

The Contribution of the Udzungwa Mountain National Park to the Livelihoods of Communities in the Morogoro Region of Tanzania

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Abstract

The effect of Udzungwa Mountain National Park (UMNP) on the livelihoods of communities is important. National Park is crucial in supporting the livelihoods of communities socially, economically and environmentally. This article analyzes the contribution and importance of the management of UMNP on the livelihoods of communities in Kilombero District in Morogoro Region. This paper adopted mixed research approach where data were collected using questionnaires, interviews and observations. Data were collected in the villages' proximity to UMNP; Msosa, Msolwa, Mkula and Ruipa villages. A total of 233 heads of households were interviewed. The results showed that, heads of households were motivated to manage the park because of the benefits accrued from it. People managed the park because they get firewood, poles, water and others benefits. This paper adopted Sustainable Livelihoods Framework (SLF). SLF is a useful tool for analyzing the contribution of UMNP to livelihood of the communities residing close to it. The livelihood supports offered by UMNP among others include income, improved food (forest vegetables), fruits and improved well-being. Challenges encountered in the management of UMNP among others include climate change, deforestation, cutting trees for building houses, wildfire, illegal collection of herbs for medicines, poaching and illegal hunting. The study concludes that, fringe communities must be motivated to manage the park because of the continuing benefits accrued from it. The study recommends that communities should be encouraged to take measures to protect, conserve and participate in the management of UMNP.

Keywords: Local people, Livelihoods, National Park, Protected area, Udzungwa Mountains

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Introduction

National parks and protected areas contribute significantly to the needs of poor people who live in and around them and depend heavily on the park and forest resources for their subsistence (Hag, 2016). National parks play a vital role in the conservation of the world's biodiversity, in food security and in human health issues (Hag, 2016). National parks have attracted and continue to attract human attention and interest for a variety of reasons. National parks offer both goods (food, poles, firewood, herbs for medicines) and services (recreation, shade, attracts rainfalls). National park is an area set aside by a government for the conservation and preservation of the natural environment. It is also an area set aside for the public recreation and enjoyment and for historical or scientific interest (Suh and Harrison, 2005). In other words, national parks are important for preserving biodiversity through supporting ecosystems and the flora within it. The main objectives of the management of the national parks are preservation of species and genetic diversity; maintenance of environmental services; and tourism and recreation (Suh and Harrison, 2005; Said and Maryono, 2018). National parks can contribute to maintaining the ecosystem and biodiversity conservation, along with the economic benefits to the local population (Hag, 2016).

A sustainable management of national parks requires collective measures between the communities (local people), park staff/ employees, Non-Governmental Organizations (NGOs), local organizations and other stakeholders (Nyirarwasa et al., 2020). Evidence suggests that, individual motives on the management of national parks are possible when people meet their livelihood through it.

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living (Chambers & Conway, 1992). In other words, livelihoods are the capabilities, assets and activities required for people to earn money and secure a means of living. According to He & Ahmed (2022), livelihood refers to a systematic procedure of making a living based on skills, resources, and feasible activities. The livelihood activities are of different forms with many households taking up various activities to enable them contribute to family needs (Arowosafe

and Emmanuel, 2017). Many of these activities however rely on the use of natural resources most of which are found within the National Parks (Arowosafe and Emmanuel, 2017). According to DFID (2001) and Ijeomah (2017), a livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets for now and in the future, while not undermining the natural resource base. Different people have different livelihood priorities and different types of communities have different kinds of impacts on the nature. This touches on their survivals like access to food, water, shelter and other necessities (Arowosafe and Emmanuel, 2017). The livelihood activities of rural communities enabled households to meet the family needs. Many of these activities rely on the use of natural resources most of which are found within the national parks (Arowosafe and Emmanuel, 2017). The Sustainable Livelihood Framework (SLF) was adopted for this paper. SLF is a useful framework for analyzing the impact of the management of the national park on the livelihoods of the local people. With the explanation of Ijeomah (2012), this article will use livelihood model to explain the role of Udzungwa Mountain National Park (UMNP) on the livelihoods of communities. The Sustainable Livelihoods Framework (Figure 1) is a tool for understanding how household livelihood systems interact with the outside environment - both the natural environment and the policy and institutional context.

