

Environmental Law and By-laws' Knowledge among Community Members around Forest Reserves: Experience from Mount Uluguru Nature Reserve

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ABSTRACT

Degradation and deforestation are among the major environmental problems facing forests in Tanzania. The country has undertaken deliberate efforts to devise mechanisms to address the environmental problems in the country. One of the remarkable actions is decentralization and privatization policies in the 1990s that pave way for local people to participate in the management of forest resources by recognizing that local people are better placed to manage their resources efficiently. The main focus of this paper was on determining how the national environmental policy (NEP 1997) and Environmental management Act (EMA 2004) have been reflected in the village decisions related to environmental management, taking a case of some villages close and far from Mount Uluguru Nature Reserve forests. The paper found that, there is poor knowledge of environmental laws (national law as well as villages' by-laws), very low villagers' involvement in by-law formulation process, which goes together with poor willingness of people to participate in the environmental activities, as well as long processes in formulating these by-laws. Based on these, the focus should be given to awareness programs at village level, also the by-laws drafts should be treated with urgency by top district authorities so as to crown efforts done by villagers and the supporting stakeholders.

Keywords: Environmental law, by-laws, nature Reserve

1.0 INTRODUCTION

The Uluguru Forest Reserves (RFs) like other forests of the Eastern Arc Mountains are of global importance for their biological values and of national importance in providing water to millions of Tanzanians(William, 2010). The Uluguru forests are among the most critically threatened in the Eastern Arc. In spite of the indicated values, the Uluguru FRs faces many threats resulting from human interactions and utilization of environmental resources. The Uluguru mountains landscape was first occupied by the Waluguru ethnic group between 18th and 19th century and subjected to shifting cultivation and settlement (Chamshama, *et al.*, 2008; William, 2010).

Previous study done in Uluguru Mountains in 1990s (Svendsen and Hansen, 1995) showed that there was a very serious depletion of firewood and building pole resources outside the forests forces people to obtain these items illegally inside the forest. There was also a poor and rapidly growing human population (2.8 % growth per annum and up to 6.5 % per annum in some places) with poor agricultural techniques. These techniques lead to soils soil erosion and nutrients loss. The need for new lands due to population growth and as a result of nutrients loss leads to a risk of crossing the often badly demarcated forest reserve boundaries. Widespread burning was also noted as one of the serious threat to the woodlands and forest edges. Outside the forests soil erosion is a big problem. Farming often takes place on very steep slopes (up to and beyond 50°) and on most of them no measures are taken to prevent erosion.

These have been several local and international efforts done so far to conserve the Uluguru Mountains. The conservation story of Uluguru Mountains environment begins during the colonial period. The first conservation measures were introduced by the Germans in 1909 when the Uluguru forest reserves (FRs) were declared and boundaries demarcated, but these measures were in most places rejected by the communities. The Bunduki FRs were gazetted in 1950. In 2008, almost all forest and natural grassland remained in the reserved areas, with land outside being used primarily for various types of agriculture. After independence to the early 1990s conservation efforts in the Uluguru have slackened, most communities on the landscape have continued to use unsustainable agricultural practices and support to reverse this was very limited.

Degradation and deforestation are among the major environmental problems facing forests in Tanzania (Zahabu, *et al.*, 2009). The Tanzania National Environmental Policy (NEP) of 1997 p.5 stipulates that during 1990s and the long period before this time, Tanzania was already under the threats of serious environmental problems including land degradation and deforestation. The forests and woodlands were being reduced year after a year through clearance for agriculture, woodland and other demands. These problems had evolved over a long period of time and had already spread through the country. In addition, these problems hinder the economic well-being of the country and health of the people (URT, 1997).

Tanzania has undertaken deliberate efforts to device mechanisms to address the environmental problems in the country. Some of the efforts include putting in place the National Environmental Policy in 1997(URT, 1997) and enactment of Environmental Management Act of 2004 (URT, 2004). NEP 1997 paved a way to enactment of Tanzania Environment Management Act (URT, 2004). This umbrella environmental law in Tanzania marked an important step ahead in terms of Environmental management. The Environmental Management Act (EMA) is a legal and institutional framework for sustainable management of the environment. In principle, EMA is using existing village structures in environment management.

