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Indigenous Knowledge: As A Panacea for Natural Resource Conservation The Case of Ethiopia - Review

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Abstract: Farmers in Ethiopia have a number of indigenous knowledge existed and practiced by the communities for a century that can give a solution for the current global concern of environmental problem of the country and the world as well. This is evidenced by the indigenous knowledge practice applied by the farmers to conserve the natural resource in different parts of the country as mentioned in the literature review. Despite this potential, the indigenous knowledge is not exploited and it is under estimated while the natural resource degradation of country is continuing from time to time. While there are efforts to develop indigenous knowledge for environmental protection, its success remained behind. The technological inputs that have been identified and packaged by outsiders, with very little or no consultation of the smallholder farmers, were not able to respond adequately to local realities. The government low consideration to appreciate, collaborate and complement the indigenous knowledge of natural resource conservation, and unwillingness to copy the knowledge by other communities is also challenge. For enhanced contribution of indigenous knowledge for sustainable natural resource management recognizing, empowering and incorporating indigenous knowledge in participatory rural development projects can ensure for socially, environmentally and economically sustainable natural resources management. Furthermore, strong government support, incentives awareness creation and improving the exchange of traditional knowledge are essential for sustainable development and for improved livelihood.

Keywords: Indigenous Knowledge, Natural Resource, Challenges, Ethiopia.

I. INTRODUCTION

In most African countries, colonization and colonial education resulted in local resources degradation in which the colonizers were engaged in resource exploitation without much consideration of the cultural beliefs embedded within the local communities. Most of the past research has centeredon indigenous knowledge of Asia, Native American Indians and Australian Aborigines with little attention being paid to Africa (Kelbessa, 2005). This has resulted in rampant destruction of forests, animals and land degradation (Brosius, 1997). As native cultures disappear there is also a loss of knowledge of a way of living in a balance with the earth. So the restoration, respect and adherence to cultural beliefs adopted by each community such as the role of ancestral spirits, taboos etc are effective tools in the management of the environment. There is a need to give due importance to indigenous knowledge systems to safeguard our environment (Altieri, 1995) Ethiopia has numerous indigenous natural resource management practices contributing to sustainability of ecosystem management .Although there is a lack of deliberate knowledge management and creation efforts in modern Ethiopia the country possesses 1,700-year old indigenous practices of knowledge creation (Saint,2004).According to Feyera (2003) and Viveroet al.(2005), there are traditional indigenous resource management systems in many rural communities of Ethiopia.

Traditional conservation practices, present in many highland area of the country, have contributed to the conservation of forest natural resources for centuries. Indigenous knowledge systems in land management have played a vital role in ecosystem management for generations in Ethiopia. Protection of indigenous people and their environment as potential resource managers is a solution toward of threatened ecosystems and sustainable natural resource management (Davis and Wali, 1994). But due to lack of recognizing, empowering and incorporating indigenous knowledge in participatory rural development projects ensuring socially,environmentally and economically sustainable natural resources management is difficult. Thus the objective of this review is to assess the contribution of indigenous knowledge sustainable natural resource management.

II. REVIEW OF RESEARCH WORKS DONE SO FAR

A. Concept and Development Of Indigenous Knowledge

Different authors defined indigenous knowledge differently at different times. According to Warren (1991) it is the local knowledge that is unique to a given culture or society that is the basis for local decision making in agriculture, health, food education and environmental management. Langil, (1999) and Mapara (2009) also defined as it is the knowledge of people of a particular geographical area that has survived for a long period of time. The traditional knowledge that people in a given community have developed over time and which is based on experience is

referred to as Indigenous Knowledge (Morohashi, 2002). It is characterized by being developed outside the formal educational system, being embedded in culture and being unique to a given society (Boven&Morohashi 2002). According to Agarwal (1995) indigenous knowledge differs from scientific knowledge in that the former is a closed system while the latter is an open system. Indigenous knowledge also differs from western knowledge in subject matter. It is generally recognized that IK plays an important role in sustainable management of natural resources and can also have impact on issues of global concern (Tripathi and Bhattarya, 2004). Indigenous knowledge was widely used by people who engaged in hunting and gathering in early historical times. Since then, such knowledge has been utilized worldwide (Grenier 1998).

