



# A Community Based Model of Environmental Resource Conservation and Livelihoods: Non-Governmental Organisation Supported Tšenekeng Botanical Garden in Semonkong, Lesotho

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## Abstract

Environmental degradation in Lesotho has resulted in decreasing arable land that has adversely affected agricultural productivity and food security. As a response to the declining food production, many people are making a living out of their environmental resources. Some people harvest the medicinal plants from the communal land for sale. As a result, some of the valuable environmental resources and particularly the medicinal plants are now depleted due to over-harvesting. As a response to protecting the depleting environmental resources, governments and Non-Governmental Organisations (NGOs) have implemented community based resources conservation projects. On the one hand, many government conservation programmes have followed an autocratic approach that imposes projects on the community. On the other hand, NGOs are complimented for including the affected communities in decision making process through different participatory methods. In this regard, this research paper assesses the contribution of local NGO's (Serumula Development Association) community based environmental resources conservation programme, Tšenekeng Botanical Garden to environmental conservation and livelihood making.

**Keywords:** Community based natural resources management, environmental degradation, botanical gardens, community participation, poverty.

## Introduction

Environment plays a decisive role in the lives of people in different parts of the globe. Firstly, it is a source of food. Mutia (2009) indicates that environmental or natural resources provide people with satisfaction and productive materials such as food sources. Environmental resources such as fishing grounds, plants, animals help with food production. For instance, plants provide people different kinds of food, they are one of the most basic human needs. Food gives people energy for work. Staple crops such as rice, wheat, fruit, beans, and vegetables come from plants. The Organization for Economic Cooperation and Development (OECD) (2008) shows that poor people largely rely on natural or environmental resources such as fodder which is vital as a source of food and income. An example from Beck and Nesmith (2001) is that in India, common property



resources produce food and 12 per cent of income of the poor comes from such environmental resources.

Secondly, environmental resources provide people with medicine. Medicinal plants are the sources of income in many developing countries, and especially for the poor households of Africa. For example, humankind benefits in a multitude of ways from all kinds of ecosystems and these benefits are called ecosystem services (Millenium Ecosystem Assessment, 2005). MEA (2005) further indicates that ecosystem services include the provision of clean water and the decomposition of wastes, control of climate and diseases, and many ecosystems are assigned economic value such as income generation in many developing countries.

Thirdly, natural resources provide protective services. They protect human beings from harmful weather conditions; they act as wind breaks and flood barriers (Mutia, 2009). In addition, the importance of biodiversity is to maintain the balance of carbon dioxide and oxygen and the green house gases. Furthermore, timber increases the average amount of carbon storage because of managed forests, and especially old growth forests, hold a lot of carbon per unit area (Toman 2002). Toman (2002) further states that certain species are also fundamental as environmental quality indicators. For instance, endangered species inform humans when something is wrong in their life support system and, therefore, these act as the 'miner's canary'.

Although the environmental resources in many developing countries are considered very important, many of them are depleting due to lack of appropriate conservation policies. This is ascribed to the land tenure system in many developing countries, especially in Africa, that inhibit proper conservation measures. The resources found in many parts of Africa and elsewhere are referred to as common property resources, and they fall under communal ownership. There are also some private property resources that mostly fall under state ownership in many countries where both access and conservation rules are enforced by the state (Bromley 1991). Johnson (1972) and Demsets (1967) indicate that the establishment of private property rights over common property rights is a necessary condition for avoiding the tragedy of over-exploitation. However, unlike the private resources where access is restricted, the common property resources are easily bound to be over-exploited (Smith, 1981:45). This is because when the resources are owned by everyone, no one conserves them for the future. The result of common property is over-exploitation, overgrazing, overfishing, clearing of forests and destruction of plants. And this can endanger the sustainability of the resources (Hardin, 1968). The tragedy of the commons in many parts of developing countries calls for the conservation of the environmental resources by either the state, private institutions and the community. However, community based environmental resources conservation is considered the most viable and sustainable conservation strategy by most policy makers.

### **Community based environmental resources conservation in Africa**

According to available literature, Community Based Natural Resources Management (CBNRM) is devolution of control over natural resources from the state to the local community (Muphree, 2004). Muphree (2004) further shows that the concept 'community-based natural resource conservation' first became popular in the 1980s. According to the author, the 1960s and 1970s were marked as top-down state-centred environmental protection period. However, the state-centred conservation programmes failed at both local and global levels to promote sustainable conservation of natural resources (Gibson and Marks, 1995). As a result, CBNRM programmes were introduced to ensure the bottom-up approach to conservation of natural resources.



