

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/233406859>

# Perspectives on the Status of Traditional Medicine in Tanzania

Article · February 2012

CITATION

1

READS

2,598

2 authors:



**Sotco Claudius Komba**

Sokoine University of Agriculture (SUA)

33 PUBLICATIONS 211 CITATIONS

[SEE PROFILE](#)



**Ernest Kira**

Sokoine University of Agriculture (SUA)

22 PUBLICATIONS 74 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Skills development project [View project](#)



Enhancing Entrepreneurship, Innovation and Sustainability in Higher Education in Africa [View project](#)

## Perspectives on the Status of Traditional Medicine in Tanzania

Ernest S. Kira<sup>1\*</sup>, Sotco C. Komba<sup>2</sup>

<sup>1</sup>Department of Education, Sokoine University of Agriculture, Morogoro, Tanzania

<sup>2</sup>Department of Social Sciences, Sokoine University of Agriculture, Morogoro, Tanzania

Received May 27, 2012  
Accepted August 20, 2012

### Abstract

*This article entails student teachers' perceptions of the status of traditional medicine in Tanzania. A broad focus group discussion was held with 50 student teachers taking Bachelor of Science with education at the Dar es Salaam University College of education in Tanzania. However, such student teachers' responses were merged with interview responses from regular teachers, elders, customers of traditional medicine and traditional healers from both Dar es Salaam and Morogoro regions. Findings indicated that all respondents appreciated the existence of the African traditional medicine alongside the modern ones. However, it seemed that the modern medicines are far more popular than traditional ones especially in towns and cities. Although the respondents admitted to have heard and or witnessed some cases where some modern medicines proved failure but managed by traditional medicine, very few believed so. This could be attributed to a scenario that only a small proportion of the respondents grew in environments conducive for using traditional medicine. Hence, it was concluded that, future plans that focus on integrating some important aspects of the African traditional medicine in the formal school curriculum can serve dual purposes of improving people's health and enhancing biodiversity conservation strategies for both rural and urban societies.*

**Keywords:** African traditional medicine, biodiversity, school curriculum

### Introduction

Literature indicates that traditional science and technology is fundamental to both the continuity of sound community-based management practices and design of new systems of sustainable resource management (Ruddle, 2001; Nnadozie et al., 2003). Traditional knowledge involves innovations and practices about wild foods, crafts, and medicinal plants as well as knowledge about other natural resources and their uses (Lebbie and Guries, 1995; UNEP, 2002; Wynberg, 2003). Traditional medicine features traditional science and technology and seems to evolve with time. Thus, both traditional and western medicines co-exist in Africa (Makhubu, 1998; Shikongo, 2000;

---

\* Corresponding author: Department of Education, Sokoine University of Agriculture, P.O. Box 3038, Morogoro, Tanzania (e-mail: klesiani@yahoo.com)

UNEP, 2007; Ng'etich, 2012).

For both rural and urban Africans, traditional medicine is a form of healthcare that is more available and it embodies an ancestral belief system that is uniquely African; often cheaper than the western medicine (Iwu, 1993; Neba, 2011). Research findings have revealed that traditional medicines are more effective than the conventional modern medicines to some patients suffering from chronic diarrhea and herpes (Shenton, 2004). Also, some positive results have been reported when traditional medicines were used against incurable diseases such as cancer, HIV, and other diseases especially those caused by virus (UNEP, 2007).

Advancement in western science and technology, coupled with globalization, have led to the growth of industries which have increased their interests in natural products as sources of new biochemical compounds for drugs, beauty products, chemicals and agro-products development (Shikongo, 2001). This does not only result in a direct threat to the biodiversity of the developing world but also indirectly by diluting and sometimes replacing the African culture especially the African languages (Luisa, 1999; Gupta, 2003; Nnadozie et al., 2003). Unfortunately, these traditional communities have typically received little, if any, benefits (Mugabe et al., 1997).

According to the Centre for Environment and Development (CED) and the Forest Peoples Programme (FPP) (2005), local communities are often marginalized from planning for forests they use. Marginalizing local communities is likely to be more disastrous now than it has ever been because of the alarming effects of climate change predicted to decrease biodiversity, agricultural output, and water supply including the disrupted structures of traditional communities and intensified rural-urban migration (Paavola, 2005; Cline, 2007; Ulatov et al., 2007).