Prior to the 1980s, particularly in the colonial period, indigenous and/or traditional knowledge was neglected and marginalized by Westerners. It was considered backward (primitive), simple, and static (Posey, 1985).Lack of focus to indigenous knowledge in the past has led to the failure of numerous projects (Richards, 1985; and Critchley, 2000). During the last two decades, particularly in the 1990s, the role of indigenous knowledge is recognized in the International Agricultural Research Centres and multilateral agencies such as the World Bank and the United Nations Agencies (Warren, 1991).Earth Summit (United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992 passed a declaration stating that governments must support indigenous communities because they are a base for sustainable environmental protection and sustainable development. Today, scientists and indigenous scholars are endeavoring to uncover the potential of IK for environmental protection and resource management.

B. Review of Research Works On the Role of Indigenous Knowledge For Natural Resource

Degradation of environment threats to ecological systems due to destruction of habitats, introduction and loss of species are the most serious environmental problems in Ethiopia (Feyera, 2003 and Vivero et al., 2005). In a country endowed with such biological diversity, diverse ecosystem and over 80 ethnic groups, indigenous knowledge has contributed a lot to maintenance of present day ecological bio-diversity against the past natural and social disaster(Niamir, 1990 and Dixon, 2002). To expose this indigenous knowledge and for its development different researches have conducted in Ethiopia at different times. Some of them are reviewed as follows. The study of Ashenafi (2001) revealed that the Menz community had various bye-laws which were enacted by the user community to enforce the protection of Guassa area during the closed season.A study conducted by Asebe (2012) in Guji Oromo indicated that it has been a deep-rooted belief among the Guji that any disruption in their relationship with non-human things in nature would displease Waaqaand invoke punishment in the form of drought, famine, disease and war. Thus among the Guji, local frameworks that guide and regulate resource management and access rights are formulated under different Qaalluuinstitution and Gadaa system. Guji sacred cosmologies are embedded in their attachment to the environment as part of their connection to Waaqa.

A study conducted by Masaka (2009) in the Ndau people of south eastern Zimbabwe have showed that as the people has a positive attitude towards non-human animals. Their dislike of cruelty to non-humans, animals and the environment itself is reflected through taboos. Through the observance of taboos, were and still are able to control the indiscriminate harvesting of forest products, protect water sources and species of spiritual, nutritional and medicinal value and even rare species. Similarly study was conducted by Woldemedhin (2011) in Guassaarea has been managed by the Menz community as a common property resource for centuries and it represents an interesting model of community led natural resource management regime that has operated in a very fragile ecosystem. Menz community had various bye-laws which were enacted by the user community to enforce the protection of Guassa area during the closed season. The Qero system in the central highlands and the Kobo system in the south western part of the country is an example of indigenous resource management systems (Derejeet. al**.,** 2007 and Ashenafi, 2001).

Research Works of Indigenous Knowledge Onsoil An Water Conservation: A study by Tesfaye Beshah (2003) indicated farmers in Konso have an amazing appreciation for stone terraces in SWC technology existed over time in Konso people is marked by the combination of physical and biological conservation measures. Similarly, ARCCH (2009) found that dry stone terrace farms that strongly mark the hills and catchments of the Konso country are result of hundreds of years of hard labor in the struggle to harness the difficult environment and unique in this part of the world.Shifting cultivation is an indigenous agro-ecological knowledge used to maintain the complex agro-ecosystem. The fields are shifted to use the nutrients of the natural vegetation-soil complex. Thus, by skillfully maintaining the natural forest and vegetation ecosystem, the other equally important natural resource components such as soil, waters and wild animals are managed in a sustainable way (Report of Ethiopia National Workshop, 2002) The Konso people are not only famous in Terracing but also in their indigenous water harvesting method. ARCCH (2009) appreciated consciousness of the Konso people to their natural environment, diligence and effective traditional water and moisture harvesting system and indigenous knowledge of managing natural resources have been virtues of these people to live in this kind of harsh environment. The same study indicated that the oldest and traditionally and regularly maintained water reservoirs (Harda) are located within or near these forests. Hardas are also located in the landscape where the rain water could easily be trapped at locations where the water cannot easily sink. In Gondar, farmers shift their barn from one farmland to another to fertilize the land. (Report of Ethiopia National Workshop, 2002).