The Policy statement number 68 of Tanzanian NEP 1997 states the importance of environmental law as one of the instruments for this policy. Environmental law is an essential component of effective environmental management and improvement of the quality of life. The inherent nature of environmental law to set demands, impose duties and limits and create obligations for the individual for private and public bodies means that it can make a clear contribution to fit human activities into laws that govern the patterns of our air, water, soils and plant and animal life. Among many good provisions in EMA, 2004 includes Cap36 (2) which direct the establishment of environmental by-laws at lower administrative units. This Cap mentions the need for district environmental officers and their functions which include reviewing of the sector specific environmental by-laws and raising public awareness on environmental conservation.

The government of Tanzania introduced decentralization and privatization policies in the 1990s to pave way for local people to participate in the management of forest resources by recognizing that local people are better placed

to manage the resources efficiently (Banana, *et al.*, 2000; Kajembe, *et al.*, 2000). Tanzania local government reforms programs Phase one (LGRP I) of 1998-2008 and Phase two (LGRP II) of 2009 - 2014 (URT, 2009) using Decentralization by Devolution (D by D) reform strategies, empower local government authorities, and firmly establish them as primary service providers in their areas of jurisdiction (Mmari, 2005; URT, 2009). The D by D policy strategy matches with and complements well the EMA 2004 in terms of powers of lower level of local government authorities in the area of environmental management. Under D-b-D strategy, one of the powers and roles of village council is to propose by-laws which will be liberated by the village assembly (Mmari, 2005). Cap 41, establishes the role of village environmental management committees which have powers to initiate inquiries and investigate about all allegations related to environment and the implementation or violation of EMA 2004.

Impacts of decreasing in forest cover in Uluguru Mountains have been reported to be the decrease of dry season flow of Ruvu River. It has been decreasing since 1958-2002 while forest area cover declined from 1955-2010. Turbidity of water has also been increasing (Yanda and Munishi, 2007; Lopa, *et al.*, 2012). Between 1995 and 2000 there was an extensive expansion of agriculture at the expense of the natural vegetation cover. Agriculture was found to be encroaching and extending into marginal lands such as hilly, steep slopes and river bank (riparian) ecosystems. Such situation has increased exposure of land surface to erosion agents and increased surface runoff (Yanda, *et al.*, 2007).

The most recent efforts done to conserve Uluguru Mountain forests was the establishment of Mount Uluguru Nature Forest Reserve (MUNFR) in 2008 (Chamshama, *et al.*, 2008). The establishment of MUNFR changed the tenure regime status of the gazetted forest reserve which was inherited from colonial period, not only in Tanzania but in many African countries. Literature shows that gazetted forest reserves management which was inherited from colonial governments was not effective (Kowero, 2003). This kind of forests management system failed to yield the expected results due to inadequacy in finances, facilities for patrolling forests and lack of people's participation. As a result, most of the forests were not adequately protected and hence prone to degradation, encroachment and fragmentation (Zilihona, *et al.*, 1998; Kowero, 2003). One of the recent approaches in Tanzania for improving the control over some forest reserves was to change the tenure status establishing Nature Reserves. The first of

its kind was the Amani Nature Reserve (ANR) in 1997, which became operational in 2000 (Zahabu, *et al.*, 2009). The government of Tanzania established the Uluguru Nature Forest Reserve (UNFR) in 2008 (William, 2010). The UNFR involves local people in reserved forests management. Full local involvement means that local priorities can also be financed making a direct link between development and the conservation of the forest (Burgess, *et al.*, 2001).

This paper is a part of the research project which was carried out in some villages close and far from Mount Uluguru Nature Reserve forests. The main goal of the project was to find out how the powers devolved to village governments under Local government reforms under D-by-D policy strategy have been used to make their own decision to protect their environment. The main focus being how the national environmental policy (NEP 1997) and Environmental management Act (EMA 2004) have been reflected in the village decisions related to environmental management. The research questions were i) Why continued environmental degradation on Mount Uluguru slopes despite presence of having NEP1997 and EMA2004? ii) Why continued degradation despite the influx of conservation actors in the landscape mainly involved in supporting sustainable land management of Uluguru Mountains? iii) How have village council and villagers on Mount Uluguru Mountains used the powers devolved upon them to make by-laws aiming at protecting the environment? This paper specifically assesses the knowledge on Environmental Law and By-laws among Community Members around Mount Uluguru Forest Reserves.