It is also noted by Murombedzi (2003) that, after realizing the failure of a law enforcement approach used by many governments in succeeding to conserve resources because of conflicts between law enforcement agents and users, the people centered approach to natural resources conservation was introduced. A people or community centered approach to natural resources conservation was seen as a way out of the crisis of resource depletion (Murombedzi, 2001). Many African countries accepted and welcome the concept 'community-based natural resource management'. For example, Zimbabwe was the first country in Africa to use CBNRM in the early 1980s through the model called Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) (Child, 1996). CAMPFIRE focused on conservation of natural resources such as wildlife, grazing resources and grasslands for monetary benefits (Murphree, 1993).

Murphree (1993) shows that the Zimbabwean government allocated 75 per cent of the communities' dividends in CAMPFIRE, while some dividends were being dedicated to support actual wildlife. The author, on the one hand, points out that since the introduction of CAMPFIRE, there has been no conclusive evidence on the performance of the program. Evidence, on the other hand, indicates that the program benefits people in terms of revenue, meat and participatory decision making. Although it is believed that the programme was beneficial to the communities, some scholars have a different view on the benefits of the project (Murombedzi, 2003). There are also some other African countries that have introduced community-based conservation of natural resources. Botswana is one of the countries that adopted the CBNRM model. According to Mazambani and Dembetembe (2010), Botswana encouraged communities to legally create trusts entrusted with allocating wildlife quotas in agreement with wildlife and plants management.

One of the endangered species in Southern Africa is the **Spiral Aloe (*Aloe polyphylla*)** because of overgrazing and unsustainable harvesting (Emanoil, 1994). In order to limit the threats and reduce the depletion of this plant, Talukdar (1983) shows that national parks and botanical gardens have been introduced to conserve this endangered plant species. While many of these conservation projects are privately owned, (especially the national parks) establishment of community based natural resources conservation is supported for sustainable conservation of the resources. This calls for an inclusive development that promotes participation of the communities for conservation of the environmental resources in their vicinities. According to Hulme and Murphree (2001), the concept community participation is used widely on approaches that are found in ideas, policies, practices, and behaviors that need to give those who live in rural environments a big involvement and access to benefit in the management of natural resources. Hutton et al., (2005) propose that the new concept of community conservation should emphasize the need for community participation. This is because this kind of community conservation is based on the context that it increases concern over human impacts on the biosphere, the global scale of environmental issues and arguments that conservation should move beyond protected area borders (Adams, 2004).

Western and Wright (1994) indicate that the rise of community conservation of environmental resources draws on ideas of economic impacts on protected areas in local communities as well as increasing poverty that results from biodiversity conservation. Furthermore, Hutton et al., (2005) hold the view that the sudden emergence of community conservation of environmental resources was a question of adoption by different countries. This is because community conservation narratives put conservation in line with ideas of sustainable development in order to connect conservation to poverty reduction (Adam and Hulme, 2001).

It is also stated by Chambers and MacBeth (1992) that community has played a meaningful role in resource conservation. Therefore, community participation in environmental resources is very important to achieve sustainable use of natural resources. This would be achieved by involving



individuals, families or communities to take responsibility for their own environmental resources conservation and welfare (Oakely and Marsden, 1987). In this scenario, community participation empowers, builds beneficiary capacity, strengthens an effective desire to share the cost and improves the relation to the conservation project (Paul, 2005). Paul (2005) further points out that the involvement of communities in natural resource conservation maximizes the chances of sustainable conservation initiatives. This is also supported by Sharp (2003) who says that community participation has proved to be significant in many studies of important empowerment of success, especially in water, livestock, irrigation forestry, plants and agricultural projects.

The International Union for Conservation of Nature (1999) concludes that a good reason for community participation is the fact that human culture is based on respect for nature, social responsibility of the present generation and natural conservation for the welfare of future generations. Using (2006) highlights three various ways through which communities can participate in natural resources conservation, especially in environmental resources conservation and management. These are community-based management, collaborative management and Non-Governmental Organisations (NGOs). These three ways can work with government institutions to ensure management and conservation of natural resources and sustainable development. Using (2006) also makes an example of some NGOs in Nigeria that partnered with government to conserve natural resources. These NGOs include among others, the Nigerian Environmental Study Action Team (NEST), the Nigerian Conservation Foundation (NCF), the Nigerian Field Society (NFS), Coalition for Environment (CFE) and WorldWide Fund for Nature (WWF).

