

# Why Agro-biodiversity Conservation - Who is Responsible for what?

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## 1 INTRODUCTION

Agro-biodiversity conservation is an important ingredient with potential for food security and for medicinal purposes. In the marginal semi-arid areas of the world, there is often nutritional deficiency due to low level of edible flora diversity during most parts of the year. Availability and knowledge on the utilisation of available indigenous and traditional flora as a food source is therefore important to alleviate nutritional and health problems of people in these areas. In Tanzania for example, there are several species of indigenous plants, both herbs, shrubs and trees available in both marginal and fertile areas with high rainfall areas which are either known or unknown to the local people as nutritional and medicinal plants. An example of such plants available in Tanzania is shown in Table 1. However, the current situation indicates that loss of agrobiodiversity is on the increase. It is estimated that about 34,000 species, constituting about 12.4% of plant species are in the danger of being extinct. This results into the depletion of food to the rural and urban people and loss of plants for healing various ailments for animals, plants and humans.

Evidence of the accelerating depletion of natural resources and other environmental and social problems has resulted to a global consensus on the need to see development in terms of long-term sustainability (see Quiroz, 1994). The need for "sustainable development" requires no further emphasis. Since more than 80% of Tanzanians live in rural areas and, depend on agriculture, the "sustainable agriculture in rural areas in particular, must be given priority. It is generally accepted that natural ecosystems are much more complex than Agricultural ecosystems. However, traditional agricultural ecosystems are less simplified compared to modern agricultural ecosystems are less simplified compared to modern agricultural ecosystems. This is to say that it is only in areas with high agrobiodiversity where we can find more life forms, and hence high chances to survive due to diversified food sources. We need to link conservation and development so as to see the importance of this activity for appropriate policy development to address accompanying problems. Ecological security should always be linked with livelihood security in terms of food security.

Thus we should conserve agrobiodiversity for the sake of food security, medicinal needs, conservation of soil water, moderation of the macro and microclimate and maintaining an ecological balance.

## **2 WHY LOSS OF AGRO-BIODIVERSITY?**

To date, there is widespread burning and clearing of vegetation in the search for more land to produce crops for feeding the ever increasing world population. Overgrazing, harvesting of trees for charcoal, clearing for construction, mining etc. have accelerated tremendously less of plant species in recent years. There is therefore a seemingly conflict between biodiversity conservation and economic development particularly in the areas of agriculture, mining and energy. The loss of biodiversity is clearly linked with poverty, population growth and environmental degradation. Thus, nature's diversity is seen as not intrinsically valuable in itself, but rather its value is conferred only through economic exploitation for commercial gain. This attitude then, reduces diversity to a problem, a recipe for capitalist orientation.

Bad/weak governance, poverty, ignorance and bad cultural values are among the leading factors to the loss of agrobiodiversity. Loss of agro-biodiversity leads to the loss of indigenous knowledge and vice versa.

## **3 WHO IS INVOLVED IN LOSS OF AGRO-BIODIVERSITY?**

There is no definite answer to the question of who is involved in loss of agro-biodiversity, but this depends on culture, division of labour, gender potentialities in specific ethnic groups, property and economic rights, type of economic activity etc. In Tanzania for example, there are more than 120 ethnic groups, each with a different cultural habit. In some tribes or households, men are more involved in farming while in others, women play a leading role in farming. In the majority of the tribes however, both gender sections are equally involved in farming, thus land clearing in search for more agricultural land. In activities like hunting, mining, construction, lumbering, charcoal making, grazing, men take a leading role. Thus, environmental degradation from such activities should solely be due to activities of men. One may wonder on how hunting can result into loss of biodiversity! Look at the reason(s) leading to indiscriminate burning of vegetation on the Uluguru Mountains in Morogoro Region, Tanzania. although farming and grazing are generally implicated as the objectives, hunting for animals particularly "Ndezi", vermin has also been cited by local people as the reasons why fire is used in the bush. Fire chases the animals from hiding and thus exposes them to the hunters. Evidence has shown that search for firewood by women as a source of domestic energy at home plays a very minor role in loss of agrobiodiversity. They mostly look for dry wood and hardly cut down fresh wood for the purpose. In this way, they make judicious harvesting of the natural resources, pruning the existing trees/shrubs for a better stand. Yet, women are mostly the victims of loss of agro-biodiversity because they are the ones searching greens for the potherb during lunch and dinner and energy for the household. They are compelled to travel long distances in search of these. The issue of loss of agrobiodiversity through overgrazing among the Sukuma, the Gogo and the Rangi need

no overemphasis. It is their culture to keep so many herds of animals, which in turn degrade the environment. Thus, sustainable development and agro-biodiversity initiatives should include ethnoscience (i.e., the scientific description of races and cultures of mankind) together with gendered knowledge and skills and cultural backgrounds of specific groups of people (see also, Rochelau, 1991).