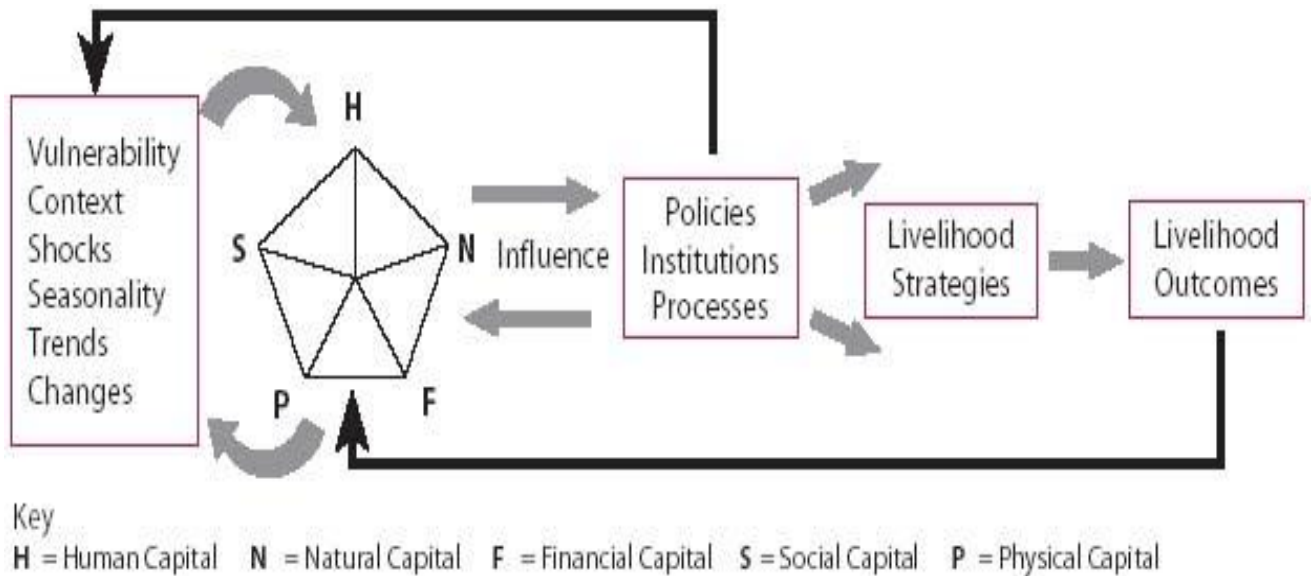


Figure 1: Sustainable Livelihood Framework

Source: 2001, 1999; <https://www.fao.org/3/a0273e/a0273e04.htm>

A well-managed national park has a strategy for preventing biodiversity loss and climate change, and improving livelihoods of local society while maintaining essential ecosystem functions on which humanity worldwide depends (Lopoukhine et al., 2012; He and Cliquet, 2020). With the fore mentioned flaws like the missing study related to the role of national park on the livelihood of communities, this paper was prepared to underscore the role of Udzungwa Mountain National Park (UMNP) in Kilombero District on the livelihood of communities. The literature review also clearly revealed that, very little research has been done on peoples’ motives and benefits towards management of national parks in Tanzania and Africa at large (Berkman and Gilson, 1978; Gundersen et al., 2015; Carvache-Franco et al., 2021). Hence, the results of this study would be applied to other national parks to improve them and improve livelihoods of the local people. The three specific objectives that underpinned this study were to: (i) explore benefits accrued by the local people from UMNP, (ii) investigate contribution of the management of UMNP on the livelihoods of local communities and (iii) examine challenges facing management of UMNP.

Material and Methods

Study Sites

This study was conducted in Morogoro Region, the area adjacent to Udzungwa Mountains National Park in Kilombero District (Figure 2). Udzungwa Mountains National Park (UMNP) is a mountain ranges lying between 07°46'S and 36°49'E and at altitude of 2,579m (8,461ft.) above the sea level. The Udzungwa Mountains cover an area of 16,131.40km²; this is the largest point of the Eastern Arc Ranges. The size of Udzungwa Mountains National Park is about 1,990km² (770miles²) and it is the second-largest biodiversity of national park in Africa. The Udzungwa Mountain has a vertical height range of 250-2,576 meters (the peak of Lohomero) which incorporates the Udzungwa Mountains part of the Eastern Arc Mountains. Apart from its scientific value, UMNP has tremendous attractions for animals and plants together with the geological formation of the park. The park has a wonderful mixture of forest (tropical rainforest, mountain forest, miombo woodland, grassland, and steppe), formation of rock and numerous wildlife species both plants and animals. The reasons for selecting the UMNP for this study were the livelihood importance it has on the communities living around it and the country at large. Thus, the UMNP management should ensure that the ecological integrity of the park is maintained, managed, improved and protected for continuation of its existence.

