, a cluster and purposive sampling method has been used at all selected sectors and a proportionate allocation sampling method have been used to know the number of population to be interviewed in each sector.

For KOTHAR the margin error varies between 5% and 10%. I used the margin error of 10%, then the confidence level of 90%, our probability of success is p=0.5, failure probability of q=0.5, as  $Z_{0.25}=1.65$ .

The total households to be interviewed on these selected sectors are:

$$n = \frac{(1.65^2) \times 0.5^2 \times 792}{(0.1^2) \times (792 - 1) + (1.65^2) \times 0.5^2} = 62.74 = 63$$

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

**Proportionate sampling:** After a proportionate sampling at Sector level, a proportionate allocation sampling was used to determine the number of households to interview in each sector.

The following formula was used:

$$n_i = \frac{N_i \times n}{N}$$

Where,  $n_i$ =the sample size proportion to be determined,  $N_i$ =the population proportion in the stratum,  $n$ =the sample size,  $N$ = the total population.

Then, the proportion of population in each sector is shown in Table 1.

**Table 1.** The proportion of population in each sector.

Sector	Number of house holds	The proportion of population interviewed per sector
Kinigi	512	41
Shingiro	280	22
Total	792	63

Apart from the 63 households selected by focusing on 2 sectors bordering the VNP, other 18 key respondents from local leaders and managers from other institutions with resources that could assist the VNP conservation were interviewed and they have been identified by conducting a focus group discussion with the members of RDB which is a partnership of organizations in VNP. The RDB was chosen to take part in this initial focus group discussion because it is national board that has already brought together many of the key stakeholder organizations as part of their partnership, including International Gorillas Conservation Project(IGCP), Dian Fossey International Gorillas Fund (KARISOKE), Mountain Gorillas Veterinary Project(MGVP) and Gorillas Organization(GO). The aim of the focus group interviews was to evaluate and to adapt the proposed objectives of the research if it was focusing on relevant issues and categorize stakeholders. Three individuals from each category of the key respondents were interviewed which makes 18 interviewees from different organizations. In total, 81 representing all categories including both the surrounding riparian communities (63) and key respondents (institutions and local leaders: 18) stakeholders were interviewed.

## Data Collection

During data collection, the secondary and primary sources were used. Secondary data involved different reports at the park levels, especially those from community partnership ranger based monitoring programs. Primary came from households survey and Institutional stakeholders included local leaders and employees of governmental and nongovernmental organizations, Community based organizations and park managers, working with RDB in the conservation of VNP. The used questionnaire was divided into two parts. The first part concerned the households' survey that was translated in the mother language of Kinyarwanda and the second part which was for Institutional stakeholders but established in English which is officially spoken in Rwanda. Both structured and unstructured questionnaires have been used.

## Data Analysis

Once the measuring instrument has been administered, the raw data was systematically organized through coding to facilitate analysis. Inferential statistics have been used to make inferences about the influence of the stakeholder's perspectives to the co-management of VNP. This helped to generalize the findings of the study to the stakeholders. Using the statistical package for social sciences [SPSS] version 16, data collected from different interviewees have been used to analyse according to different variables. We used Friedman test to characterize the stakeholders perspectives on co-management of Volcanoes National Park (objective One); to evaluate the synergy among stakeholders (objective two) we used descriptive statistics including mean, frequencies, percentages, and standard

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

deviation. To analyse the relationship between stakeholders perspectives and co-management activities (objective Three), we used correlation analysis in order to predict the dependent variable from the knowledge of independent variables. For interviews and field observation notes, qualitative analysis was used. Arc map software has been used to localize the study area. To test the hypothesis, I examined P value at 0.05 level of the significance.

## IV. RESULTS

### Stakeholder's Perspectives on Co-management of VNP

The first objective of the study was to characterize stakeholders' perspectives on co-management of VNP and the objective was analyzed using the Friedman test.