2.0 METHODOLOGY

2.1 Study Area

This study was carried out in 5 villages on Mount Uluguru Slopes in Morogoro districts. Two of the villages namely Konde and Kibungo juu and Tawa/ Nyingwa are villages adjacent to Mount Uluguru Nature Forest Reserve while the other three Mvuha, Kibangile and Kiswira were villages far from the nature forest reserve (Figure 1). The villages selected were those ones that their livelihoods are directly linked with the Mount Uluguru forests environment, mainly Uluguru North and Uluguru South, although there are other small forests namely Kimboza and Kasanga forests. The main inhabitants of the study villages are Luguru with exception of few immigrants and government workers, for example wards' executive officers and livestock health officers.

The Uluguru Mountains are one of the mountain blocks in the Eastern Arc Mountain Range (Burgess, *et al.*, 2001). They are located in the central part of the Eastern Arc Mountains in Tanzania. The mountains have long been recognized as a key site for conservation of biodiversity in Africa (Svendsen, *et al.*, 1995). They form an outlying ridge east of the main range of Eastern Arc forests, 180 km from the Indian Ocean. The Uluguru Mountains ranges from 200 – 2,638m altitude. As altitude increases, the vegetation changes from miombo woodlands and coastal and transitional rainforests to submontane, montane and upper montane forests. (Lopa, *et al.*, 2012). It consists of two mountain blocks which are separated by the Bunduki Gap (Figure 1). Apart from the forests above 1000 m on the slopes there are patches of lowland forests in the limestone karst terrain in the eastern foothills at about 300-500 m, of which the most important are the Kimboza/Ruvu Forest Reserves.

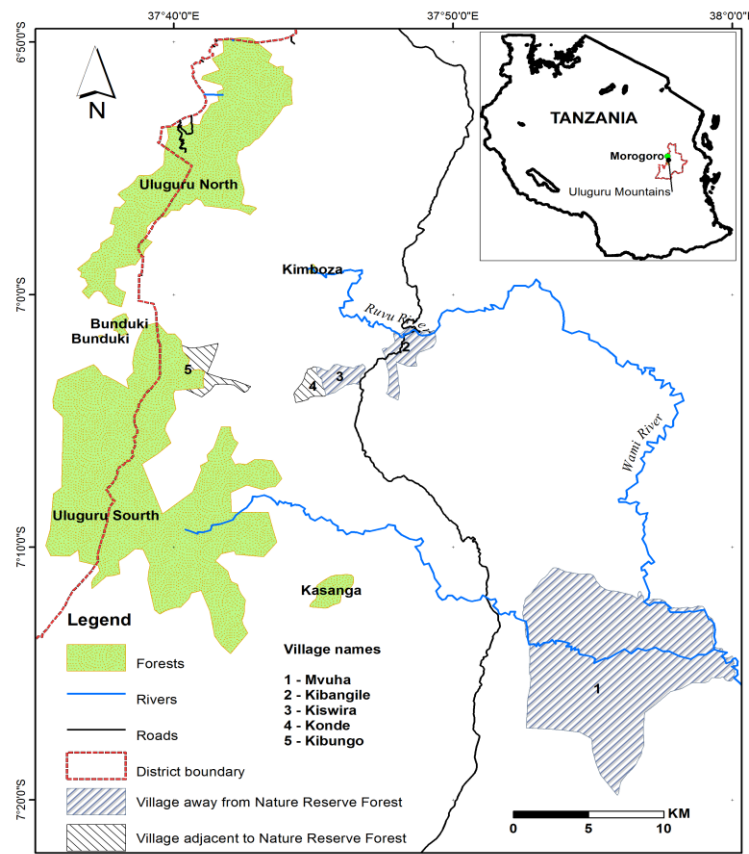


Figure 1: Map to show study villages on Uluguru Mountain slopes in Morogoro district

Population growth in the Ulugurus is generally 2.5-3% per annum with a population doubling time of around 20 years (Burgess, et al., 2001). Over 150,000 people live within the mountain area whereby it doubles after 20 years. Human density is greater at higher altitudes, with farmland up to the Nature Reserve boundary (Burgess, *et al.*, 2001; Lopa, *et al.*, 2012).

Ruvu River which has its sources in Mount Uluguru forests is very crucial for water supply in Dar es Salaam. Most of the economic activity of Dar es Salaam depends on the water from the catchment forests of Uluguru mountains (Svendsen, *et al.*, 1995).