Research Works on Indigenous Knowledge And D. FoConservation: Ethiopia comprises lands of varying altitudes and climates. It has a variety of vegetation, including medicinal plants, in close geographical proximity (report of Ethiopia national workshop, 2002).A study conducted by Yalew et al (2012) in Libokemkemworeda of southern Gondar zone provides evidence that people use traditionally medicinal plants to cure illness. Traditional medicinal plants were harvested mostly from natural vegetation/wild habitat/ area followed. Farmers conserve the medicinal plants in order to get their service. This is the contribution of indigenous knowledge on health care system in the community. Similarly a study conducted by Biniam and Bihilu (2017) indicated that traditional forest conservation method is practiced in Tocha district of southern Ethiopia which is associated with some members of the community because of their belief and a sacrifice took placeunder certain bigger trees to give respect to the value of the tree. A study by ARCCH (2009) found that in the Konso people there are respected sacred forest sites where they are burial places for their ritual chiefs (poqollas) & their respective family members.

Accordingly, damages to the forests would mean against god as sign of badlack in terms of fertility and a sign of bad health, war, death and famine. The Gedeo, an ethnic group in southern Ethiopia, have a long history of traditional land-use systems (Tadesse, 2002), and hence it is assumed that their IK has a long history. The local people have been using IK for different purposes, among which traditional agroforestry practices are prominent. Tesfaye Beshah (2003) in his study found that traditional agroforestry based on indigenous knowledge is a typical feature of the hoe-farming system in Konso. According to Tesfayemost fields in the hoe-farming system are characterized by a multiple cropping system with Morinaga stenopetal the dominant high tree species which is the source food for the locality. Alemayehu (2003) in his research on church forests indicated that the Ethiopian Orthodox Tewahido Church has long history of planting, protecting and preserving of trees. Church compounds where one can animate trees escaped from being destroyed forever under the shelter of the church value and esteem which in turn give prestige for the religious sites.

Research Works On Indigenous Knowledge And Climate Change: Indigenous and local knowledge (ILK) should play an integral role in building climate resilience. Existing adaptive local practices can be harnessed and tailored to ensure communities are able to reduce their vulnerability to climate change (Grenier, 1998). Indigenous Peoples have played a key role in climate change mitigation and adaptation. The territories of indigenous groups who have been given the rights to their lands have been better conserved than the adjacent lands. Niamir (1990) in his study found that afar pastoral groups in Ethiopia, as do many other pastoralists in Africa practice some form of transhumance involving seasonal movement to regular pasturing areas. For some this demands regular routes but almost all have regular areas that they send their livestock in every normal year Around Debre Berhan, and Tigray it is common for the residents to build their houses from stone, mud and ash. According to Report of Ethiopia National Workshop, (2002), in rural parts of Ethiopia, if someone is struck by lightning, the survivor will be immediately brought into contact with moist ground or dung. This practice is substantiated by static electricity theory though the rural people are unable to explain it. Abebeet. al. (2011)in their study entitled with role of indigenous knowledge in land management for carbon sequestration and sustaining soil-based ecological services in Damot-Sore District, Southern Ethiopia indicate that indigenous agro-forestry provides multiple benefits to address carbon sequestration, climate change adaptation and ecosystem sustainability. Asebe (2012) in his study in Guji Oromo indicated It is worth mentioning that the livelihood of the people, that is, pastoral activity, thought the people should systematically utilize the resources (pasture and water) in order to cope up with local climate variability. The inevitable conclusion from the review is that the development of traditional-, local- and indigenous knowledge systems enhances resilience and adaptation to climate variability and change.

C. Degradation of Indigenous Knowledge

Agriculture and rural development in Ethiopia, although claiming that it includes people's participation, remain delivery oriented in terms of its extension services rather than encouraging farmers' innovations (Tesfaye, 2003). Ethiopia is a country of ancient history, diverse culture and multi ethnic combination. Apparently, traditional agricultural system is the most dominant one among the smallholder farmers and pastoralists in this country. Although not well explored and received adequate attention by outsiders, Ethiopia is also the home of amazing indigenous knowledge bodies and systems that helped the people survive adverse environmental conditions, famine and poverty in general(Pankhurst, 1985).Tesfaye (2003) has mentioned that the communities' indigenous knowledge on resource management; local institutions and copying mechanisms were not given any attention. The technological inputs that have been identified and packaged by outsiders, with very little or no consultation of the smallholder farmers, were not able to respond adequately to local realities (Amnuel, 2005).Apart from this some members of the community pay no attention to the traditional belief which associated with the practice of conservationindigenous knowledge in the past years(Biniam and Bihilu, 2017).