**Table 2.** Stakeholder's perspectives on co-management of VNP.

The Stakeholders perspectives on co-management of VNP	Mean rank
Conservative attitude	2.43
Participation	3.09
Community concern	3.04
Guided visioning	3
Social network	3.44

Table 2 gives the summary of objective one which was to characterize stakeholders' perspectives on co-management of VNP. There are some perspectives highlighted by the stakeholders on co-management of VNP where they expressed that conservation attitude with 2.43 mean rank as the more appreciated perspectives among others, following by guided vision (3.00 mean rank) to conserve the VNP, community concern with the mean rank of (3.04), participation with mean rank of (3.09) and the social network with 3.44 mean rank. This means that these ones are the preferred perspectives of stakeholders towards co-management of VNP as shown by their mean ranks. Some of interviewed farmers especially those bordering VNP in Kinigi and Shingiro sectors showed negative attitude where they are not willing to perform agriculture on their lands because of crop destruction by wild animals from the park. The farmers allege that no action is taken when they report such incidences to the Park Authorities. The farmers around VNP, who are the majority of the local population around VNP, believe that the park is not an asset to them and they should devote their energies to agricultural production which yields direct economic returns. This has not happened because wild animals have always destroyed their crops. Their perceptions towards VNP conservation are negative because they are not compensated for such losses. These sentiments concurred with the views and observations of park management. The entire VNP has been buffered and protected using different structures such as stone walls and trenches, an intervention that can be effective in mitigating human wildlife conflict. Despite this, the effectiveness of those structures as a conflict mitigation measure, with a view to changing local people's attitudes is limited because animals like monkeys can easily cross the buffer.

Findings support from different scholars indicated that the lack of clear communication channels between park staff and leaders at the local and national levels was also attributed to failure of conserving biodiversity in National Parks co-management where, found that miscommunication amongst stakeholders of the Serengeti National Park coupled with the conflicting laws and regulations from local and national leaders and park staff led to improper investment agreements that resulted in inadequate benefits from investors to local communities. This has in turn aggravate negative attitudes and perceptions towards the conservation of VNP. Whereas the Park Authority may actually mean well by enforcing the law, it is apparent that there is need to treat the local people fairly and with respect as key stakeholders in conservation development. Efforts must be made to improve communication between the local people and the Park Management regarding benefits, their roles and responsibilities in conservation development in the area.

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

A major theme that emerged from the data was that all stakeholders, including both the institutional and surrounding rural community, believed that VNP should be conserved to provide economic, social, and environmental benefits to local communities. Though co-management can positively contribute towards successful achievement of goals of conservation and socio-economic development, co-management arrangements cannot emerge or be effective without an enabling political framework and favorable government policies. A strong political support and enabling policies would particularly create incentives for the local resource users to participate fully in management partnerships and afford them protection from powerful outsiders. Certain resources may be needed at the local level that user groups cannot provide. These may include technology and scientific expertise. At the same time users have resources based on local knowledge, such as information about harvests or the status of the resource, which may be needed for central administration. Efficiency may be increased as specialization is enabled by the division of labor. This may also occur through linking different types and levels of organization so that the flow of information can be accelerated and problems can be addressed at their appropriate level.

## Change in attitude towards conservation of VNP:

Table 3. Test statistics.

VNP	P-value
N	63
Chi-Square	21.848
Df	4
Asymp.sig	0

Friedman Test: The results given by Friedman test, that the P-value < significance level ( $0.000 < 0.05$ ), therefore we rejected the hypothesis stated that conservation attitude towards the conservation of VNP is not the main conservation stakeholder's perspective on co-management of VNP, so that rejecting the hypothesis conducted us to conclude that there is a statistical significance of 5%, and as shown by the mean ranks above, we concluded that conservation attitude is the major perspectives of stakeholders on co-management of VNP.