### **Problem justification**

Traditional system of handling diseases is contrary to the western system of diagnosing the disease through laboratory experimentation prior to the administration of drugs. The Western system of managing diseases is characterized by laboratory experiments and use terminologies such as: grams, kilograms, ingredients, vitamins, mineral salts or chemical formula that are also commonly used in the formal school curriculum. Also, some subjects (such as biology) identify particular diseases that are problematic to man and describe explicitly their causative agents, symptoms, effects and the type of western medication that can be applied (MoEVT, 2005, 2010). This means that the western system of disease management reinforces the experiences of the society members who go through the formal education. This implies that these two types of medicines might not be equally promoted in this era of the growing formal schooling that prominently features globalization. This is also by considering the observation that, African traditional knowledge is characterized by ancestral belief system that is uniquely African and normally against western cultures as it sometimes involves spiritual issues (Shenton, 2004). This results in a need to examine the current status of traditional medicines in the society so that the way forward can be suggested.

### **Sampling**

The study employed a qualitative approach involving focus group discussions and interview. The study involved 50 student teachers doing Bachelor of Science with Education at the Dar es Salaam University College of Education using snowballing technique such that the sample represented 21 Tanzanian tribes. This category of

university students was chosen because they were envisaged to be the prospective curriculum developers, secondary school teachers, secondary school book writers and/or reviewers or educational planners. In addition, 8 teachers (who have been teaching at both ordinary and advanced level secondary schools), 2 traditional healers, 4 elders and 4 of the traditional medicine patients/customers from both Dar es Salaam and Morogoro regions were interviewed. In order to get respondents of the desired characteristics, the snowball technique was used in the sampling process (Garson, 2004). Each region contributed equal number of each category of respondents except for the case of student teachers (Table 1). It should be noted that only Biology and Geography teachers were sampled. The Dar es Salaam city represented a highly urbanized area whose people have more interactive lifestyle than their counterparts in Morogoro region that represented peri-urban cultures.

**Table 1:** Sample distribution

Groups	Dar es Salaam		Morogoro		Total
	Male	Female	Male	Female	
Student teachers	32	18	0	0	50
Biology teachers	2	0	1	1	4
Geography teachers	1	1	1	1	4
Patients	1	1	0	2	4
Elders	1	1	2	0	4
Traditional healers	1	0	1	0	2
Total	38	21	5	4	68

### Data collection

The 50 student teachers were divided into 4 groups of 10-13 respondents for focus group discussions. The discussions were conducted in five different sessions for each group; i.e. one hour discussion for each group, each day; for five consecutive days. The discussions were conducted according to the convenient time for each group. For the five days, there were three main questions/topics for discussions as summarized in Table 2.

**Table 2:** Topics for focus group discussions

Day	Topic
1st day	Student teachers' perceptions on different types of African traditional medicine.
2nd and 3rd day	Utility status of the African traditional medicine and what determines it.
4th and 5th day	Does the availability and utility status of traditional medicine call for interventions?

For every topic listed in Table 2 the researchers developed some follow up questions and a probing style of classroom questioning was adopted to make sure that the students' knowledge and attitudes were effectively explored. When the researchers sought to note the proportion of student teachers who responded/not responded on a particular issue, the discussion was temporarily suspended in order to be able to note the number of the respondents before embarking on another point of discussion. The researchers were also able to note student teachers' reactions that seemed to be relevant in accomplishing the purpose of this study. The researchers clarified very clearly that the purpose of this study was only for knowledge purposes

and the results were not to be used for any other purpose. Thus, student teachers were free to respond according to the researchers' questions and those posed among student teachers themselves. The responses of all groups were merged after the discussion.

Student teachers were the main focus for this study as they represented the youth group of the current generation that has gone through the formal school curriculum; hence, information from the other respondents was mainly for justifying some of the issues raised by the student teachers. Therefore, data collection from the other respondents was done informally involving the same topics. But each respondent was interviewed at his/her convenient time except for the 2 traditional healers from whom the researchers could only get positive responses after buying some of their traditional drugs. Basically, the same topic areas as those in table 2 were covered though with minor modifications especially when interviewing the traditional healers.

## Findings

Responses were presented using both direct and reported speech.