The eastern slopes of the Uluguru Mountains have the highest rainfall in eastern Africa. The mountain forests of the Uluguru mountains are extremely important for water catchment (Lyamuya, 1994). The Uluguru Mountains receive rainfall every month and this supports year-round crop production. They secure a stable and good water supply and maintain a humid climate suitable for agriculture (Svendsen, *et al.*, 1995). Our household interview found out that about 87.74% of all residents of study villages depend on agriculture for their livelihood and economic activity. Social surveys of 83 households in 2007 show that 89.2% of villagers are subsistence farmers with no more than 1ha of land (Lopa, *et al.*, 2012). Residents grow grains like non flooded paddy and maize, fruits like pineapples, bananas, oranges and mangoes. They grow also spices like cloves, black pepper and cinnamon (*Mdaldasini*). Coconut also grows well on mount Uluguru slopes. The main market for bananas, oranges, coconuts and spices from the study area are Morogoro urban, Dar es Salaam and Zanzibar.

Subsistence agriculture is the major land use activity on the farming landscape of the Ulugurus. Increasing population has stimulated intense utilization of the land resources including land for cultivation and settlements. High population density, intensive agriculture and land fragmentation are typical features of the area. Poor agricultural practices, growing of annual crops on steep terrain have hastened vulnerability of the land to soil erosion. Such practices, especially on marginal lands, eventually lead to fast environmental deterioration (Chamshama, et al., 2008).

2.2 Data Collection and Analysis

Data collection involved interview with households, Focus group discussion (FGD), Observation and consultation with the District Environmental Officers. The FGD involved village and wards council leaders, village Environmental conservation groups and village environmental committees. Some data was also gathered during reconnaissance whereby Uluguru Mountain stakeholders were consulted. The stakeholders included Eastern Arc Mountain Conservation, Uluguru Nature Reserve, TAFORI, Catchment Forests Office and Morogoro District Council office. Data from the households was collected using semi-structured questionnaires while a checklist was used to guide the FGD. A total of 106 heads households were involved in the study.

Secondary data which involved village environmental conservation by-laws, district environmental law, maps, among others, were collected from the village offices as well as district council office and other Mount Uluguru conservation stakeholders. In this study, qualitative data was analysis using content analysis while quantitative data was analyzed using descriptive statistics.

Selection of villages to undertake the research was purposely selected. For comparison analysis on the impacts of implementation of environmental policy and environmental law, the study included two villages which are active in environmental management but are located adjacent to mount Uluguru Nature reserve. These are villages where PFM have existed. Other three villages include in the study were those ones which are not adjacent to mount Uluguru Nature reserve and have no good history of environmental conservation.

3.0 RESULTS AND DISCUSSION

3.1 Level of Environmental Law and by-laws Knowledge

Tanzania has a good umbrella environmental management law (EMA 2004). The law in Cap 36(2) shows that the district environmental officer should advise the lower local government authorities (ward and villages) to make their by-laws as well as to make environmental protection awareness specific to wards and villages within their jurisdictions. Despite these good umbrella law and policies, the study found that there is a great lack of awareness of these environmental management tools among villagers. Among the surveyed individuals, no one has ever seen the Environmental Management Act (EMA 2004). However, some people (46%) are

aware of the villages environmental by-laws (Figure 2) of which some those who are aware of the village-by-laws were either in the village council or in the village environmental committee. Although not all members of environmental committee were aware of the by-laws, being newly elected members was put as the major reason for this. However, on the side of villagers, lack of awareness of existing environmental by-laws was attributed by the habit of individuals not attending the village meetings.