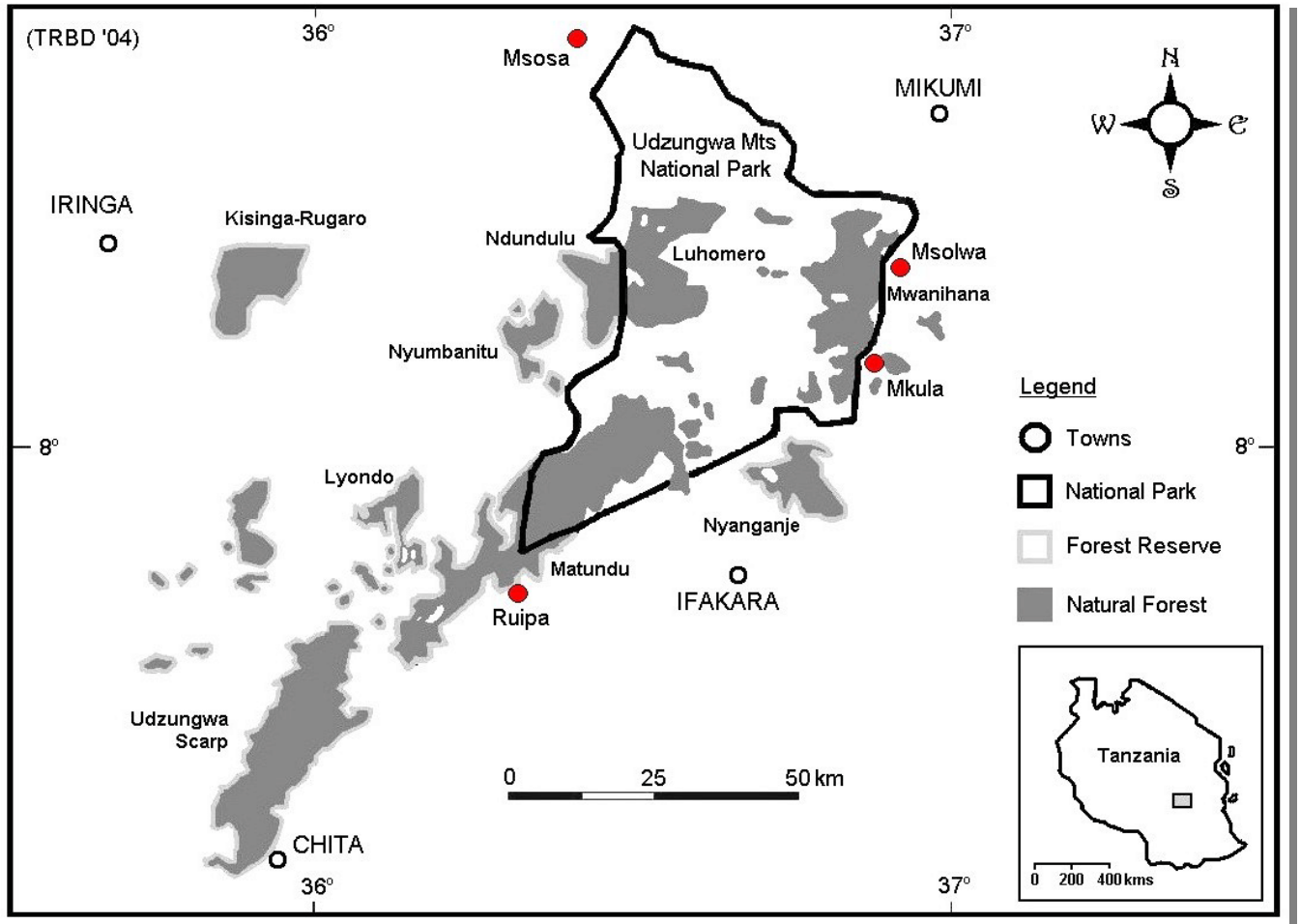


Figure 2: A Map showing Udzungwa Mountains National Park and study villages

Data Collection and Analysis

This study adopted mixed research approach because this approach offers detailed description of the importance of the UMNP on the livelihood of the local communities. Additionally, this design was adopted in this paper because it allows incorporation of a wide variety of research methods on investigation of the contribution of the UMNP. The target population for this study consisted heads of households and other stakeholders inclined to conservation and management of the UMNP. Heads of household are the ones aware of the support the park has on the livelihoods of their families. The sampling techniques used in this paper were simple random sampling and purposive sampling

techniques. The simple random sampling technique offered all heads of households in the study villages an equal chance of inclusion in the study. However, purposive sampling technique was used in this study as it enables us to identify participants who have appropriate knowledge to suit the needs of the study. Purposive sampling targeted local and government officials and elders who are knowledgeable and experienced the study area.