### *Different types of African traditional medicine*

The researchers wanted to know if the student teachers were knowledgeable with different types of African traditional medicine that have been used or still in use in various traditional societies. The response was 'yes'. But 40% of them were not able to cite any disease or scenario for which traditional medicine has been of use. Though 54% of them claimed to be able to include at least a single scenario where traditional medicine has been of use they were largely relying on secondary information heard from other people. This was also the case for one of the regular teachers based in Dar es Salaam. However, some of the student teachers (6%) were able to give specific examples of diseases where traditional medicine has been of substantial use especially in their childhood. For example, one of the respondents testified that: "I'm experienced with the situation where my grandmother used to pick some leaves similar to those of pineapple plant as a very effective cure for stomachache." This applied for the rest of the respondents except the traditional healers to whom this question was not relevant.

Others were able to describe similar cases where traditional plants were able to cure health problems like headache, flu, tonsillitis, physical injuries, skin diseases etc. The student teachers stated that such traditional medicines were being provided by their parents and mostly their grandparents in case they suffered from any of those diseases. They also argued that such drugs seemed to be effective as they got relief immediately when they applied. This was also supported by all four elders and three of the four traditional medicine patients who claimed that they still apply them nowadays though not as regularly as in the past years. A response from the side of student teachers was;

"Nowadays we live in towns where such plants are rare to find and of course people do not bother much because there are plenty of modern medicines which can treat the same diseases."

It was interesting that all respondents, except the traditional healers, stated two things; first, they were not sure if they could recognize particular plants that they knew in the past for some diseases even if they came across them. Secondly, they admitted that nowadays such plants have become rare; i.e. even when they go to the village

they do not find such plants as often as was the case in the past. They also stated that the usage of African traditional medicine decreased considerably even in the rural areas when compared to the time of their childhood. However, two of the four customers of traditional medicine who testified to have recovered from hypertension and diabetes opposed this and one of them had this to say;

“How can the usage decline if I have completely recovered from a very serious problem that could not be solved by western drugs; considering that people with problems like mine are increasing day after another?”

The other two could not support this opinion as they were still on a doze of traditional drugs (one suffering from cancer and the other from epilepsy) and they were not sure of recovering.

However, it is worth noting that all supported the view that people who are knowledgeable in traditional drugs decrease as the number of village elders declines. But the two traditional healers claimed to have enough knowledge as their ancestors and one of them based in Morogoro said:

“I know more traditional drugs than my father from which I inherited. So far I have already discovered about twelve more traditional drugs for various diseases...”

### *Determinants of the utility status of the African traditional medicine*

In other sessions, the researcher began the discussions by urging the respondents to explain in detail how western medicine undermined the utility of the African traditional medicine. All respondents were at least certain that the use of western medicine in both rural and urban areas is currently higher than that of traditional medicine, though people in rural areas are more exposed to traditional medicine than those living in towns. The reasons included: unreliable supply of effective western drugs in the villages; little circulation of money in the village; little exposure of the village people on the available choices of western drugs; and belief systems that traditional medicines are good for body health; etc.

Other respondents indicated that there are some tribes, particularly the Maasai, who have won markets for their traditional medicines in towns such that their every day activity has continued to be that of selling traditional drugs for various health problems. When the researcher sought to know from the student teachers the extent to which traditional healers win customers when compared to western drugs the explanation given by one of them which was also supported by others was that:

“Normally their customers are people who still hold traditional values of handling diseases, worshiping etc. or may involve some people who have got very serious health problems that could not be cured by the modern medicine such that they go to the traditional drugs as their last resort.”

But when the researchers wanted to justify this from the two traditional healers they both revealed a list of several diseases which they claimed could not be cured by using western drugs such as cancer, erectile dysfunction, diabetes etc. One of the two traditional healers living in Dar es Salaam said he had medicines for attracting lovers, succeeding in business and in formal schooling.

Moreover, the researchers wanted to know if the student teachers did believe that there were cases which could not be cured by using western drugs but by traditional medicine. 50% of student teachers believed some traditional healers moved into towns in recent years after learning that the western medicines had proved ineffective in curing certain health problems such as diabetes, cancer, HIV, hypertension,

hypotension, erectile dysfunction, bed wetting etc. However, some traditional medicines have been reported to cure such problems including ability to prevent other social problems which have never been addressed by the western science and technology like theft, divorce, witchcraft etc. All other respondents supported this 50% category of the student teachers.

Also, they added that these traditional healers are confident with what they do and probably that is why they make lists of all problems they claim to cure in their advertisements as a means of establishing their business in town. The researchers also wanted to know if in this context respondents thought that traditional medicine was superior to modern medicine. One of the student teachers stressed:

“Yes of course, but this is very difficult to be realized by the modern society because those who go to the traditional healers are not ready to testify to others as most of the people who live in towns consider traditional healers as sinful people who are against God and their healing activities are driven by evil spirits.”

