

UNDERSTANDING LOCAL KNOWLEDGE SYSTEMS FOR AGRICULTURAL AND RURAL DEVELOPMENT: RESEARCH NEEDS FOR TANZANIA

*Bertha Koda,
Institute of Development Studies
University of Dar es Salaam*

1 CONCEPTUAL LINKAGES

1.1 Introduction

This contribution is a result of a baseline study conducted in Tanzania in April-May 1999 and two workshops on gender, agro-biodiversity and local knowledge systems organized by FAO and Tanzania Food and Nutrition Centre (TFNC), held in Dar es Salaam and Morogoro on June 7 and 22-23, 1999. These are in turn components of a broader regional project on *Gender, Biodiversity and Local Knowledge Systems* (LinKS) whose development objective is to support the implementation of gender sensitive policies, programmes and participatory technological development for the in-situ conservation and sustainable use and management of agro-biodiversity for food security. ANNEX 2 provides an overview of the LinKS project.

1.2 Information used in the analysis

The information used in this report was gathered from both secondary and primary sources consulted during the baseline study conducted in few regions in Tanzania including Dar es Salaam, Dodoma, Morogoro and Arusha in April-May 1999. To a small extent, data was also collected from Zanzibar. The major input came from Dar es Salaam region where more research institutions, government ministries and NGOs were visited. Additional information was generated from secondary data accessed from libraries, documentation centers/rooms and individual researchers' offices. (Summaries of consulted references are accessible at FAO office). Participants of the two workshops held in June 1999 contributed appreciably. Working definitions of key concepts used in the following chapters are provided in ANNEX 3.

1.3 Conceptualizing the linkages between gender, agro-biodiversity and indigenous knowledge systems within the Tanzanian context

Overview of the linkages between poverty, agro-biodiversity and local knowledge systems: cause-effect relationship

Tanzania is predominantly agrarian with crop farming as the main employer and income earning activity for the majority of Tanzanian women and men. Livestock keeping assumes the second position with pastoralism featuring prominently in a few regions such as Arusha and Dodoma. Despite abundant natural resources, including land, forests, minerals and water (from rivers, lakes and the Indian Ocean), Tanzania is one of the least developed countries in the world. More than 45 % of the rural population, for instance live below the poverty line.

Efforts to address the poverty issue at both individual and public levels are numerous. These include policies, programmes and projects initiated locally and sometimes with external induction. The currently implemented Structural Adjustment Programmes (SAPS) are a case in point where both positive and negative effects have been experienced. For instance the impact of the market forces,

coupled with the genuine individual urge to harness available resources for poverty eradication have to a great extent exposed Tanzania's biodiversity to a less sustainable nature. Local efforts aimed at eradicating poverty have also affected the life of plant and animal species and even exposed them to the danger of extinction. Efforts which destroy the natural habitat include massive timber harvesting, expansion of farm-land in natural forests where indigenous tree species are cut down indiscriminately and without replacement. The poor technology, like firewood use in the processing of some cash crops, such as tobacco curing, has also led to intensive exploitation of forest ecosystems. It is in line with this argument that Van Vlaenderen (1999:2) conclusively contends that "As a result of development interventions, steeped in a modernization approach, as well as a general process of globalization, certain aspects of peoples' local and traditional knowledge are disappearing."

Local knowledge systems and concerns of food security

Local knowledge systems deserve recognition in their own right as human attributes to development. Indeed, it is often argued that local knowledge is symbiotically related to poverty eradication. The contention is that local peoples' needs, values and capacities (skills) are related to both local knowledge and development dynamics (Van Vlaenderen, 1999; Koda, 1999). Both women and men have intimate knowledge of their natural environments which they have, at times used sustainably for generation while still preserving agro-biodiversity. In the past through this process local people were empowered for increased self-reliance, self-confidence and capacity for addressing issues of food security especially where the dynamics for combining old and new knowledge systems have been seriously addressed (Koda, 1999).

It is a truism that many of the contemporary farming systems that guarantee food security at the community level evolved from local knowledge systems. The case of the Matengo "pit" system (Ngoro) of the Matengo people of Tanzania which ensures soil conservation and hence soil productivity validates this contention (Rutatora et al., 1995). Yet this system is not devoid of gender imbalances especially in terms of distribution of workload, where an average of 135 and 40 hours per hectare is spent by women and men respectively.

The linkages between gender, agro-biodiversity and LinKS

The majority of Tanzanian women and men depend directly on natural resources for their livelihood, through farming, pastoralism/herding, fishing, mining and forestry activities. Rural communities also depend on natural forest products such as wild "foods", herbs, firewood, building poles and ropes/fibre, thatching grass, etc for meeting food, shelter, clothing needs and medicinal services for both human beings and livestock. As pointed out in the LinKS project document, women and men largely use their 'local knowledge' on local environmental and farming systems in their daily activities. Knowledge on edible and cultivable fauna and flora and medicinal herbs & shrubs for instance has contributed greatly to the development of currently used agricultural systems both in terms of production techniques as well as in developing processing, preservation and storage technologies/ facilities. Such knowledge has also contributed to the adoption of coping strategies during food shortages and at times of hardship, gendered knowledge on drought resistant crops wild foods and medicinal plants. It has equally assisted in ensuring both rural-based household food security, human and animal health and agricultural development.