According to Sam, Nnaji and Etefia (2014) community and government partnership in conservation of environmental resources in Nigeria was witnessed in the Akamkpa Local Government Area National Parks. Community and government partnership in conservation of environmental resources is very essential for promoting tourism. For instance, as stated by Sam, Nnaji and Etefia (2014) the National Parks contribute to the promotion of ecotourism in many African countries. As a result, this improves the living standards of the local communities. However, on the contrary, Kaosa-ard (2006) points out that natural resources exploitation has been experienced because of a sudden increase in the number of tourists. This has encouraged international organizations to encourage sustainable tourism. Dowling (1993) indicates that sustainable tourism includes every part of tourism, and these include inter alia eco-tourism, indigenous tourism, and pro-poor tourism to solve some social and environmental problems caused by conventional tourism (Dowling 1993). The benefits of sustainable tourism in improving the lives of the communities are observed elsewhere in Thailand (Sriphnomya, 2002).

Promotion of ecotourism is seen as an important conservation strategy in many African countries by promoting economic development, conservation and poverty reduction (Satarat, 2010; Silva and Khatiwada, 2014). Friefenberg (1998) maintains that if the implementation of ecotourism is good, then everybody, including the environment, local communities, tourists, as well as the economy, wins. However, there is a different view that since eco-tourism brings more tourists, then hotels and facilities increase, and this has an effect on natural resources (Ashton, 1991).

Although some governments are introducing eco-tourism as a form of community participation in conservation of environmental resources, it is observed by Timothy (1993:383) that in Indonesia, the education of local residents and their involvement in the economic benefits of tourism are very minimal. The experience of Indonesia reveals that the local communities in Indonesia are not considered when making the decisions that affect their lives (Timothy, 1993). Other examples of community participation in conservation of environmental resources are in Zambia and Mexico. However, McIntyre et al., (1998) opine that these cases represent manipulative and passive



participation of the affected people. This is because for participation to be good, fair, active and successful, it should not be manipulative. It is further observed by Mowforth and Munt (1998) that there is no evidence pointing to the fact that participatory tourism development practices have gone beyond community consultation in developing countries and the effects of these problems and limitations have made community participation in tourism less probable in developing countries (Tosun, 2000).

### **Challenges of community based natural resource management in Africa**

According to Fabricius and Collins (2007), the main focus of Community-Based Natural Resource Management is the collective management of ecosystems in promoting human well-being, and its aim is to transfer the power of ecosystem management to the community level. However, Fabricius (2004) argues that CBNRM has been criticized for failing to provide real benefits to communities. The author further argues that another reason for CBNRM's failure is a lack of different kinds of capital in remote areas where many CBNRM projects are located. These kinds of projects involve natural capital (ecosystem goods and services); social capital (social and kinship networks and reciprocity as well as social institutions; human capital such as knowledge, skill, and labor; and much more).

The CBNRM programmes have many challenges that have negatively affected them. Firstly, a lot of initiatives have not been a success because of conflict and different types of conflict that occur in CBNRM (Koch, 2004). These include competition for benefits at the time of success, the tension between traditional authorities and elected leaders, the fluidity of communities as well as the hidden power of spiritualists.

Secondly, financial mismanagement leads to failure of CBNRM projects. Robbins (2000) shows that poor management of project revenues which usually results in unaccounted finances, lack of trust and unwillingness of private partners to engage with communities are other factors contributing to CBNRM failure. Members of the committee, especially the treasurer can sometimes misuse the CBNRM project finances, either to meet their own ends or for a purpose that do not include project needs and this can hinder the success of CBNRM projects.

Thirdly, mismanagement of environmental resources is another leading factor to unsuccessful CBNRM projects. Okello and Kiringe (2004) argue that in communities, some members exercise their rights and freedom badly and they tend to misuse the community resources. They either sell these resources and make a profit out of them or share them with their friends and families without notifying the community members (Okello and Kiringe, 2004). This, in turn, contributes to the failure of CBNRM.

### **Research methodology**

This section presents the methodology used in gathering and analyzing data. The methodology gives the description of the research design, study population, sample size, sampling techniques, data collection, and analysis technique.

The study gathered secondary data using literature method. The literature was gathered mainly from documents and books on community participation in environmental resources conservation in developing countries and Lesotho. Internet sources, journals, policy reports and other materials were used to collect secondary data on community and privately-owned participation in environmental resources conservation in developing countries including Lesotho. In order to



collect literature on Lesotho, information was acquired from Lesotho policy documents, internet sources, research reports and from government documents.

Structured interviews were used to obtain primary data and these included face-to-face interviews with members and non-members of conservation projects. These three kinds of interviews were important because they helped people with low literacy to express themselves with the language they understand. The mailed questionnaires were also used and it was filled by people with formal education and those with high literacy, for example, managers of a conservation project. Apart from interviews and mailed questionnaires, data were also acquired through observation. The observation was useful because the researchers were able to observe condition by themselves.