Four villages located adjacent the Udzungwa Mountain National Park, which are Ruipa, Msosa, Msolwa and Mkula were selected for this study (Figure 2). Primary data were collected through household survey, in-depth interviews and field observations. A structured questionnaire was employed to collect data from 233 heads of household between July and August 2021. In depth, interviews were administered to 10 key informants where only respondents with knowledge, experience and have lived in the study areas for 30 and above years were selected. Field observation was also employed to collect nonverbal information like wild animals in the park, environment, and goods collected from the park and others. The mixed research methods were employed for triangulation purpose. In data collection, no single method is self-sufficient in bringing valid and reliable results. The Statistical Package for Social Sciences (SPSS) version 27 was used for data analysis. The data collected were presented in tables, figures and narratives.

Results and Discussion

Profile of respondents

A detailed description of the profile of the respondents was crucial for the interpretation and understanding of the peoples' meeting their livelihoods through managing the UMNP. On marital status, 65.7% of the respondents were married while others were single, widow/ widower, divorced and separated (Table 1). Table 1 revealed that 67% of the households are headed by males. Majority (47.6%) of the respondents were in the 31 to 54 years of age group, only 11.6% were of the age group

ranging 18 to 30 years old and 9% were of 66 years old and above (Table 1). According to the findings of this study, the majority of the respondents, 50.2% had primary education, while 31.3% had no formal education.

Table 1: Respondent's profile

Categories	Frequencies	Percentages
Gender		
Male	156	67
Female	77	33
Age		
18 – 30	27	11.6
31 – 54	111	47.6
55 - 65	74	31.8
66+	21	9.0
Marital status		
Single	53	22.7
Married	153	65.7
Widow/ widower	7	3.0
Divorced	11	4.7
Separated	9	3.9
Education level		
Non-formal education	73	31.3
Primary education	117	50.2
Secondary education	21	9.0
College education	13	5.6
University level	9	3.9

Source: Author's compilation, 2021

Livelihoods and other benefits accrued by local people from the UMNP

About 76.8% of the 233 respondents pointed out that the park regulate climate in the study area (Table 2). The UMNP also serves as a source of water for local people close to it; it is also a source for many rivers and tributaries feeding the Kilombero River. Importance of the park in provision of water to local people was supported by 86.3% of the heads of households responded to questionnaires in the study villages (Table 2). The ecologist interviewed said this, “*The park provides water to Tanzania Electricity Supply Company for generating electricity, to Ilovo Kilombero Sugar Company and to*

Kilombero Teak Company for irrigation". The park also offers ecotourism ventures as pointed out by 39.1% of the respondents. Ecotourism provides local people with income and market of their produces, which support their livelihoods. The main purpose of ecotourism ventures is to educate the travelers, at the same time to help the local community to conserve, manage the park, and enjoy the sustainability of the park in meeting poor peoples' livelihoods. Through a community conservation programme, the UMNP is a source of funding for building schools and supporting health facilities as said by 43.4% of the respondents (Table 2). The presence of the UMNP contributes economically, socio-culturally and ecologically significantly to villages, districts and to the nation at large.

Table 2: The Importance of the Management of UMNP

Importance of UMNP	Frequencies	Percentages
Regulating micro-climate	179	76.8
Source of water	201	86.3
Ecotourism venture	91	39.1
Source of fund	101	43.4
Source of construction materials	171	73.4
Offering cultural values and religious sites	55	23.6
Others	31	13.3

Source: Field survey, 2021 *Multiple Responses from heads of households

The head of household interrogated in Msosa Village had the following opinions, *"Traditionally, this park (UMNP) is very important to our culture, it has cultural values to us. We use that park/ forest to contact our ancestors in case of any problem like, shortage of rainfall, low harvests and drought"*.

The park is also used as a religious site. People execute different traditional taboos, rituals and beliefs on the park. An old man interviewed in Ruipa village said this:

"I am old now leading my family on ritual issues, I used to lead prayers asking ancestors to bless us in unforeseen or unexpected problem like dropping of water in the river or shortage of rainfalls and other calamities like death and drought. The prayers are always performed in the park".

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Importance of the park for cultural and religious purposes was supported by 23.6% of the people interviewed (Table 2). Construction and furniture making materials is another livelihood benefit of the park. People meet their livelihoods assets from the park by getting timber, poles and withies, which are used for building their houses. This importance of the park was agreed by 73.4% of the heads of the households interviewed (Table 2). The park also provides people with trees for making furniture, which includes beds, chairs, tables, windows and doors, to list some. The category others was mentioned by 13.3% of the respondents. These other benefits include; medicinal herbs and honey collection, source of fodder and source of pastures. From the preceding discussion on the importance of the UMNP, it is evident that, the park has significant importance to the livelihoods of the people residing in the proximity of the park.