(a) The gender dimension

The gender dimension needs further elaboration since it is the least observed aspect both in the culture of the indigenous people and by development practitioners and policy makers as elucidated by the research community (Koda, 1999). From time immemorial, gender has been a conspicuous variable in the allocation of roles, responsibilities and resources at both the household and public levels. For many ethnic groups for instance, the domestic domain including household chores has been confined to women.

Studies on rural development inform that rural women and men are better placed with respect to knowledge on local environmental issues and strategies of ensuring maintenance of the ecosystem. Knowledge on the many aspects of indigenous tree species such as timing for flowering, fruiting, growth, diseases of such trees, medicinal and nutritional values of local trees and even poisonous trees which are unfit for use by human beings and livestock is one such example (Koda, 1999).

Local Knowledge prominent in Tanzanian ethnic groups appears to be popular knowledge, yet it is relatively unevenly distributed. Because of its very nature of being closely tied to an activity where accessibility is determined by participation in related activities. Traditional healers, traditional birth attendants, farmers, livestock keepers and honey collectors for instance, usually access the relevant local knowledge and skills, followed by a process of experimentation, adaptation and propagation of new ideas gained through experience. It is also primarily the principle of "access through participation" which largely influence the gender dynamics in local knowledge systems.

Tanzania is a huge country comprised of 25 regions inhabited by more than 120 ethnic groups. Each of these regions and its people are unique in terms of geographical and climatic specificities, cultural norms, beliefs and practices and farming systems. Hence there is a wide variety of knowledge systems and social relations whose components are passed over from one generation to the other through socialization.

Essential variables in the socialization process include "gender" which is largely used to determine role specificity for women and men in all Tanzanian communities. Hence the gendered and unevenly distributed knowledge prominent in each ethnic group. While girls are socialized to become wives and as mothers and custodians of household food security, boys are tuned to become public leaders, decision-makers and planners for their house-hold's development and for public life. For the farming communities for instance, women and men will have the general knowledge on the farming systems, yet women would be more conversant with issues related to food crops and vegetables and the food basket in general since in all Tanzanian communities they are the ones who collect vegetables and process, prepare and cook food for their families, usually with the assistance of the girl child. Invariably, men would know more about hunting and related activities, housing construction (except for few ethnic groups which assign this role to women) and cash earning opportunities.

The social norms of pastoralists would tune women to accessing and controlling knowledge on milking and processing of milk products and tendering of calves and sick cows which remain at home (the woman is domain). The young men would be more knowledgeable on the best grass for cattle or best pastureland and related domains since men are the ones who move around with livestock for longer periods of time during dry and wet seasons. It is also said that during the initiation ceremonies of young male pastoralists such as the Maasai youth, sufficient time is allocated to training on issues of useful knowledge and skills on medicinal herbs (personal communication with a Maasai elder, June, 1999). The population in coastal areas on the other hand would have different knowledge systems since their farming system and life pattern involve knowledge on quite different factors such as the growing and caring for coconut and cashew-nut trees, cassava & rice. Necessary knowledge on diseases and cures for these crops would also be quite different from that of the pastoralist communities and vice versa. These are just a few examples to demonstrate not only the gender differences but also the ecological, geographical, ethnicity and age differences with respect to indigenous/local knowledge systems and agro-biodiversity. Activities such as cooking for the household members and associated activities such as firewood-collection and water totting have always been woman's role. It is hence widely argued that women know the type of trees ideal for firewood and for cooking & heating purposes, while men are more knowledgeable on the best trees for poles, timber and ropes/fibre for housing construction as well as the best grass species for thatching & fodder.

In the same vein, women are better placed in terms of accessing and controlling local knowledge on factors directly linked to household food security. The colonial-induced systems of assigning crops to

each gender as *women's and men's crops* is another factor with bearing on gendered knowledge. Subsistence crops, especially those with small seeds such as cow-peas and millet, are usually regarded as women's crops while men control cash-crops and grains (Mascarenhas & Mbilinyi, 1983). Therefore, with respect to household food security women's knowledge systems tend to be more broad-based in comparison with men.

The gender 'roles' stereo-typing has yet other social implications to indigenous and local knowledge systems. For one thing, participation in such roles create associated needs and interests particular to each gender but which are not necessarily similar. These have to be met by the ecosystem with the use of local knowledge. Yet, it is pointed out elsewhere that women's interests, knowledge and priorities are neither consulted nor are they considered as important inclusions in most development programmes aimed at managing agro-biodiversity (Mascarenhas and Mbilinyi, 1983; Koda & Mukangara, 1997).