The population under this study included the members of the Tšenekeng Botanical Garden who were aged 15 and above. Non-members of the botanical garden projects, chiefs, councilors were also part of the sampled population. Therefore, the sample of 62 respondents was selected using simple random sampling and purposive sampling. Simple random sampling was used to select the project members and non-members, workers, and non-workers from the villages under the study. Purposive sampling was used to choose key informants, managers and local leaders such as chiefs and councilors. This sampling technique was used to obtain 6 key informants, namely; 2 managers, 2 chiefs, and 2 councilors. These people were selected based on their expertise and roles they play in the enforcement of rules and regulations and coordination of development activities.

## Results

### An overview and profile of Tšenekeng Botanical Garden

The Tšenekeng Botanical Garden is located in the area of Semonkong, in the Maseru district. It was established in 2007 by the Tšenekeng community. Although the Tšenekeng community is the main driver of the botanical garden, the idea of establishing the project was initiated by a local Non-Governmental Organization, Serumula Development Association. The community members found it necessary to establish a botanical garden in order to conserve depleting and almost extinct plant species. The species are depleted because of over-harvesting by traditional doctors and members of the community. Another objective of the project is to create employment opportunities through nature based natural resources conservation.

The Tšenekeng Botanical Garden is a community development project aimed at empowering the local people. There is participation of both men and women in the project as it comprises 7 men and 13 women, making a total of 20 members. Participation in the project is free and voluntary but one has to pay a subscription fee of M10.00<sup>1</sup> to be a member. Money collected from subscriptions is used to purchase necessities for the project. These include hybrid seeds which are sold at the botanical garden.

According to the chairperson of the Tšenekeng Botanical Garden, participation in the project is not only restricted to the local people. People from the neighbouring villages such as *Moreneng*, *Moriting*, *Ha Rasefale* and others are also welcome to join the project by paying a subscription fee.

The community has joined hands to conserve some plant species such as ***Aloe Polyphylla***, ***Aloe Striatula***, ***Aloe Ecklonis***, ***Aloe Maculata***, ***Haemanthus***, ***Asphodelaceae***, ***Asteraceae***, ***Rosaceae***, ***Talbaghia Alliaceae***, and ***Amaryllidaceae*** from extinction. Protection of these plant

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<sup>1</sup> 1 Loti (Plural Maloti) is equivalent to USD 14.30



species is currently done for conservation purposes, not for the market. The chairperson of the botanical garden notes that plants are not yet sold because they are still few in number. Selling them will be considered in the future. Therefore, there is no revenue collected from the sale of plant species especially from community members and tourists. In this case, one can argue that the objective of reducing unemployment through income generation from the botanical garden still remains a challenge.

The Tšenekeng Botanical Garden has faced several challenges. The chairperson of the project reports that members are few in number and lack commitment to their work. Many of them do not show up during working hours. On the contrary, some project members state that, the reluctance of some members to show up for duty is caused by reckless spending of funds from Serumula Development Association by the chairperson. Another challenge faced by the project is lack of support from non-members. They vandalize project property. For example, the project once received fish from Serumula Development Association but non-members vandalized the pipes that supplied the project dams with water, causing the fish stock to die. Another challenge is conflict over range grazing land. Some chiefs and local people accused the project of invading their communal grazing land.

Although some community members are not supportive of the Tšenekeng Botanical Garden, the project has improved the living standard of the local communities in different ways. It is stated that the benefits of the project are shared equally among members and that these benefits trickle down to non-members. For instance, Serumula Development Association provided members with chickens for making a living. In this case, each member of the project received about 36 chickens. Non-members also benefitted from these chickens by purchasing eggs. Again, water was scarce in the village but since the inception of the project, there is a tank in the botanical garden that supplies the whole village with water.

The botanical garden has further contributed to the development of the area by providing medicinal plants. Over-harvesting of plants has resulted to their scarcity in the project area. However, conservation has resuscitated some rare medicinal plants that are used for curing certain ailments. It is further pointed out that, conservation of plants in the botanical garden has contributed to the control of soil erosion. This is well explained by a response from one male member of the project who said 'since the project was introduced, we no longer experience severe soil erosion because the garden is now covered with grass and other vegetation and even where there were rocks, the area is now covered with plants'.