About 40% of the student teachers supported this assertion but added that unlike the traditional medicines, western drugs are readily available in towns as they are openly sold in pharmaceuticals and normal shops. These are normally prescribed after diagnosis of the problem by a person with knowledge on human health and by following an objective procedure of identifying a specific agent responsible for a particular disease in a clinical laboratory. The drugs are clean, normally with regular shapes and well packed in well labeled and attractive materials. The labels usually indicate the name, composition, means for taking the drugs, expiry date and sometimes strengths and weaknesses of the drugs. They also added that if a person suffered from a particular disease and took modern drugs which cured the disease, the beneficiaries become good ambassadors to others on the effectiveness of the drug because such drugs are advocated by people from most of the tribes and almost all religious groups in the society.

However, the remaining 60% of the respondents were of the opinion that there are some health problems where neither modern nor traditional drugs can cure. For example, they believed that no cure has been developed so far for cases like fully developed cancer and HIV in either western countries or in traditional communities. However, both traditional healers claimed that they had very strong anti-viral drugs that ‘paralyze’ the HIV viruses such that they remain harmless in the body provided that the drugs are taken regularly by the patient as per their prescription.

### *Does the status call for interventions?*

The researcher opened the discussion in another day by posing a question that: “are there people in Tanzania who solve their health problems by using traditional medicine alone without any use of modern drugs?” About 40% of the student teachers replied “yes” giving some examples of societies that spend their entire life in the bush feeding on honey, meat and plant products. This is typical of small tribes like Hadzabe, Tindiga and Sandawe. This was also typical of other tribes like Maasai that spend their entire life in the traditional environment where they have no interaction with other societies.

About 50% of the student teachers and one of the four regular teachers who strongly believe in modern medicine advocated that traditional communities are least contaminated when compared with the town environment which is so polluted that if it rains the drinking water gets contaminated all over with infectious microbes. However, the other category of student teachers did not agree as they claimed that the traditional healers found in towns do have all drugs that can cure almost all types

of diseases except that such traditional healers in towns are few. Two of the four patients, one claiming to have recovered from hypertension and the other from diabetes, supported the effectiveness of traditional drugs so clearly by citing other people who had been cured by traditional medicine where modern medicine proved ineffective.

Then the researcher wanted to know if the student teachers could predict the future status of traditional drugs putting into consideration that they compete with modern drugs. All agreed that in whatever the circumstance, the two types of medicine will co-exist as long as they serve similar and sometimes different purposes and that the society is not homogeneous as it is made up of people with different values who would prefer either type of medicines even under equal conditions of their availability and effectiveness. However, more than 75% of student teachers, two of the four teachers and one of the elders justified that western medicine would always outweigh traditional medicine due to several reasons. The reasons for this were: more studies were based on western medicines compared to traditional medicines; more standardized procedures for preparation, packaging and administration; assured market for western drugs compared to the unpredictable markets for traditional drugs; decreased sources of traditional drugs due to various factors such as changing climate, environmental pollution, cleared land for agriculture and other purposes and decreased number of people who can locate the sources for traditional drugs as traditional elders die with very little or no replacement from the youth group.

The researcher posed a question that 'following our discussion it seems the co-existence of both traditional and western medicine will be beneficial to the society'. All responded 'yes' including those who could not see the significance of traditional medicine at the beginning of the discussion. The researcher further probed that: 'but it seems spontaneous co-existence of the two types of medicines is unlikely, then, what do you think can be done to rescue the situation?' One of the student teachers responded:

"The government needs to take initiatives instead of leaving it to individual persons who are doing business."

The other respondents suggested the following strategies: setting aside funds by the government to do more focused studies on how to improve sources, processing and administration of traditional medicine including the studies on actions of different types of traditional medicines on various types of diseases. Other student teachers pointed out that some important aspects of the traditional medicine may be incorporated in the school curriculum although they could not agree on how exactly this could be done. This was mainly because these student teachers had little exposure on the traditional knowledge that could be considered worth while to school students.

But after further discussion, three of the four teachers suggested specific concepts in both biology and geography which can be associated with some issues related with traditional medicine as discussed in the section of the way forward. Concerns for traditional healers was not much on the depleting sources of traditional medicine as one of them claimed that he imports from outside the country some of his traditional drugs. But, they focused more on asking assistance from the government on issues related with advertising their business, tax reduction and recognition.