#### **4 MEASURES TO CONSERVE THE LIFE SUPPORTING SYSTEM: AGROBIODIVERSITY**

4.1 Gender and Cultural Considerations: As noted earlier on, women are the day to day managers of the environment and the house holds although men are the owners in absentia. This is because in most cases, the men are the decision makers, while women are the implementers of these decisions. Similarly, the rural people are the ones managing the countryside contrary to the urban people concentrated in cities. We therefore need to empower the rural people particularly women in programmes of agro-biodiversity conservation. The experience and skills of rural women in recognising their potent plants, use and conservation should never be ignored. Shiva and Mies (1993), noted that women marginalization and destruction of the environment go together. Domot et al. (1994) noted the importance of looking into the relationship between women and agriculture, forestry and population dynamics in order to examine critically the role of women in conservation of biodiversity. On the other hand, men are the decision makers and also, actively involved in specific activities which abuse the ecosystem. We therefore need to address them through extension workers on conservation packages. In many of African Societies, Tanzania is no exception, there are several ethnic groups with different cultural backgrounds, knowledge and skills not only on the potential use of plants in their vicinity, but also on conservation activities. For instance, a baobab tree (*Adansonia digitata*) is potentially know as a leaf vegetable plant, refreshing drink and also as a remedy against cholera in several parts of Dodoma Region Tanzania. However, the people of Kilimanjaro Region utilise it only as a drink and only scarcely. In several parts of Zimbabwe, the fruit is made to flour and a highly nutritious food can be prepared from it. We therefore need to recognise and use traditional wisdom and techniques taking into consideration gender potentialities in specific ethnic groups. These however, should be combined with modern science and technology so that rural livelihoods are strengthened through conservation and rational use of indigenous plants as noted by Swaminathan (1994). Thanks to the International Community in which the 1990's have been postulated by some observers (e.g. Rocheleau et al., 1992) as the decade of women - and - environment or women-and-sustainable development. However, both men and women should be looked at taking into consideration the various roles played by each of them in specific cultural backgrounds. In this postulate, the daily experience of rural people is viewed as an important element in conservation. In particular, gendered property, gendered work and gendered knowledge are advocated. We need to use a bottom up approach in the whole issue of conservation and utilisation of indigenous plants.

Although Quiroz (1994) advocates that women control over their resources, decisions and actions should be a key factor in the success of projects on conservation, we need to be cautious. Both men and women have specific roles to play depending on the division of labour, ownership rights and decision making responsibilities as accepted norms in specific societies. We should build on already accepted norms by the society in general taking into consideration gender differences. Rocheleau et al., (1995) noted the necessity of addressing current gender imbalance between rights and responsibilities in resource management. Probably surveys need to be conducted first, to establish what norms are accepted or not by the majority and then, disseminate packages according to accepted norms. This is a bottom up approach. Then and only then, we need to recognise, reinforce and improve specific roles, knowledge and capabilities according to gender in such undertakings on a sustainable basis as also noted by Quiroz, (1994).

4.2 Community Involvement In order to effectively conserve lands beneficial for all life forms, we need to involve the community as a whole which include all classes of people e.g. livestock keepers, farmers, lumberers, hunters, bee keepers, miners, institutions etc. Before we go into details, two assumptions may arise:

- i. There is a knowledge gap between different classes of people in the community, and therefore one class does not know the effect it has on the others in terms of agro-biodiversity loss.
- ii. There is no knowledge gap, every class in the community knows its effect on the others.