### **Characteristics of the Tšenekeng Botanical Garden's participants**

Many development programmes in developing countries and elsewhere in the world are meant to improve the living standards of the participants. In addition, the success of the conservation project is determined by the benefits participants obtain from it. The less profitable project results in loss of interest to participants that results in ultimate failure of the initiative. Tšenekeng Botanical Garden also shares the same principles of every development programme in the world. The beneficiaries expected the positive outcomes from the conservation project. Therefore, this section studies the characteristics of the participants of Tšenekeng Botanical Garden.

#### ***Age of the participants***

It is indicated in the literature that age of the respondents plays an important part in development projects. Therefore, this study investigated the most common age group found in the botanical garden. This is because youth and elderly people are not participating equally in many development projects. Research shows that young people are more mobile than elderly people.



Young people migrate to towns to seek paid employment (World Bank 2011). One study conducted by Adu-Gyamfi (2011) indicates that young people are not interested in community development projects, and associate such activities with old people.

According to the results of the study, the majority (20 per cent) of participants in the Tšenekeng Botanical Garden is found in the age group of 33 – 38 years. According to the international standards, youth are found in the age bracket of 15 – 35 years. Therefore, the research findings suggest that young people also contribute to community development projects. The research findings further reveal that 15 per cent of people found in the botanical garden is from the age groups of 45 – 50 years and 57 – 62 years respectively. People found in these age groups are adults who are responsible for community development initiatives. This observation is in line with some international trends that adults are found in large numbers in community development projects. For instance, the village support groups largely consist of adults.

### ***Gender of participants***

According to the international trends, men migrate to towns for employment opportunities while women stay at home to take care of families. Therefore, women play an important role in rural development in many developing countries, especially in Africa. Migration of men in Lesotho is associated with the discovery of the diamond mines in Kimberley (World Bank 2011). They migrated in large numbers to seek employment in the South Africa mines, while women stayed at home to perform the family chores.

The results of the study show that 65 per cent of the people who participate on the Tšenekeng Botanical Garden are women while 35 per cent are men. The large percentage of women participants on the Tšenekeng Botanical Garden can be associated with the cultural practices and norms of the Basotho. Women are restricted to taking care of the families and performing household and community activities, while men migrate into South Africa to seek paid employment. It can, therefore, be argued that migration has contributed to less involvement of men in the conservation of environmental resources on the Tšenekeng Botanical Garden.

It is observed from the study that, some villages such as *Moreneng, Moriting and Masaleng* have a small number of men relative to women. This is due to the labour migration system that existed between Lesotho and South Africa for a long time. Participation of women in large number on the Tšenekeng Botanical Garden can also be explained by their attachment to nature, as compared to men. According to Jiggings (1994) women have unique views on the environment since they connect the land to immediate survival and concern for future generations rather than simply looking at the land as a resource with monetary value.

### ***Marital status of participants***

Marriage is an important cultural and religious institution in many countries. It denotes social ties between two different sexes, female and male. Married people form a family or a household that can be a unit of production and consumption. In this regard, married people work together to take care of their families or households while unmarried or divorced people do not have partners that can help them maintain their families. It is, therefore, important to study the marital status of people who work on Tšenekeng Botanical Garden.

It is noted from the research findings that about 60 per cent of the workers on the Tšenekeng Botanical Garden are widowed. The large number of widows can be linked to the benefits that development projects bring to the beneficiaries. Widows and single parents do not have help from anywhere else. As a result, they consider community development projects as their source of income. For example, it is indicated earlier that the Serumula Development Association



provided beneficiaries with chickens to make a living and many beneficiaries. In this case, the widows and single parents benefitted from the project.

The study further shows that 30 per cent of participants are married. Married people have dependents to take care of. One member of the project explained that he had four children to take care of. This is why he participates in the community development project. Although medicinal plants in the Tšenekeng Botanical Garden are not yet sold, participants gain some incomes from Serumula Development Association and the tourists. The income obtained from these sources is used to improve the living standard of the households. Another member of the botanical garden indicated that she sold the chickens that the Serumula Development Association donated to the participants of the botanical garden. According to her, the sale of chickens improved her living standard.

### ***Educational Level of the participants***

It is important to study the educational level of the Tšenekeng Botanical Garden in this research because education is the key to development. Educated people are considered to be in a position to take more rational decisions than the less educated. In addition, the more educated people are the more aware of the importance of conservation they become, unlike the less educated ones. The results of the study show that 60 per cent of the participants have primary school education. A large number of people with a low level of education can be associated with the long history of Basotho providing labour to the South African mines. In the past years, Basotho boys were not interested in education. They were only interested in migrating to the South African mines for paid employment. This is why many Basotho men were less educated compared to women. On the contrary, some cultural practices such as marriage at a young age prohibited girls from getting access to education. When many these less educated people cannot find employment in the formal sector, they participate in community development projects to make a living.