The co-management of protected areas (PAs) have been developed and supported in many countries through international and national approaches and practices as well as legal, policy and institutional frameworks. Many international standards, guidelines and best practices are non-binding principles (soft law) in international regimes, yet they have become embedded in national legal and policy frameworks in forest and PA management (Table 3).

## Stakeholder Prioritization of Management Purposes on VNP

For all institutional and surrounding riparian community stakeholders, the protection of Mountain Gorillas is the main purpose on co-management of VNP as indicated by the results on the figure above. Respondents felt the goals where 77.2% of the respondents confirmed erosion control and protection of fauna and flora, 87.3% confirmed the protection of mountain gorillas, 75.2% confirmed the environmental education while 79.4% of respondents confirmed tourism and said that through the environmental education and research because they could help them to demonstrate the social and economic values of conservation (Fig. 2).

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

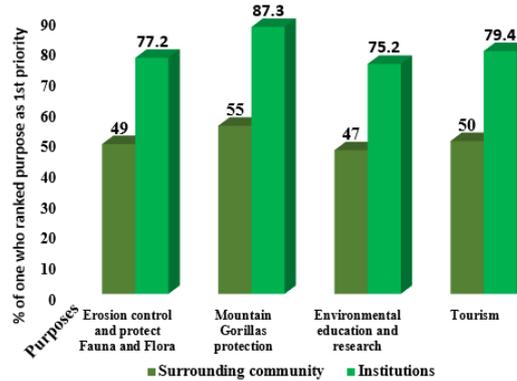


Fig. 2. Stakeholders prioritization of management purposes on VNP.

Protected areas have long been the most effective and widespread measure for conserving nature and natural resources. Well our planet's land surface has been allocated for conservation purposes, in virtually all countries. These areas are important tourist attractions, protect watersheds, help define national identity, and conserve biological diversity. Our societies would be much poorer if protected areas had not been established.

The majority of the stakeholders saw the benefits from tourism since it would provide jobs to the community as park rangers, trackers, guides and it is the one which generate more foreign earnings to the country. Although VNP is the smallest national Park in Rwanda, it represents a real economic resource in the real sense.

Gorilla visits generate several millions of dollars every year directly or indirectly and Gorilla trips develop the whole sector of travel agencies, hotels, restaurants, and different tourist operators essentially contributing to the national economy [42]. VNP is very important to the neighbouring communities. It provides them with vital ecological services ranging from watershed protection through erosion control, rain formation, climate change control etc.

## The Synergy among Stakeholders on VNP and Approaches used on Co-management of VNP Conservation

The second objective of the study was to evaluate the synergy among stakeholders on VNP and approaches used on co-management of VNP conservation in Northern Province of Rwanda. The objective was analyzed using the mean and standard deviation; the mean portrays the occurrence of the response and the standard deviation portrays the extent to which scores deviate from the mean.

Table 4. The level of synergy among stakeholders on VNP conservation.

Items	Mean	Std Deviation
We work in team as the best results to be very productive	3.6	1.24
We combined power of a group of things when we are working together	3.27	1.25
We work separately in our activities of co-management of VNP conservation	3.43	1.13
We have participated in the negotiation process for conserving the VNP	3.42	1.25
We work as team spirit born	3.44	1.26
Stakeholders	3.43	1.27

Table 4 gives the summary of objective two which was to evaluate the synergy among stakeholders on VNP and approaches used on co-management of VNP conservation in Northern Province of Rwanda, where the findings results indicated that the level of synergy among stakeholders is moderate as per the scale used in the study which indicated a mean of (3.43). This can also be observed from the standard deviation of (1.27). This may also be captured from the

## International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

production of interview guide where the respondents expressed their advantages in terms of communion and the approaches used because, they involve local communities inclusively in participation due to the decision making, which enabled their level of synergy among them with their approaches used. If affected groups are included, their interests and concerns can be known or considered. If significantly affected stakeholders are excluded from attempts to address the conflict, they are likely to remain disgruntled over time, because they believe their interests are ignored and because they have no ownership in the outcome. Mainly inclusion or stakeholder's participation also gives people a sense of ownership, which is a precursor to stewardship and belongingness at VNP.