## Discussion

If the literate community knows anything about traditional medicine, it is basically partial information that is either based on the past experience or unreliable sources of information that they can not easily trace. Unfortunately their past experience on traditional medicine is that of what used to be done by their parents or grandparents in their early childhood especially before attending the formal schooling. Since there are more schools in towns than in villages and urban populations seem to increase as time goes which indicates that more of villages are converted into towns and towns into cities, there is no hesitation that the rate of decrease of people knowledgeable on traditional medicine may be of comparable magnitude to that of urban formation. According to World Urbanization Prospects (2009), the population living in urban areas is projected to gain 2.8 billion, passing from 3.5 billion in 2010 to 6.3 billion 2050. Africa, whose urban population was the fourth largest in the world in 2010, is expected to see it rise by 0.8 billion, to reach 1.2 billion in 2050, when it will be the second largest after that of Asia. This rural-urban migration is coupled by the changing climatic conditions in the villages where productivity in agriculture seems to decrease considerably reinforced by the fluctuating market prices of agricultural products; thousands of youths migrate to towns and cities looking for any possible job even if the probability is very uncertain (Paavola, 2005).

Since most employments in town need formal schooling which is basically structured in such a way that it only fits western science and technology, the formal education system seems to have only propagated western medicine. This is the reason why one of the respondents indicated that:

“Customers of traditional healers are people who still hold traditional values of handling diseases, worshiping etc. or may involve other people who have very serious health problems that could not be cured by the modern medicine such that they resort to using traditional drugs as their last alternative.”

These views imply that, the literate community is likely to assume that the most appropriate means of handling body health problems is first by consulting western science and technology as it is modern and taken by people who do not believe in traditional religions. This means that a literate person is expected to have abandoned traditional means of worshipping including its associated science and technology. However, the same literate people admit that there are some health cases where modern medicines have failed whilst traditional medicines have been efficacious. Limitation of the western medicine is generally reflected in the society as it was once reported in Mwananchi News Paper of April 17, 2011 that thousands of people from inside and outside Tanzania with health problems were travelling to Arusha looking for traditional cure from Ambilikile Mwasapile, a retired pastor of the Lutheran church claimed to have discovered a herb that was effective in curing multiple diseases (Juma, 2011).

However, regardless of how effective such a traditional drug might be in treating people's health problems its sustainability can not be guaranteed because: firstly the pastor claims that it is only effective when processed by himself; which means the cure is likely to end when he dies. Secondly, if more and more people move to Arusha from different parts of the world to receive that medicine and no deliberate efforts are taken to replace the plants from which such medicine is extracted, he will run short of the plant materials he uses to prepare the medicine. Lastly, some people in the society are not ready to take such traditional medicine as the procedure for its administration is associated with some spiritual aspects which may be against some people's beliefs.

Though there is an increasing number of traditional healers capable of running their lives in towns and cities and sometimes advertising their medicines at a very high cost through broadcasting media like televisions, radio and in news papers; it is likely to blackmail the society that both traditional and western medicines can successfully compete in the free market economy leading to their sustainable co-existence. For instance, a recent study in Kenya indicated that mixing of traditional and modern concepts of illness have resulted in medical syncretism and the use of both health care systems (Ng'etich, 2012). This does not ensure sustainability of traditional medicine because of the fact that most of those who make business of traditional medicine in towns are immigrants from the rural communities who may not find right candidates in towns whom to impart their traditional knowledge in this era of globalization characterized by the growth of western religions in Africa and demand for formal schooling. Furthermore, even if the demands for traditional medicine would reach the levels of western types; sustainability of traditional flora and fauna species from which traditional drugs are derived is unlikely in this era of climate change and increasing rates of urbanization. This is reinforced by bio-prospecting that targets the same species of plants and animals which are also sources for traditional medicine (Shikongo, 2001).

It should also be considered that traditional education in different parts of the world is mostly informal and non-documented (Uprety, 2012). It means it is likely to phase out at the same rates as that at which traditional communities' elders disappear. Also, as reported by Neba (Shenton, 2004), that some aspects of African traditional knowledge are associated with religious aspects, it may have negative impacts on the utility status of traditional medicine even when it happens that there are some believers of western religions who advocate it. This is by considering that people's behavior is mostly determined by what they believe and value and that people have different sources of knowledge that cement their belief systems (Cooke and Sheeran, 2004).