According to Okunlola *et al.* (2011), educational level is one of the factors that influence adoption of new techniques and technologies. Participants of TBG do not have formal schooling which enhances the conservationists' ability to perceive, interpret and respond to new events in the context of risks. A participant with a higher educational level can be in a position to adopt new technologies. Although the less educated people are considered not to have knowledge of the conservation practices, evidence shows that they are the ones who interact with nature more than the educated ones. For instance, herd boys who participate in Tšenekeng Botanical Garden do not have education, but they are responsible for range management, and the same thing applies to women who collect firewood. They use indigenous knowledge systems to conserve nature. It can, therefore, be concluded that the level of education is not a determinant of good conservation practices.

### ***Household size of the participants***

African households are generally large in size. Therefore, the household head has to work hard to maintain the lives of members. The social and economic problems such as poverty and food insecurity have affected maintenance of households in different countries. Therefore, it is important for this research to study the household size of the Tšenekeng Botanical Garden to see how many household members are supported.

The field data illustrates that about 35 per cent of the respondents have large households, ranging from 4 to 6 members, while 30 per cent of the respondents have household size ranging from 7 – 9 members. These figures show that the Tšenekeng Botanical Garden participants support



large number of household members. Rural societies in Africa have large households, compared to their counterparts in urban areas. A large number of households in rural areas is linked to the incidence of HIV/AIDS that has left children without parents. Therefore, they are taken care of by the extended families members. In addition, family planning devices are not easily accessible in rural areas.

It is difficult to maintain a large household, especially when the household head is unemployed. Therefore, participating in community conservation projects is considered a way out of poverty by some people. The benefits obtained from the environmental resources conservation are used to take care of the households. They are the source of income for households that do not have alternative means of living.

### ***Employment status***

The participants were asked to state whether they are employed elsewhere, especially in the formal sector of the economy. This is used to determine whether the benefits received from the botanical garden are the main source of making a living.

**Table 1: Employment status of the TBG participants in Lesotho, 2017**

<b>EMPLOYMENT STATUS</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
<b>EMPLOYED</b>	4	20
<b>SELF-EMPLOYED</b>	12	60
<b>UNEMPLOYED</b>	4	20
<b>TOTAL</b>	<b>20</b>	<b>100</b>

**Source:** Field data

It can be observed from data contained in Table 1 that the majority (60 per cent) of Tšenekeng Botanical Garden beneficiaries is self-employed, while the minority (20 per cent) is unemployed. These results suggest that, self-employed people are committed with their private businesses rather. They spent a little time participating in the community development conservation project. Although conserving environmental resources on the botanical garden is not providing participants with satisfactory revenues, commitment and full participation of the people are needed for the success of the project.

One member of the project indicates that she is not committed to the tasks of the botanical garden because there are no benefits and no incentives. She will not leave her commitments in order to attend to the botanical garden tasks. She further notes that her husband does not even encourage her to attend to the project because he thinks that women run away from family tasks and go there to gossip. Ostrom (1990) in the explanation of the Common Property Theory indicates that local people conserve natural resources around them so that they can benefit from them. This means that people are not committed to conserving the resources that do not generate any benefit or income for them.

### ***Source of income***

The source of income can also influence the participation of people. If people do not have the means of income generation, they join conservation projects with the hope of obtaining some benefits or income. If these projects fail to accomplish these expectations, people show reluctance to take part.



The research findings indicate that the highest category (25 per cent) is of the participants who do not have any source of income besides participating in the conservation project. However, there are some participants who make a living from both farm and no-farm activities. For instance, about 20 per cent of participants depend on the sale of agricultural products, while 10 per cent make a living from traditional beer brewing. There are also some people (10 per cent) who depend on social safety nets for making a living. These results suggest that participating in Tšenekeng Botanical Garden is not considered the main source of livelihood. Therefore, sustainability of the conservation project is at stake due to little benefits to the participants.

### ***Economic and social benefits***

Many participants on the botanical garden have not yet realized the tangible benefits from conservation initiatives. As a result, about 50 per cent of the project beneficiaries indicated that they have not yet benefitted from conservation of plants. Although the benefits in the form of revenues collected from selling and tourists are not observed by many people, 25 per cent of the respondents revealed that Serumula Development Association provided them with hybrid seeds and fertilizers to increase productivity on their fields. The botanical garden also benefits members by providing them with the medicinal plants.