**Table 5.** The level of the approaches used by stakeholders in co-management of VNP.

Items	Mean	Std Deviation
Revenue Sharing	3.28	0.81
Group discussion	3.32	0.91
To establish a buffer zone around VNP	3.28	0.83
Gardians	3.35	1.00
People Mobilization	3.03	1.09
People involvement in conservation of VNP	3.36	0.95
Co-management of VNP	3.27	0.931

The findings from table 5 indicated that the level of approaches used by stakeholders in co management is moderate as per the scale used in the study which indicated a mean of (3.27). This can also be observed from the standard deviation of (0.931). This is confirmed by the interview guide where the stakeholders of different institutions, 17(94.4%) said that buffer zone protection, implementing compensation law, ensure the capacity building of stakeholders, carrying out a study for critical animals, training on co-management and sharing of benefits from VNP. Another important strategy as highlighted by respondents is the compensation to properties and crops by park wildlife. The involvement of community based organizations in conflict resolution is highly benefiting both sides because members have been involved in illegal activities against VNP but now they are currently involved in the process of problem solving without special need.

Revenue sharing was gazetted by the Government of Rwanda in 2005, with objectives of conserving the park, livelihoods promotion and conflicts reduction. The stone wall and trenches digging were among others the very important measures put in place to control park animals especially buffaloes and other small mammals. However, some critical animals such as primates' mountain gorillas inclusive cannot be controlled by these types of physical measures [45].

Revenue sharing serves alternatives to local communities' economic losses, increases household income and thus reduces resentment of victims who may have been mostly affected by wildlife problems. Revenue sharing provides benefits as opposite to costs of living near the park as results of efforts made by local communities in the conservation of VNP. If it was successfully executed, revenue sharing could play an integral role in improving and changing local peoples' perceptions towards park conservation and hence building a strong community and conservation relationship that would benefit community people and the conservation area. The significantly higher proportion of respondents who agreed with the suggestion that the amount and type of benefit that local people derive from VNP conservation may be explained by the fact that benefits normally motivate individuals and groups to take positive action towards conservation and tourism development.

### **The Relationship between Stakeholder's Perspectives and Co-management Activities in VNP**

Objective three was to find out if there is significance relationship between stakeholder's perspectives and Co-management activities in VNP conservation. The objective was analysed using Pearson correlation analysis. Pearson correlation moment coefficient (r) provides the measure of linear relationship between stakeholder's perspectives and

## International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

co-management of VNP, while coefficient of determination ( $r^2$ ) indicates the amount of variation of co-management explained by stakeholders' perspectives.

**Table 6.** Relationship significance of stakeholders' perspectives and co-management activities of VNP.

Descriptive	Measures
Pearson Correlation	0.145**
Sign.(2-tailed)	0.25
Coefficient of Determination $r^2$	0.021
N=63	
**. Correlation is significant at the 0.05 level (2-tailed)	

According to table 6 of bivariate correlation analysis, the P-value > the significance level ( $0.258 > 0.05$ ), we failed to reject the hypothesis stated that there is no synergy among stakeholders and no differences in approaches used by different Stakeholders of VNP conservation.

Accepting the hypothesis led to the conclusion that there is no statistical significance association / relationship between stakeholder's perspectives and co-management of VNP conservation, due to the following constraints such as low participation in the planning and decision making process which should be based on the trust, mutual learning, knowledge, insights and capabilities of stakeholders. Therefore, co-management should be enhanced by the sharing of authority and decision-making, making it more responsive to a wider range of needs. Thus the idea of co-management is to take advantage of the complementary knowledge of different stakeholders i.e. local inhabitants may have experiential and holistic 'views' about the area concerned, while officials and decision-makers rely more on rational and specialized 'facts'.