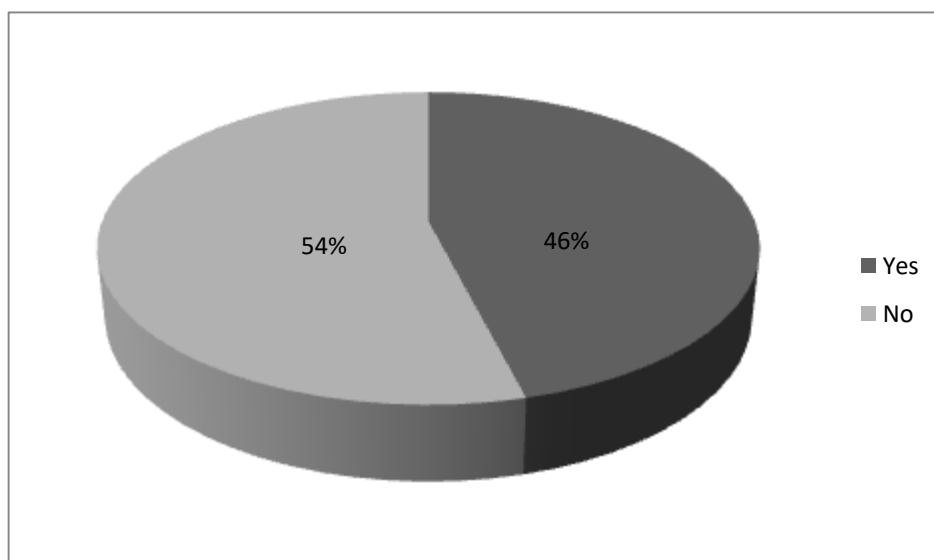


Figure 2: Awareness on village environmental by-law in study villages

By-laws have an instrumental role in managing natural resources in Uluguru Mountain villages (Chamshama *et al.* 2008), they define the norms appropriate for managing particular resources. To this effect villages together with development partners have developed various by-laws intended to enhance the management of various resources. Some of the by-laws were formulated as far as 2004. However, previous study by Chamshama, *et al.* (2008) that assessed the understanding of Uluguru Mountains residents on how the by-laws were made, the results showed that nearly half (49%) of the respondents do not know how these by-laws were formulated, 30% reported that they were formulated by the village government, while only 21% reported that the by-laws were formulated in a village meeting and approved at division and district level as required by the environmental law. Moreover, the process of formulating by-laws is long and involves several stakeholders in the approval process. What appears to be at fault, however, is the lack of wide participation of stakeholders, particularly at community level. It is

probably the main reason for the many of the respondents claimed that the by-laws were formulated by the village government.

3.2 Environmental Management Structures in the Study Area

The Tanzanian National Environmental Policy (NEP, 1997) culminated in National Environmental Management Act (EMA, 2004) which is an umbrella environmental law in the country. EMA 2004 (Sect g, Caps 36 and 40) states the designation, functions and powers of the local government authorities in environment management. This Act states that the district council shall designate for each administrative area of township, ward, mtaa, village and kitongoji a public officer who at village level will be known as Village Environmental Management Officer. His/her functions will be to coordinate all functions and activities geared towards the protections of the environment within the village area. The provisions in Cap 36 and 40 of the EMA 2004 have been implemented up to district level only whereby there are existing Districts Environment Management Officers in Morogoro district. At lower levels of ward and village as well as kitongoji there still no such officers.

At village level, the study found out that there are Village Environmental Committees. The EMA, 2004 (Cap 41) mentions the villages environmental management committees. Each of these committee shall, in relation to which its established, have powers, among others, to initiate inquiries and investigations about any allegation related to the environment and the implementation or violation of provisions of EMA 2004, and resolve conflicts related to environment. In Konde, Kiswira and Kibangile villages for example, the environmental management committees are like environmental watchdogs. They are well organized in such a way that they have a well established network of informers. Apart from making weekly voluntary patrol of the forests, they fight against environmental destructive gold mining along Ruvu River. Although the committee members are not paid for being watch dog and patrolling, they are motivated by the penalties from those caught breaching the environmental by-laws or destructing water and forests. The village council pays up to 30% of the fines to the environmental management committee.

The concerns for future generation and fear of adverse environmental effects attributed by destruction of catchment forests on Uluguru Mountains have led to evolution of voluntary environmental management groups which are highly

appreciated by village council although are not a part of local government structure. Such groups are found in Kibangile and Konde villages. They volunteer to plant trees, educate their fellow villagers, ready for any fire outbreak and also to make regular patrol of their forests and water resources.

3.3 Training on Environmental Law and By-laws

One of the question asked to households during the interview was “Have you got any training on Environmental law”. Table 1 show that, only 27.36% of all respondents have received training while the rest have never received any training on environmental law.