### ***Satisfaction with money collected from Tšenekeng Botanical Garden***

It is indicated in the earlier sections that members of the botanical garden collect revenues mainly from subscriptions and tourists (both local and international). It is not clear how these revenues are being distributed or shared between members. However, the majority (80 percent) of the participants indicated that the money collected from the botanical garden is not satisfactory. There are some participants (20 per cent) who benefit from the conservation. Although their number is not significant, it can be noted that there is a difference in opinion regarding the benefits of the conservation project. It can be deduced from the above results that the essence of community ownership is lost when people are not benefitting in the same way. For instance, one member complained that she last heard that the money collected from the project was with the treasurer some years ago. However, recently nobody received any reports about how the money was spend.

### ***Equality of rights***

Community participation in development projects is expected to be democratic. As a result, participants should have the equal rights in the management of the conservation project. This is because community participation, according to Timothy (1998), includes equal involvement of the community in decision-making and equal rights in sharing the benefits.

According to the results of the study, a high percentage (55 per cent) of the population reports that beneficiaries do not have equal rights in the project. On the contrary, about 45 per cent of the participants indicated that people do have equal rights. This implies a situation of mixed perceptions among the participants. Despite the fact that 45 per cent of the respondents report that beneficiaries on the project have equal rights, one member indicated that some people have more benefits than others. She said 'the nets that are used to protect the vegetables were distributed to the members of the project a few months ago, but I did not even receive a piece of those nets. To my surprise, people who are not members of the project have nets'.

### ***Challenges of participating in Tšenekeng Botanical Garden***

Challenges are everywhere especially where people work together. Some of these challenges lead to conflicts among the working parties. In this regard, the results of the study show that the



highest percentage (90 per cent) of the beneficiaries indicated that the project is facing some challenges. The most common challenge comes from livestock farmers who graze their animals on the garden at night and destroy the plants. It was highlighted that, although the botanical garden is fenced, the gates are not locked. In addition to destruction of plant species on the garden by the livestock, there is a conflict between members of the project and members of range management who wanted to use the land demarcated for botanical garden for grazing purposes.

Members of range management are suspected of destroying the botanical garden property so that the project would not succeed. This clearly also impacts on tourism. For example, there were some fish ponds constructed through the assistance of Serumula Development Association on the botanical garden. However, there was destruction to property by some members of rangeland management who cut the pipes supplying water to the ponds, and this resulted to dying of the fish stocks. According to the members of the botanical garden project, these conflicts can be solved by penalizing those who destroy the property. For example, if the animals are found grazing on the botanical garden, their owners should be penalized M500.00. That can probably be the solution to the degradation of the project resources.

### ***Non-Participants in the Tšenekeng Botanical Garden***

It was very important for this research to study the community members or people who do not participate in Tšenekeng Botanical Garden. This is because community development projects impact positively and negatively on many people in the adjacent villages. It is discovered by the researchers that about 7 participants (23.3 per cent) of non-participants are found in the age-group between 27 and 32 years. Although this age group consists of young people who are still active in community tasks, the reality indicates that they are not interested in participating in TBG. The results further reveal that only one non-participant (3.3 per cent) is found in the age group of 69-74 years. This shows that even some elderly people are not interested in community-development projects.

The research findings further show that there are about 25 females (70 per cent) compared to 9 men (30 percent) not participating in the TBG. Although the previous results show that there are many females participating in TBG, the real situation shows that there are many women outside there not taking part in conservation projects. This may be caused by different factors such as family and community obligations. For instance, one female from *Moring* village said she is a member of many and different women associations so she could not afford to pay subscription fees for all of them. Some people can fail to be members of the project because they are not the residents of the village where the botanical garden is located/established. In the light of this, the following table shows whether the non-project members are the residents of the village where the project is found.

**Table 2: Non-participant residential status during establishment of TBG in Lesotho, 2017**

<b>RESIDENCE STATUS</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
<b>RESIDENT</b>	25	83.3
<b>NON- RESIDENT</b>	5	16.7
<b>TOTAL</b>	<b>30</b>	<b>100.0</b>

**Source:** Field data

Table 2 illustrates that 83.3 per cent of non-members resided at Tšenekeng where the project is located, while 16.5 per cent are not the residents of the village where the botanical garden is found. This results suggest that a large number of the respondents are found in the project area even though they are not participating in the project. A few who are not residing in the village



where the project is located did not in the first place had an opportunity to join at the time of establishment. This is because the entry/subscription of new members was not allowed. They were told that there was no space for new members. Others did not subscribe because although they are now interested they are kept out. One village member complained that 'some botanical garden members do not want us to participate because they became members during the difficult times/inception. Therefore, they cannot allow new-comers to join and steal medicinal plants for their friends'.