### **Suggestions for the way forward**

This study provides evidence that society needs to take initiatives to ensure an improved status of traditional medicine along side establishing an environment for sustainable sources of traditional medicines for both rural and urban communities. Since health issues are of concern to lives of everybody, it is high time we should begin implementing suggestions from research findings on traditional medicine that are available so that some aspects of traditional plants and animals may carefully be integrated in the school curricular as it was suggested by some of the respondents of this study specifically the teachers. These suggestions based on the observation that when classroom instructions draw on students' preexisting knowledge, culture, and real-world experiences, it becomes more meaningful (McLaughlin et al., 1993). Also students enjoy learning more and learn better when what they are studying is of personal interest and relates to their lives (Meece, 1991; Akey, 2006). For example, some aspects of traditional drugs can be suitably integrated in topics of classification and ecology in Biology and in topics of agriculture and conservation in Geography at various levels of the education system.

In the case of both ordinary level and advanced level secondary schools biology syllabus, in the topics of classification, students are supposed to study different types of individual plants and animals based on their economic importance (MoEVT, 2005, 2010). Different types of plants such as bean plant, maize plant etc. are studied based on the fact that they produce food for human beings. Likewise, certain plants or

animals that are found through research as precursors for particular traditional drugs should be studied based on the fact that they produce medicines for human beings. Conditions required by such plants for their survival may be reinforced in other subjects particularly geography. Instead of describing general importance of forests only as shown in ordinary level geography syllabus (MoEVT, 2005), specific plants as significant sources of traditional drugs may be specified to be learned by students. In the advanced level geography syllabus where students are supposed to discuss competition and elimination of plant species (MoEC, 1997), a section may be added where students should learn the necessary conditions for successful competition of plants that are potential sources of traditional medicine including the factors that are likely to lead to their elimination in their natural ecosystems.

This implies that if more of the traditional medicines can be included in the formal curriculum, more and more traditional drugs are likely to be discovered for various health problems. Such discoveries are likely to follow existing formal procedures for patenting innovations. This will also open wider avenues for our school leavers to direct their further studies in various perspectives of traditional medicines. Thus, further research on how to integrate African traditional science and technology with the formal school curriculum can play the dual role of perpetuating traditional medicine and preserving biodiversity.

## References

- Akey TM. (2006) An exploratory analysis on school context: student attitudes and behavior, and academic achievement. Retrieved July 3, 2012 from [www.mdrc.org](http://www.mdrc.org).
- CED, FPP. (2005) Customary use of biological resources by local and indigenous peoples: case study on indigenous peoples and protected areas in Western Dja Reserve, Cameroon.
- Cline W. (2007) Global warming and agriculture: impact estimates by country centre for global development. Washington DC: Peterson Institute for International Economics.
- Cooke R, Sheeran P. (2004) Moderation of cognition-intention and cognition behavior relations: a meta-analysis of properties of variables from the theory of planned behavior. *Brit J Soc Psychol* 43(2):159-186.
- Garson G. (2004) *Ethnographic research. Course syllabus on ethnographic research*. North Carolina State University. Raleigh: North Carolina.
- Gupta AK. (2003) *Rewarding conservation of biological and genetic resources and associated traditional knowledge and contemporary grassroots creativity*. Ministry of Environment and Forestry: Government of India.
- Iwu MM. (1993) *Handbook of African medicinal plants*. Boca Raton: CRC Press.
- Juma M. (2011) Officers from Kenya's precedence office getting a cup of traditional medicine from babu. 17th April 2011 Mwananchi news paper retrieved August 24, 2011, from [www.mwananchi.co.tz](http://www.mwananchi.co.tz).
- Lebbie AR, Guries RP. (1995) Ethno-botanical value and conservation of sacred groves of the Kpaa Mende in Sierra Leone. *Econ Bot* 49(3):297-308.
- Lopez C, Shanley P. (2004) *Riches of the forest: for health, life and spirit in Africa*. Centre for International Forestry Research. SMK Desa Putera. Indonesia.
- Luisa M. (1999) *Linguistic diversity: in cultural and spiritual values of biodiversity. A complimentary contribution to the global biodiversity assessment*. United Nations Environment Programme. Trykkeriet, Denmark.
- Makhubu L. (1998) Essays on science and society, bioprospecting in an African context. *Science* 282(5386):41-42.
- McLaughlin, MW, Talbert JE. (1993) *Contexts that matter for teaching and learning*. Stanford, CA: Center for Research on the Context of Secondary School Teaching, Stanford University.
- Meece JL. (1991) The classroom context and students' motivational goals. In Maehr ML, Pintrich PR, editors. *Advances in motivation and achievement* (Vol. 7). Greenwich, CT: JAI