Table 1: Training on environmental law and by-laws

| Villages | Have you got any training on environmental law? | | | | | |
|--------------|---|--------------|-----------|--------------|------------|------------|
| | Not Trained | | Trained | | Total | |
| | Freq | % | Freq | % | Freq | % |
| Mvuha | 17 | 16.04 | 8 | 7.55 | 25 | 23.6 |
| Konde | 17 | 16.04 | 3 | 2.83 | 20 | 18.9 |
| Kiswira | 13 | 12.26 | 5 | 4.72 | 18 | 17.0 |
| Kibangire | 11 | 10.38 | 5 | 4.72 | 16 | 15.1 |
| Kibungo juu | 19 | 17.92 | 8 | 7.55 | 27 | 25.5 |
| Total | 77 | 72.64 | 29 | 27.36 | 106 | 100 |

Of those who said that they had been trained on environmental law, about 35.7% of them reported to get training from Sokoine University of Agriculture (SUA) while 64.3% said they were trained by other institutions. The content of the trainings included good agricultural practices (94.4%) and environmental conservation (5.6%). During the FGD it was learnt that training on environmental law and how to draft the by-laws involved the village leaders and the environmental committee only and not all villagers. So those who responded “Yes” in Table 1 must be those villagers who were once members of village council and environmental committees who got some chances sometimes back to attend the trainings.

Since the training by SUA in collaboration with the Morogoro district office aimed at capacitating the villages to draft their own environmental by-laws, the output from the training is normally shared in village meetings. For those villages

with environmental by-laws in place like Konde and Kiswira villages, the village general assembly does pass the by-laws. Despite training, few villages (Konde and Kibangile) have drafts of village environmental by-laws. These by-law drafts are at District Council office for waiting for approval from district council.

3.4 Involvement of Villagers in Developing Environmental By-laws

Table 2 shows that 70 out of 106 respondents (66.03%) claim to have not been involved in developing the village environmental by-laws. This claim of not been involved in by-laws development might be due to the by-laws drafting process itself. The focus group discussions with village leaders and environmental committee members gave details on this, for example in Konde village, experience shows that drafting of the by-laws involves the village council, environmental committee, “Msukumo” committee and external help from the district council officer and a lawyer. Villagers are also involved at some stages as it would be difficult to gather all villagers in each stage of the by-laws development. This limited involvement of villagers in Uluguru Mountains have been also pointed out by Chamshama (2008) that there is limited involvement of members of the community other than the village leaders in formulation of by-laws. In Tanzania local government structure, the village assembly is the supreme authority on all matters of general policy making in relation to the affairs of the village (Mmari, 2005). If this is the case, then it is expected that every villager has to be involved in any activity that concerns village development including the development of the environmental by-laws, however, this was not observed in larger part of the study area.

Table 2: Involvement of villagers in developing village environmental by-laws

| Villages | Have you been involved in developing any environmental by-law in your area? | | | | | |
|--------------|---|--------------|-----------|--------------|------------|---------------|
| | No | | Yes | | Total | |
| | Freq | % | Freq | % | Freq | % |
| Mvuha | 15 | 14.15 | 10 | 9.43 | 25 | 23.58 |
| Konde | 14 | 13.21 | 6 | 5.66 | 20 | 18.87 |
| Kiswira | 11 | 10.38 | 7 | 6.60 | 18 | 16.98 |
| Kibangire | 13 | 12.26 | 3 | 2.83 | 16 | 15.09 |
| Kibungo juu | 17 | 16.04 | 10 | 9.43 | 27 | 25.47 |
| Total | 70 | 66.04 | 36 | 33.96 | 106 | 100.00 |

3.5 Implementation of Existing Village Environmental By-laws

Having environmental by-laws in place and being aware of them is one thing, but implementation of such by-laws is another thing. The respondents in this research gave their opinions on the implementation of the existing environmental by-laws in their villages. Table 3 shows different opinions of the respondents.

Table 3: Opinions on Implementation of existing village environmental by-laws

| Villages | In your opinion, are the by-laws implemented? | | | |
|--------------|---|--------------|-----------|--------------|
| | No | | Yes | |
| | Freq | % | Freq | % |
| Mvuha | 10 | 9.43 | 15 | 14.15 |
| Konde | 2 | 1.89 | 18 | 16.98 |
| Kiswira | 10 | 9.43 | 8 | 7.55 |
| Kibangire | 8 | 7.55 | 8 | 7.55 |
| Kibungo juu | 10 | 9.43 | 17 | 16.04 |
| Total | 40 | 37.74 | 66 | 62.26 |

The responses in Table 3 were as anticipated by researchers based on observation in Figure 2. Konde and Kibungo Juu are two villages adjacent to Nature Reserve Forests. It is in these villages the Mount Uluguru Nature Reserve office have concentrated their training, they also have very active village environmental committees. In Konde village there exists environmental by-laws (waiting for higher authority's approval) and enforcement have been so active that most of villagers are aware of that. But in general, Table 3 shows that majority (62.3%) of respondents agree that the existing environmental by-laws are implemented. The villagers have their own measures to prove that the village environmental by-laws are implemented. These measures are shown in Figure 3.