Some other non-members show that they have not joined the project because although they are residents, and they do not know anything about it. One respondent adds, "all I see is that there are plants but I have no idea what is going on in there". This implies that some villagers do not participate because they are not aware of the project and its importance to their lives. Others probably did not join because they do not see any benefits. This is one reason why non-members are not even supportive. Another reason for their lack of support may be that the project does not provide any incentives for them.

There are some non-participants of the project who complain that the project has deprived their animals of grazing land. They argue that now their animals are starving because they used to graze in the place where the botanical garden is now located. There are some challenges that are associated with the advent of the botanical garden, and these include among others, lack of space for communal use by village members, and closure of a short cut pathway to the local shops and other places.

There are some non-members who argue that the botanical garden should be closed. However, those who see some potential benefits in the project opine that, conserving the environmental resources is a good initiative, but it can be improved by providing some trainings to members and the community, and attracting mainly young people. They encourage these kinds of project to be replicated in other places because they are important for the future sustainability of plants, especially when they are well managed. According to them, these kinds of the projects can be a success when plants are well-taken care of.

## **Recommendations**

This study suggests the following recommendations in order to improve community participation in environmental resources conservation in the study areas:

The government through the help of the Non-Governmental Organisations (NGOs) has to cooperate and improve the situation of the community based conservation projects such as Tšenekeng Botanical Garden. This can be achieved by employing the environmental officers who will serve as field officers at least at the village level and provide them (environmental officers) with transport facilities to facilitate the conduct of their duties in the villages of Tšenekeng. This will help to ensure that the communities at the lower levels have access to knowledge of plant resources management, skills and technical advice and sustainable environmental resources at large.

The district authority through the Ministry of Environment, Tourism and Culture should also recognise and provide support to the project members (participants) by providing training and financial or material resources such as nurseries and green houses. Members of the community based environmental conservation projects should be taken to different botanical gardens and



national parks around the country where plants are conserved so that they can learn how others manage and conserve the plants.

Local governments, botanical gardens, traditional doctors and some other stakeholders should establish a framework for collaborative monitoring and evaluation of plant resources conservation activities in the study area. These collaborative efforts should also focus on the improvement of plants conservation programmes and projects in such a way that the local governments, botanical garden managers and traditional doctors coordinate the establishment of the nurseries, green houses and the general management of the initiatives.

Developing Community-Based Natural Resources Conservation projects at the district level should be established. This will help participants mainly in the community based natural resources' conservation projects such as Tsenekeng Botanical Gardens towards improving their skills in conservation and management of natural resources that are also used by tourists.

There should be an increase in the implementation of the village plant use plan within the chosen districts. Special attention should be given to the villages on the borders with the neighbouring districts and villages. This has to be accompanied by the articulation of the by-laws, rules and regulations in order to establish workable frameworks that give the local authorities the needed authority and powers to enforce the various by-laws and regulations.

The government has to create an enabling environment for the villages to establish community-Based Natural Resources Management in villages on the procedures of making applications from the Ministry of Environment, Tourism and Culture. The environmental laws should cover all the environmental resources like plants and other resources and the botanical gardens, especially community botanical gardens should be included when policies are generated.

There should also be an agreement made between the botanical gardens' committees and other members on how to regulate the activities of the projects. For example, the agreement should be made that anyone who is found misusing the properties of the project should be punished. To improve community participation in environmental resources conservation, there should also be a provision of regular training of the community at large, both members and non members of the conservation projects. Functional natural resources committees should be established in many villages and regulatory framework pertaining to land acquisition must be improved. The scope of land use planning to local authorities should be widened as well.

## **Concluding Remarks**

It can be noted from the results of the study that participation in Tšenekeng Botanical Garden is not age restrictive, there is thus participation from both old and young people. Old people are actively participating in the project because they believe that conservation projects may help them in income generation. However, Tšenekeng Botanical Garden is not perceived to be viable by some community members because they are not directly benefitting from its existence. For instance, some women are discouraged by their spouses to join the conservation project because of the intangible benefits provided by the project.

There are also some institutional challenges faced by the Tšenekeng Botanical Garden. One of them is a clashing of ideas on land use between the project and the community. Many people want the land used for the conservation project to be turned into community land used for grazing purposes. This is because the botanical garden does not bring in any benefits to the community.



Lack of tangible benefits from the Tšenekeng Botanical Garden has made only some locals join the project. As a result, the project has only a few members, especially the young people. There future participation is essential for the sustainability of the Tšenekeng Botanical Garden.

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