The scholars [24] said that sharing of ideas among different stakeholders in a long time period can result in a deeper understanding of the issues, and should result in more legitimate and sustainable policies of their collaborative management or co-management. However, benefit-sharing and shared decision-making have an options in the core zones of the protected areas, where community involvement is restricted to consultation. Moreover, this legal framework on buffer zones has tended to expand the authority of the state by imposing restrictions in populated areas formerly under the control of park officials, and the management authority largely remains top down from the standpoint of local users.

This can be further evidenced that constraint or challenges faced by stakeholders come from different purposes and approaches of institutions that are involved in VNP conservation, low level of awareness between VNP stakeholders, lack of enough alternative solutions to the problems met by the riparian community, lack of sufficient funds and low level of community participation in planning process. The community around VNP is not involved in all process leading to decision making. Due to the results generated by the interviews from the local leaders and managers of different institutions confirmed that the little knowledge of local community, resistance to the change of some of them with lack of affected stakeholders inclusion in the establishment and design of a protected area and in decisions affecting the management of the area after it has been established are major sources of poor relationship between local community and park managers. If affected groups are not included, their interests and concerns cannot be known or considered. Therefore, the protected area manager may create or exacerbate conflict out of ignorance about how his/her decisions may adversely affect others. If significantly affected stakeholders are excluded from attempts to address the conflict, they are likely to remain disgruntled over time, because they believe their interests are ignored and because they have no ownership in the outcome, whereas, if their interests are explicitly considered in the process, they will be more inclined to support a proposed solution to the conflict. Inclusion also gives people a sense of ownership, which is a precursor to stewardship.

# International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 6, Issue 9, September 2017

## V. CONCLUSION

With regard to the findings, it was concluded that generally, stakeholder's perspectives on co-management of VNP showed positive perceptions where the results revealed that the perspectives of stakeholders on co- management were found moderate as per scale used in this study.

The results on evaluation of synergy and approaches used among stakeholders on co-management of VNP conservation are both moderate which indicated by a mean of (3.43) and (3.27) respectively. The local leaders and managers of different institutions expressed their advantages in terms of communion and the approaches used because, they involve local communities in decision making, which enabled them to produce more in their combined efforts. Therefore low level of affected stakeholders' inclusion in the establishment and design of a protected area and in decisions affecting the management of the area after are major sources of conflicts.

Coming to the findings, which was to find out whether there is a significant relationship between stakeholder's perspectives and co-management activities in VNP, the results from the local community revealed that bivariate correlation analysis, the P-value > the significance level ( $0.258 > 0.05$ ), we fail to reject the hypothesis. Accepting the hypothesis leads to the conclusion that there is no statistical significance association between stakeholder's perspectives and co-management activities of VNP conservation, due to the following constraints such as low participation in the planning and decision making process which should be based on the trust, mutual learning, knowledge, insights and capabilities of stakeholders. Therefore, co-management should be enhanced by the sharing of authority in terms of participation to the interests of VNP and decision-making, making it more responsive to a wider range of needs. Furthermore, it has been concluded that the emphasized awareness and collaborative actions among stakeholders should lead to the improved conservation and development of co-management success.

## Recommendation

The conservation process of VNP needs to support the hopes and aspirations of the local communities and thus needs to be broader in magnitude with other stakeholders adjacent to national parks and strengthen the relationship between people and protected area staff; protect and restore the ecology within national parks and strengthen local economies through ecotourism development.

There is a need to avail enough alternative solutions to the problems faced by local community, training on co-management, strengthening sharing of benefits from VNP and expropriation for damaged items. Increased capacity building and formal education about conservation, Community Based Organization development should be encouraged so that all stakeholders can work cooperatively towards the same goal for sustainable tourism development and co-management of VNP. There is a need of greater involvement in decision making and planning development in order to have a stronger synergy and approaches in terms of co-management of VNP in order to create awareness of conservation.

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