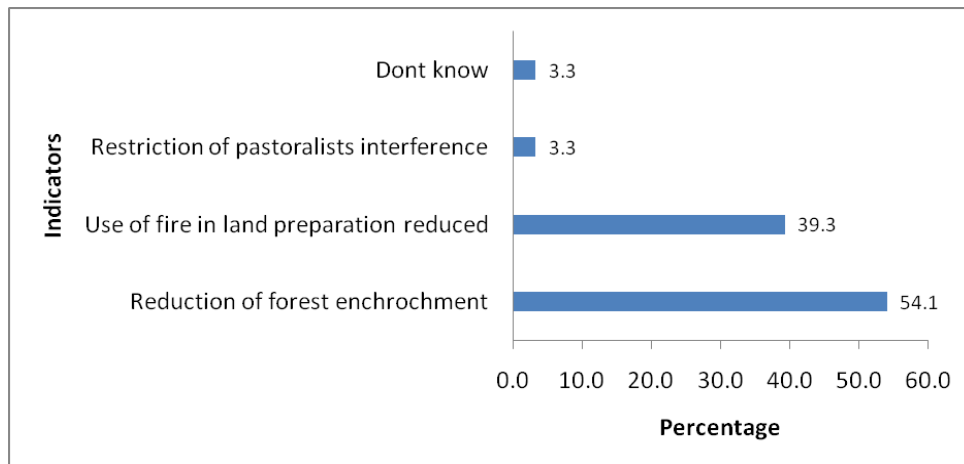


Figure 3: Indicators used to measure implementation of villages environmental by-laws

Reduction of forest encroachment by farmers ranked highest among the indicators as shown in Figure VV. Use of fire in land preparation was a common practice in Uluguru Mountains in previous years (Yanda, *et al.*, 2007; William, 2010). Accidentally, the loss of control of such fire can cause forest fire. The reduction of forest encroachment is in some extent a result of village environmental by-laws where by strong penalties (up to TZSH 50,000) is imposed on the person found encroaching the forests. In addition, it was found that most villages under the study have received training on forests and soil conservation accompanied by provision of alternative economic activities. In Konde village for example, in 2014 a local NGO (Uluguru Mountains Agricultural Development Project-UMADEP) that has been working with farmers in these mountains for many years (Lopa, *et al.*, 2012). UMADEP in collaboration with Sokoine University of Agriculture have trained bee keepers and energy saving stoves makers. The groups exist up to date (March 2015). In Kiswira village some villagers were trained on making clay pots, however the project failed as there is no clay soils(raw materials) for making pots in the village.

3.6 Willingness of the People to Participate in Environmental Issues

Very few villagers (17.9%) in study villages consciously observe their environmental by-laws in their daily activities. Out of this conscious group, 89.5% respondents do activities related to practice good agricultural practices and 10.5% do environmental conservation activities. A good agricultural practice involves no

use of fire in farms preparations, contours in farms with steep slopes. Environmental conservation activities are for instance tree planting, protection of water sources like river sources and avoidance of water pollution.

Some strong unwritten environmental by-laws exist in some villages due to lack of environmental law knowledge and also long time absence of district environmental officer support in their areas. The locally evolved environmental protection groups and regulations are found in Mvuha and Kibangile villages. These groups emerged as a result of feeling pain of loss of the forests that support their lives in terms of water and good weather. Others are concern about their future generation. Therefore they cannot wait for the district authority to guide them on what is the right thing to do while their forest and water resources are deteriorating.

In Mvuha village, some villagers voluntarily are organized in such a way that they patrol their forests themselves and are ready to arrest anyone found harvesting timber or feeding cattle in the nearby catchment forest. We found some heap of timber in Mvuha village office which was confiscated from illegal timber harvesters. The timbers from illegal harvesting are used by villagers to construct dispensary and Ward's secondary school. The villagers are not ready to hand over the confiscated timbers to District Natural Resources office as they are blamed to be corrupt and the villagers will never be rewarded for being good watch dogs.

Konde village have very active people in terms of environmental protection. Every villager is a watch man/woman. They do report immediately to the village officers whenever they see anyone breaching the agreed environmental by-laws. They have a voluntary "msukumo" committee that supports the village council in terms of good and innovative ideas to protect their environment. They have a good written village environmental by-law draft. They make regular planning of trees near the Nature Reserve forest and cooperatively they participate in firewall clearing around the forests. Bee keeping and energy saving stoves projects are still very active and sustained in Konde village.