The UMNP offers both economic and ecological importance to communities residing close to it. The communities close to the park get both direct and indirect benefits (Harrison, 2006; Haq, 2016). Ecologically, the park contributes in regulating micro-climate due to the existence of the forests reserve, which assists in bringing adequate rainfall and moisture throughout the year (Harrison, 2006). Ecological services are the benefits to human communities that stem from healthy forest or park ecosystems such as clean water, stable soil and clean air (Udzungwa Mountain National Park Profile, 2022).

Livelihoods benefits accrued from UMNP

Head of households involved in this study explained a number of livelihoods needs satisfied by UMNP (Table 3). The livelihood needs are grouped into two main groups, goods and services; tangible and intangible or direct and indirect (Table 3). The conservation of UMNP has traditionally been justified because of socio-economic importance it has as a source fuel wood, income, employment among others and biodiversity values, which the park possesses.

Table 3 summarizes the livelihoods benefits people accrued from the UMNP. The question posed required respondents to explain livelihoods benefits accrued from the park. The people were asked to list benefits in terms of goods and services accrued from the UMNP. These benefits were also collected using interviews and observations. The analysis of the information in Table 3 summarizes different livelihoods people get from the park.

Table 3: Respondents’ livelihoods communities get from the UMNP

Goods (Tangible)	Services (Intangible)
Fuel wood	Carbon sequestration
Building poles	Micro-climate regulation
Thatch	Source of water
Sustaining wildlife	Flood and erosion control
Wild food	Cultural values (places of traditional worships/ beliefs)
Traditional/ herbal medicines	Aesthetic values
Pasture	Heritage values
Fishing	Bequest values
Forestry	Shade
Recreation	
Research	

Source: Authors’ Fieldwork, 2021

The park offers good air, water, food, shelter, sleep and clothing; it also offers safety needs (personal security, employment, resources, healthy and property). In some places, people possess a deep respect for the park because of spiritual traditions (Miller, 1970), while in other places, people value forests/ park for its utility reasons (Alves, 2012; Somaweera and Somaweera, 2010; Mendonça et al., 2014). People residing close to the park are employed as porters (*wapagazi*). Porters are people employed to assist tourists and other people in carrying their luggage and other loads. In the UMNP, the people engaging in porters’ activities are local peoples; this is an opportunity, which enables local people to meet their livelihoods with income accrued. One of the youths interviewed in the study area had this to say:

“I started working as porter since 2015. The other youth said this, I am a form six holder/ leaver, and have no other means of survival apart from being porter. This activity has enabled

me to build a brick house and meets basic needs of my family”. The Mkula Village Chairman had this to say, “This activity (porter) enables youth in this village to meet their livelihoods”.

Tour guide is among the activities in the study areas giving people income. A tour guide is a person who takes people/ tourists on trips through an area and explains the interesting features around. The tour guide met in the park introduced herself and said this:

“I am called climber, this is my nickname. I am called a climber because of my speed in climbing the Udzungwa Mountain. My activity here is to take tourists through the park and brief them about the park and features found in it. This park is beneficial to me and the communities residing close it. Thus, there is a need to protect and manage the park by any cost because of its importance to the people living close to UMNP”.

Tour guides must be aware of the park and have knowledge of what is available and where it is found in the park. Among the tour guides interviewed, 55% were the residents of the villages close to the park while 45% were from other areas of the country (Figure 3). One of the old men interviewed had this to say:

“This park has rescued our youth running to urban areas looking for work. Our youth are employed as porters and tour guides in the UMNP”.