Although grassroots people are important in conservation projects, we need rule of law to effectively oversee that the generally accepted regulations on conservation are not violated by some individuals. This can effectively be implemented by local governments at village, ward and divisional levels. A typical example to that effect is that of Mvumi Division in Dodoma Region, Tanzania. A destocking project which allows only Zero grazing of a limited number of improved breeds of livestock financed by the CCT Dodoma, was launched more than 10 years ago (sometime in 1986). Villagers were first made aware of the negative effects the uncontrolled rearing of animals had in the environment and on the positive impacts zero grazing in the proposed project would have. Specific areas far away from the villages were identified where only livestock could be reared in a controlled manner. The villagers organised themselves in such a way that any violator of this regulation was put to task by the local governments. Today, there is widespread vegetation, improved agro-biodiversity, resurgence of streams and other water sources, and hence increased availability of indigenous vegetables and fruits. The local community itself has witnessed the fruits of conservation and never again would they like to go back to the old days (Mattee and Reuben, 1996). Morse and Stocking, (1985) advocate the use of incentives in community conservation projects. Probably we need to arrange in such a way that those responding positively to conservation regulations should be rewarded while those going against should be punished accordingly.

## **5 POLICY**

We need a well defined policy on the role of different classes of people (e.g. men, women, farmers, pastoralists, etc) on the exploitation, use and conservation of natural resources. This will help government's plan programmes, finance and enforce them in order to realise intended goals.

An ecologically sustainable diversity programme should be a priority in all national policies taking into consideration appropriate cultural and ethnological backgrounds if packages are to be received and implemented by the grass root people. Domoto et al, (1994) noted that women have a great role to play on food security, yet over the years, there has been negative impacts of modern development policies and agricultural industrialisation on the ability of women to undertake sustainable agriculture, particularly in the exclusion of women from training, extension and planning. Recently however, there has been a tendency to give more priority to women in recruitment and sponsorships to higher education for instance at Sokoine University of Agriculture and SACAR sponsorships. Priorities should also be looked at for them to specialise in the areas of Nature conservation. Similarly, policies should be in place, to improve institutional arrangements and project financing to better incorporate and address gender considerations as it deems appropriate in the villages. Policy implications should shift away from the present cultural settings, in most of world societies on women status to the modern on women entitlements to environmental resources as noted by Leah et al. (1995).

## **6 POVERTY ERADICATION**

Poverty is amongst the most important factors leading to over exploitation of natural resources. Increased population at a greater rate than production and provision of social services, bad land tenure systems, development of classes in society and many other factors have led to inequalities; increased depletion and degradation of available natural resources including agrobiodiversity and they increasing appropriation of these resources for the benefit of the few. Thus, when for instance most of the potential areas are held by few individuals, the majority remain with the rest of the marginal lands to exploit. This leads to over exploitation of the countryside to meet the daily requirements. Nations, particularly developing countries, should strive to eradicate or at least reduce poverty and have this target on top of their agenda. Tanzania for instance has resolved to implement the International Declaration for eradicating poverty but this needs strengthening efforts towards good governance (Mkapa, 1998).

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## **ANNEX 1: ACRONYMS AND ABBREVIATIONS**

1. ADP Agricultural Development Programme
2. CBD Convention on Biological Diversity
3. CBO Community Based Organization
4. CHD Coronary Heart Disease
5. DONET Dodoma Environmental Network
6. FAO Food and Agriculture Organization
7. FTTP Forestry, Tree and People Programme
8. GIS Geographical Information System
9. TDS Institute of Development Studies
10. ICRAF International Centre for Agroforestry
11. IK Indigenous Knowledge
12. IKS Indigenous Knowledge System
13. IRA Institute of Resource Assessment
14. ITK Indigenous Technical Knowledge
15. LK Local Knowledge
16. LKS Local Knowledge System
17. MARTI Ministry of Agriculture Research and Training Institute
18. MPS Matengo Pit System
19. NALERP National Agriculture and Livestock Extension
20. NEMC National Environment Management Council
21. NGO Non-Government Organization
22. NSC National Steering Committee
23. PLA Participatory Learning Action
24. PRA Participatory Rural Appraisal
25. PRE Participatory Research and Extension
26. PTD Participatory Technology Development
27. RIPS Rural Integrated Project Support
28. RPA Rapid Rural Appraisal
29. SCSRD SUA Centre for Sustainable Rural Development
30. TAMWA Tanzania Media Women Association
31. TGNP Tanzania Gender Network Programme
32. TFNC Tanzania Food and Nutrition Centre
33. TPRI Tanzania Pesticide Research Institute
34. TSZ Tanzania Shorthorn Zebu
35. UDSM University of Dar es Salaam
36. UMS Ufipa Mounds Systems.