Kibangile village have proven to be land for the brave and patriotic people in terms of defending their environment at any costs. Despite volunteering to patrol their catchment forests without any protective gears like special shoes and weapons, in early 2015 some villagers fought bitterly at night with the people

found destroying the Ruvu river bridge looking for gold. The gold seekers had guns but eventually they were arrested by villagers.

Kiswira-very willing environmental committee but limited with lack of knowledge on environmental law and education. This has been attributed by election of new village council and environmental committee members. However, they impose strong fines on anyone found polluting environment in rivers as well as illegal and unfriendly environmental gold mining along Ruvu River.

3.7 Achievements and Challenges to Make Environmental Laws Awareness and Management Sustainable

3.7.1 Achievements

The role for environmental awareness in local government authorities in under the district environmental management officers as stated in EMA 2004 (Cap 36). Some of the roles have been played well in Morogoro district, as well as in some of the villages in Uluguru Mountains. The district environmental management office has achieved to put in place the District Environmental Management Policy (2013). It was also found out in some villages like Konde and Kiswira that they have written Village Environmental by-laws which are at District Council office for approval. Despite waiting for approval, they are effectively used in their villages after they received the consent from village general assembly. Other villages have not yet drafted their village environmental by-laws. In villages with environmental by-laws like Konde, some people caught polluting water or trespassing to the Nature Reserve forests, they are fined 50,000/=. This amount of penalty is the general penalty stated in EMA 2005(Cap 191).

3.7.2 Challenges

Lack of continuity of environmental law/by-law knowledge prevails amongst the village council and environmental committee members in almost all villages in the study area. New village council and the committees are elected after every five years under the Local Government Elections schedule. Despite the capacity building trainings provided to equip village leaders with environmental management knowledge and skills, this knowledge ceases with the ceasing of village council regime. This situation makes the acquired pool of knowledge unsustainable. Probably this is the situation in all Tanzanian villages. To overcome the challenge, one option would be to have regular trainings of new

elected village governments after each election or otherwise to ensure that there is a permanent employed ward or village environmental officer who will have a task to train villagers and new elected village council members as well as the members of environmental committee.

It has been contended by other authors (Chamshama, *et al.*, 2008) that though the Uluguru Mountains are globally and nationally recognized for the rich diversity in both flora and fauna and being a major source of water for Morogoro, Pwani, and Dar es Salaam regions, there are several challenges that stakeholders of Uluguru Mountains are facing. Some of the challenges include inadequate or lack of efficient law enforcement mechanisms in the Ulugurus and increasing population with a fixed resource base only exacerbates poverty among landscape communities (Chamshama, *et al.*, 2008).

Lack of transparency in amount of money available to reward the adopters of good environmental practices was one of issues raised during the FGD at Kibangile village. One participant said;

“I foregone my crops farm and planted trees in expectations that I would be compensated for that under one project which was implemented by Care Tanzania. Today trees have grown and I don't see them anymore. Everyone is laughing at me”

This participant was referring to CARE/WWF payment for ecosystem services (PES) scheme that links rural ecosystem service providers to urban water users through economic transfers may help to maintain water supply and forest habitat in Uluguru Mountains. Care Tanzania and WWF would receive money from companies in Dar es Salaam (Cocacola and DAWASCO) and pay to the people. The payments were related to the labor costs of undertaking the activities or are compensating opportunity lost (Lopa, *et al.*, 2012). Lack of awareness of amounts of money available for the project, as well as lack of feedback to villagers when the funds terminates, can discourage the villagers so much. This issue of lack of involvement of landscape communities in implementation of programs/projects and the amount of project funds not revealed to implementing communities have been identified also by Chamshama (2008). Some authors warn that this may discourage villagers/farmers, instead of implementing the good changes they revert to old environmental destructive practices

4.0 CONCLUSION AND RECOMMENDATIONS

The formulation of environmental protection by-laws in Mount Uluguru Nature Reserve Forest surrounding villages is a long process and involves several stakeholders in the approval process. Although the length of the process to approval stage is to ensure check and balance, acting on the by-laws drafts should be treated with urgency by top district authorities so as to crown efforts done by villagers and the supporting stakeholders towards the Nature Reserve Forest protection.

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