- Press, p 261-285.
- MoEC (1997) Geography syllabus for secondary schools: Form V-VI. Dar es Salaam: Tanzania Institute of Education, p 39.
- MoEVT (2005) Biology syllabus for secondary schools: Form 1-1V. Dar es Salaam: Tanzania Institute of Education, p 84-87.
- MoEVT (2005) Geography syllabus for secondary schools: Form 1-1V. Dar es Salaam: Tanzania Institute of Education, p 49.
- MoEVT (2010) Biology syllabus for secondary schools: Form V-VI. Dar es Salaam: Tanzania Institute of Education, p 16-17.
- Mugabe J, Barber VC, Henne G, Glowka L, La Vina A. (1997) Access to genetic resources: strategies for sharing benefits. Nairobi: English Press Ltd.
- Neba NE. (2011) Traditional health care system and challenges in developing ethnopharmacology in Africa: Example of oku, Cameroon. *Ethno Med* 5(2):133-139.
- Ng'etich KA (2012) The utilization of African traditional and modern "western" medicine in Nairobi city, Kenya. Retrieved June 28, 2012, from <http://etdlibrary.ku.ac.ke/ir/handle/123456789/3078>.
- Nnadozie K, Lettington R, Carl B, Susan B, King S. (2003) African perspectives on genetic resources: a handbook on laws, policies, and institutions: Environmental Law Institute. Washington DC. USA.
- Paavola J. (2005) Livelihoods, vulnerability and adaptation to climate change in the Morogoro region, Tanzania. A working paper for Centre for Social and Economic Research on the Global Environment (CSERGE), University of East Anglia, Norwich NR4 7TJ, UK.
- Ruddle K. (2001) Systems of knowledge. Dialogue, relationships and process: environment, development and sustainability. The Netherlands: Kluwer Academic Publisher, p 277-304.
- Shenton M. (2004) AIDS and traditional health care in Africa: the role of traditional healers in prevention strategies and treatment options. In: Twarog S, Kapoor P, editors. Protecting and promoting traditional knowledge: systems, national experiences and international dimensions. New York: UNCTAD, p 21-24.
- Shikongo ST. (2000) Perspectives on the trade in traditional medicinal plants within the context of the Southern African sub-region: a brief overview of the issues. Paper presented at the Medicinal Plant Forum for Commonwealth Africa. Cape Town. South Africa.
- Shikongo ST (2001). Traditional knowledge, intellectual property and access to genetic resources: The issues? The end of the living and the beginning of survival. Paper presented at the International Conference on Intellectual Property, the Internet, Electronic Commerce and Traditional Knowledge. Sofia, Bulgaria. May 29-31, 2001.
- Ulatov SA, Korshunov V, Tsirkunov V, Smetanina M. (2007) Customizing methods for assessing economic benefits of hydrometeorological services and modernization programs: benchmarking and sector-specific assessment. In preprints of secure and sustainable living: the societal and economic benefits of weather, climate and water products and services. Madrid: WMO.
- UNEP (2002). Africa environment outlook: past present and future perspectives.
- UNEP (2007) Threats to the practice and transmission of traditional knowledge regional report: Africa. Phase II of the composite report on the status and trends regarding the knowledge, innovation and practices of indigenous peoples and local communities relevant to the conservation and sustainable use of biodiversity, p 18-23.
- Upreti Y, Asselin H, Dhakal A, Julien N. (2012) Traditional use of medicinal plants in the boreal forest of Canada: review and perspectives. Retrieved June 30, 2012 from [www.ncbi.nlm.nih.gov/pmc/articles/PMC3316145/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3316145/).
- World Urbanization Prospects (2009) Retrieved August 14, 2011, from [www.unpopulation.org](http://www.unpopulation.org).
- Wynberg R. (2003) Biotechnology and the commercialization of biodiversity in Africa. In: Chaytor B, Gray KG, editors. International environmental law and policy in Africa. Environment and Policy 36. Bonn: Environmental Law Centre, p 83-102.