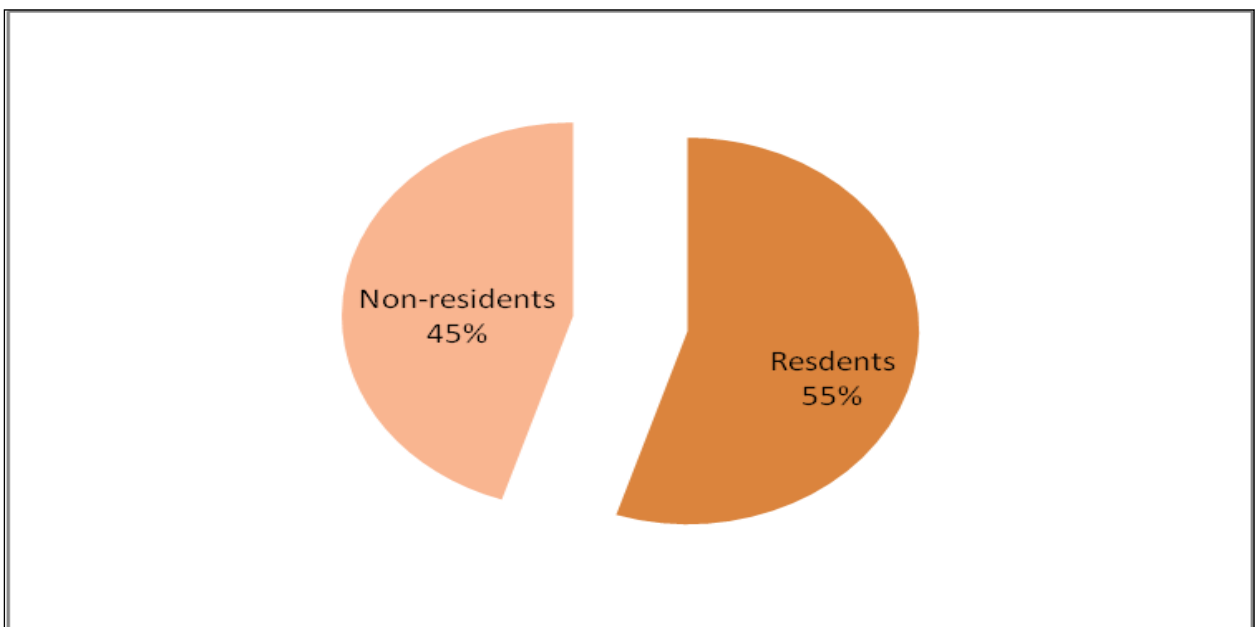


Figure 3: Origin of tour guides working in UMNP.

Source: Field survey, 2021

The UMNP is an area with high steep slopes which requires frequently repairing of trails, routes or roads leading to the water falls, otherwise, the area will be difficult even impossible to climb/ walk.

During the transect walk and interview, men met tilling/ preparing the trails to the park had this to say:

“This trail is used by tourists and other people coming to this park for tours, picnic, and ritual purposes and for swimming. Maintenance of the trails is done twice a year, mainly after or during the rain seasons. This work of making and maintaining trails gives us wages which support our livelihoods”.

The ecologist interviewed disclosed this:

“People cleaning or making the trails are paid money which enables them to meet their needs”.

She further said:

“Most of casual labor working in the park is from the adjacent villages”.

There were also some people/ indigenes of surrounding villages hiring sticks which support tourists when climbing the Udzungwa Mountain (Plate 1). These sticks give strength to people when climbing the Udzungwa Mountain. The man interviewed climbing Udzungwa Mountain had this to say:

“Stick is a support to tourists when climbing the mountain. We hired one stick per tourists for 500 Tshs per day”.



Plate 1: Sticks that are hired by tourists to support them in climbing the mountain

Source: Field survey, 2021

The income generated from tourists and other people visiting UMNP is used to pay for the operation of the park while the remaining is returned to the community to support social services such as building schools and supporting health centers. The support conferred to communities through social services supports health and education of the people and their children, respectively. Thus, if the park is not managed, the livelihoods support that the UMNP offers will end.

Tourists visiting UMNP are a good market for produces produced by the people residing close to the UMNP. According to UMNP ecologist:

“Products sold here include bites, crafts and juices. These products are sold to tourists visiting the park and other people climbing the Udzungwa Mountain. However, in connection to UMNP there are different groups of people engaging in different activities like weaving/ mending baskets (ushonaji wa vikapu) that are sold to tourists. Other residents are engaged in making/ preparing traditional food, which they sell to tourists. Among the food items sold to guests include cashew-nuts, ground-nuts, chapatti (pancake), snacks, sweet potatoes, cassava and others”.

All the fore mentioned activities give people income, which supports their livelihoods. Additionally, national parks contribute to the livelihood of local communities, enhance peoples' well-being and provide recreational opportunities. The overall results of the benefits accrued from the UMNP can be collectively being social, economic and cultural. Thus, communities are influenced to manage national park including UMNP because of the livelihood benefits they offer to them. The park gives people income, goods and services; it satisfies people with basic needs like air, water, food and shelter. People cannot become concerned with management without knowing how they will benefit from the management. People need to be secured and safe against shocks in their living environment. Based on Sustainable Livelihood Framework, vulnerability against shocks and seasonality effects like drought can be ameliorated by the park through giving alternatives means of survival as the park can offer income, improved food security and sustainable use of natural resources.