Indigenous forms of natural resource management are morestable than introduced knowledge, policyplanners have ignored them (National Ethiopia Workshop, 2002). Another constraint is lack of community participation involving the stakeholders in planning and that hinders development and incorporation of indigenous knowledge. It is interesting to note that practitioners of indigenous knowledge were confronted with unjust laws leading to fines, banishments from their native land, imprisonment and brutal executions(Charles, 2007).He also noted that community displacement is a cause for dying indigenous knowledge.

Disappearance of indigenous populations and their knowledge raises serious human rights concerns. Intellectual property right issues are other challenges, particularly if indigenous knowledge leads to profit for transnational corporations (IFLA, 2003). Documenting and publicizing IK could immediately lead to their appropriation by others without return to innovators. The intellectual property rights of the individuals and communities have to be protected and benefits have to be generated for the innovators as well as local communities. Community structures such as Tele-centers are increasingly becoming as the most important platforms for capturing, transfer and exchange of indigenous knowledge. There are challenges to the use of traditional practices in conserving the environment. Most of the young generation regards indigenous knowledge on environmental management as primitive and old fashioned tradition practiced by the less educated and elderly. However there is strong belief in traditional practices among the elderly population. An effect of these challenges is the worrying idea of loss of native cultures, loss of indigenous languages and knowledge that may lead to further environmental degradation. Since indigenous ecological knowledge of managing the environment is embodied in languages, its extinction is pretty easy as it is passed on to other groups or new generations orally.

D. Conservation of Indigenous Knowledge: The Way for Ward

Knowledge erosion is a threat, as it becomes not only difficult to conserve what we do not know. Hence, the option values decline if the probability of finding a resource useful in the current generation is lower because of the loss of knowledge about the resource(Charles, 2007).Investing on farmer indigenous knowledge in terms of money, expert's time and other resources may help to understand better the prospects and challenges of rural development in this country. The formal one is receiving adequate attention in terms of funding, policy support, expertise etc while the indigenous knowledge based informal innovation system is driving the livelihood of the small holder farmers in the country and yet receiving very little attention. Development practitioners, researchers and policy makers know only few examples (Amnuel, 2005). Another mechanism is giving an award which is a positive recognition of valuing traditional practices of the communities to manage the natural resources of the country (EPA, 1997). For example, the Konso people receive special prize for their model land management practice by UNFAO on its50th Anniversary (Engels and Goettsch, 1991). The Guassa area in Menz represents an interesting model of community led natural resource management regime that has operated in a very fragile ecosystem managed by the Menz community.

Currently the Afroalpine Ecosystem Conservation Project of the Frankfurt Zoological Society is working with the Menz community to strength this age-old conservation system (MoARD, 2000). When innovative farmers are identified, recognized stimulated and supported; experiences have thought us that there is a huge opportunity for them to develop technologies appropriate and relevant to their own realities. Sometimes farmers may even come up with spectacular types of innovations that could revolutionize agricultural development of their domain (Amanuel, 2005). Making Farmer Innovation Support fund available and accessible to farmers, which is intentionally designed to purposely help innovative farmers get access to innovation resources is therefore a very good approach to cultivate and release the potentials of farmer innovation in Ethiopia (Pankhurst, 1985).Experience of knowledge for development initiatives has shown that a vast array of tools can be used to facilitate the sharing of knowledge. Mechanisms such as community of practice, peer assists, synchronous and asynchronous communications are important to improve the exchange of indigenous knowledge (IFLA, 2003).

III. CONCLUSION AND RECOMMENDATION

Farmers in Ethiopia have a potential to solve the environmental problem prevailing specifically in Ethiopia and the world at large, but there low attention is given by the government rather for introduced one. This is evidenced by the indigenous knowledge practice applied by the farmers to conserve the natural resource in different parts of the country as mentioned in the literature review. Indigenous knowledge is under degradation due to lack of government support, under estimation by the young generation and considering it regards as primitive, lack of experience sharing among communities and lack focus to indigenous knowledge by all stake holders. Natural resource conservation and poverty reduction efforts can be made to be sustainable in local community development and their empowerment mechanisms positively through local community knowledge appreciation and utilization, decentralization of engagement approach, capacity building and proper management of participation mechanisms that gives equal interaction, support, decision making and awareness creation by ease in access to information.

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