Getting humor, enjoyment and satisfaction and feeling secure are also activities, which can be executed by the UMNP. As pointed out by Eagles and McCool (2002) and Amuquandoh (2017), there is a popular view that national parks are unique areas for restoration of the physical and emotional health of visitors. However, parks assist individuals to renew their health and relieve stress associated with living. Generally, access to fresh air, sunshine and nature is considered a healthy lifestyle. The same situation can be ensured by UMNP.

Challenges facing UMNP in meeting livelihoods of people

The information gathered through the use of questionnaires, interviews and transect walks revealed that, despite the importance of the park on the livelihoods of the people residing close to it, a number of challenges were revealed. The first challenge identified was poaching and illegal hunting; people who are not honest enter the park and hunt animals like birds and monkeys without permission. Poaching and illegal hunting were mentioned by 25.3% of the people interviewed (Table 4). Connected with illegal hunting were accidents caused by careless drivers who kill slow moving

wildlife (animals) that maybe be crossing the road. The park is crossed by a tarmac road to Ifakara.

The ecologist of the UMNP had this to say:

“Animals killing/ accidents are happening frequently in the park. Animals killed among others include monkeys. The drivers after killing these animals they run away because accidents are happening in the night when no one is around to arrest them”.

Table 4: Challenges facing Udzungwa Mountain National Park

Challenges	Responses (n = 233)	Percentages
Climate change	110	47.2
Firewood	101	43.4
Cutting trees for building houses	95	40.8
Cutting tree for timber	93	39.9
Wildfire	71	30.5
Poaching and illegal hunting	59	25.3
Illegal collection of herbs for medicines	33	14.2

Source: Field survey, 2021 *Multiple responses were considered

The second challenge facing the UMNP is people collecting herbs for medicines in the park. In collection of herbs, herbalists preferred different part of the tree including bark of the tree, leaves and roots. Some trees die in the course of people taking part of it for medicines. About 14.2% of agreed that, taking herbs from the park is a challenge to the park. Trees affected with herbalists include *Drypetes gerrardii niodides*, *Zimmermanniopsis* and *Saint paullia*. These tree species are endemic; if no measures are taken to protect them, they will disappear in the near future.

Another challenge mentioned by the respondents was illegal cutting of trees for building houses. This challenge was supported by 40.8% of the respondents (Table 4). Most of the houses of the residents close to the park are made of mud, poles and withies. In average, mud houses can last for three to five years; then the new one must be built. These mud houses use a lot of wood, which enforce people to encroach the park for poles in turn this leads to destruction of the forest and deforestation. One of the village officials interrogated said this:

“Some people ask for permit to cut poles and withies from the park for building their houses while others enter the forest illegally and cut trees for their uses”.

Tree cuttings for poles and timber if not monitored can lead to deforestation.

According to Msola Village Chairman:

“The energy source used by the residents in the study villages is fuel-wood”. This argument was supported by Msola Village Executive Officer who said this, “People get most of the firewood from the park, very little is collected from their farms”.

Collecting firewood from the park is not allowed, people are doing it illegally and clandestinely. A study on impact of firewood collection from the UMNP has indicated that 143,872 cubic meters of dead wood are collected annually (Udzungwa Mountain National Park Profile, 2022). About 43.4% of the respondents agreed that they are getting firewood from the UMNP (Table 4). They think that, since they do collect dry wood, it has no negative effect to the park. Available information has shown that firewood collection has significant adverse impacts on the park’s ecological processes (Harrison, 2006).

Lumbering is one of the activities performed by the people living proximity to the park. Lumbering involves cutting down trees and turning them into pieces of wood used for building (Igben and Ohiembor, 2015). According to UMNP ecologist:

“Lumbering is not allowed in the park, people are doing it illegally mainly in the night when the patrol guard are not around”.

Timber was mentioned to be one of the products harvested from the park (Table 4). This activity leads to depletion of species since it involves cutting the whole tree. Cutting tree for timber was revealed by 39.9% of the respondents. It was disclosed that, timber was used to make furniture. Carpentry done in the study villages involves making beds, doors, windows, chairs, stools and other wood items in a workshop. The carpenter interviewed had this to say:

“Raw materials for carpentry work are obtained from the forest and the park”.

Climate change is another challenge to the management of UMNP. Climate change was a problem mentioned by 47.2% of the respondents (Table 4). Climate change is a natural cause, which leads to

dry up of water sources, streams and rivers. Prolonged dry seasons or drought leads to dying of animals and plants. Climate change is also associated with high temperature and less rainfall. One staff working with Illovo Sugar Plant had this to say:

“Volume of water reaching to our reservoirs is low during the dry seasons than during the rain time. The decrease of water is associated with climate change”.

Another village chairman said this:

“Sometime water coming to our tapes is mixed with mud which is the indication that, water sources are open and polluted, and this is an indication that there are no vegetations covering the water catchments”.

A head of household interviewed in Mkula Village said this:

“Water flowing from tapes is very small and sometimes, no water at all coming from the tapes, this is the result of climate change”.

A prolonged drought leads to death of undergrowth or grasses, where rain falling automatically leads to floods since there is no tree to obstruct or reduce the speed of water. Wildfire is another challenge to the UMNP. Wildfire is a prominent problem during the dry season. Wildfire can be intentional or a result of people cleaning their farms using fires. When the fire is uncontrollable, it crosses to the park killing animals and plants. The wildfires in the park are most prevalent during the dry season. Most of these fires are caused by people clearing their farms, honey gatherers, poor agricultural practices and poachers. About 30.5% of the respondents have experienced fire in the park (Table 4).

The same was said by the ecologist who said this:

“Fire is a challenge in the park especially during the dry seasons. The causes of fire are many including honey gatherers and farmers when cleaning their farms using fire”.

Human-wildlife conflict is another problem between the UMNP and communities around. People close to the park practice farming and livestock keeping. Sometimes, their crops are eaten or destroyed by animals i.e., crop raiding. Animals like monkeys eat and destroy crops. Human and wildlife death

is another outcome of the human wildlife conflicts. Animals found in the park include elephant, buffalo, hippopotamus, leopard, African wild dog and eland. Animals like monkeys, eland and wild dog are killed by local people when eating their crops. Since the park and community have different needs, for example park goal is to conserve the park while community wants goods from the park. Since the needs are not compatible, there arise conflicts between the park and the community.

Challenges facing national park vary from one park to the other (Katani and Ndelolia, 2020). The respondents identified several challenges facing the UMNP. The first challenge identified was drying-up of water sources in the park due to prolonged dry seasons and drought. According to Kideghesho et al. (2013) and Thomas et al. (2004), drought and climate change particularly increasing temperature, which lead to extinction of plants and animals due to dry up of water sources and high evaporation, which dried the moisture in the soil. In Tanzania, the impacts of climate change have been felt virtually in all ecosystems including the rangelands (Kideghesho et al., 2013) and national parks.

Another challenge to the UMNP is invasion of exotic plant species, pole cutting and increasing demand for firewood collection. A study on impact of firewood collection from the park has indicated that, 143,872 cubic meters of dead wood are collected annually. Available information showed that, firewood collection has significant adverse impacts on the park's ecological processes. Sustainable conservation of species is compromised by poaching, logging and habitat degradation resulting from tree cutting in and outside the park. However, other challenges encountered were inadequate capital to open income-generating activities apart from depending on the park and lack of markets for local products like local food and crafts.

Conclusion

Sustainable livelihoods framework has become widely influential as the best-known framework. The framework has been applied to explain how shocks and other calamities can be ameliorated and alert community on livelihood resilience. Respondents of this study were aware of the importance of the UMNP in meeting their livelihoods. A sustainable management of national park requires collaboration, participation and involvement of park staff, NGOs, local organizations and other stakeholders like local residents, and governments. The UMNP is very important to the communities around it and to the government at large. The findings of this study showed that the UMNP have strong contribution to the livelihoods of communities residing close to the park and the country at large. An important aspect of managing the UMNP is developing an understanding of the park advantages and problems people will experience in case the park disappears.

This study demonstrated benefits of the park on the livelihoods of the people including assurance of getting water for different uses and rainfall. It is concluded that respondents were motivated to manage the park due to its tangible and intangible benefits they get from it such as water, firewood, poles and timber; the park regulate climate, revenue is collected from tourism activities which then support social services and offer temporary and permanent employment to local people. Moreover, presence of the park offers market for local produce, place for local people to exercise their traditions, taboos and rituals. These are among the benefits of the park, which in turn enables people to meet their livelihoods. This leads to a conclusion that, residents in the surveyed villages since they benefit from the park, they feel that, the park is for them, thus they have to protect and conserve it at any cost.

Despite the fore-mentioned importance of the park, the park is facing several challenges including wildfire, poaching and climate change. This article contributes to the literature concerning its contribution on the livelihood of people and other factors on the management of the national park. It is recommended that, the park management through the community collaboration units should educate the fringe communities on the importance of the park and the cost of destroying the park. It

is also recommended, that intensifying guard and patrol of the UMNP is necessary since poaching and illegal activities are done in the night when the park guards are not in the field. Stern measure and fines should be instituted to anyone caught in the park doing illegal activities.

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Conflict of interest

The author declares no conflicts of interest regarding the publication of this paper.

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