This does not mean however that indigenous knowledge under men's command is always considered and used during the planning and implementation of all development programmes. There has been a growing tendency for instance, for most development planners and policy-makers to marginalize both indigenous and local knowledge systems during planning and policy-making at micro and macro levels.

(b) Marginalization of local knowledge systems in formal knowledge structures

The bias against local knowledge in Tanzania has its own history. It originates from the interaction with European and Arabic culture which introduced both formal education and new religions in Tanzanian communities. The manner in which formal education was introduced and used local communities to a great extent facilitated gross marginalization of local knowledge systems. Formal education, which tended to reflect European culture, attempted to replace local knowledge as reflected in the curriculum (content) of such education and its pedagogical methods. It was generally assumed for instance that local people were less knowledgeable than the white colonial personnel. The colonial masters, and to some extent the African students, seldom acknowledged the existence of some groups of black (African) people who had more knowledge than the white people.

Moreover, most of the traditional structures for packaging' and dissemination of local knowledge were demolished while attempts to replace them have been futile. Formal media for instance has been monetized and urbanized and even where traditional knowledge is promoted, the tendency has been for its content to be commercialized and hence the decreased accessibility for the majority of non-affording users. Also, where indigenous knowledge systems managed to survive, the tendency has been to consider them as backward/primitive even where alternative knowledge systems were inaccessible or inappropriate. A good example is medicinal knowledge which was highly marginalized (after the introduction of the so-called "modern" health systems i.e. hospitals/dispensaries, formally trained doctors, etc. Only recently have formal institutions such as the Institute of Traditional Medicine been established in the country to give traditional medicine some prominence respect and to study the inherent benefits as well as generating information for a broader spectrum of users. Indeed, an increasing use of traditional medicine and associated institutions has also been noted after the adoption of the Structural Adjustment Programmes which introduced cost-sharing in the social services sector (Nyamuhanga, 1997).

Despite government efforts to distribute essential drugs to dispensaries for community members, demand has always surpassed supply. In many cases non traditional healers are also recognized and given space in the government initiatives to eradicate diseases (their NGOs are registered like any other NGO and their works are being promoted to the general public). The increasing use of "Neem" tree (Muarobaini) as a cure for malaria for instance has been noted in recent years as a coping strategy but more so as an alternative to the use of malaria drugs.

The colonial system and Christianity have played different roles in marginalizing local knowledge systems. The value systems instilled in the elite group for instance and which advocated that

"new"/imported things are always superior to old/traditional/local products and that indigenous religions and associated knowledge systems and institutions (initiation ceremonies, traditional dancing & singing and traditional healing processes/ procedures/ medicine) were bad or un-Godly, primitive have all been quite damaging to the promotion of local knowledge. The processes inherited by the post-colonial governments, has contributed to marginalize and seemingly threaten local knowledge.

Marginalization of women's local knowledge is also linked to the general inferior position afforded to women in many ethnic groups. Despite their more frequent visits to the forests to collect vegetables, firewood, mushrooms, fruits and other food items and hence their high level of knowledge on this subject matter, women's knowledge was and is still conspicuously ignored, even by social science researchers, in terms of dissemination and use for development purposes. Yet women's key role in agro-biodiversity management and their holistic understanding of agro-biodiversity and issues of food security need to be well researched, in order to understand the complex nature of indigenous/local knowledge systems and their potential effectiveness in addressing broader issues of food security.

Power relations and management of agro-biodiversity

It is worth noting that issues of indigenous/local knowledge systems and gender are within the realm of power relations, especially at the public level. A good example is the competition existing between local maize seeds some of which are more drought and pest resistant and hybrid seeds promoted by big agro-business companies such as "Cargil" which are threatening farmers' self-reliant farming systems (Mbilinyi, 1997). While farmers are finding it increasingly difficult to afford the price of hybrid seeds and accessories such as fertilizers and pesticides, their local seeds are disappearing at the same time and at an alarming speed.

Power relations as embedded in local knowledge systems are broad-based as they encompass different levels beyond the household. At the village level, where members from several clans are residing, differential patterns of controlling knowledge are evident, although, the gender differential is still the major pattern. Apart from the differential ownership and control of resources along class and ethnic lines which determine the type of activities one is engaged in, and hence the form of accessed knowledge system, there are knowledge systems which are inherited along clan lines as pointed out in section 1.2 (e) above. These include knowledge on specific procedures/principles for healing certain diseases (secretive knowledge) as well as knowledge on the science of rainmaking. It also applies to knowledge on production of local technologies where only certain clans are well versed in, usually through inheritance. The "iron-smithery" clans such as the "Washana" of Pare ethnic group from Same and Mwanza districts in the northern part of Tanzania are a case in point where such skills were "discretionary" and hence not public. Other discretionary knowledge systems include medicinal knowledge where an apprentice chosen by the traditional doctor/ herbalist, to carry the "medicinal bag" ("*mkoba wa mganga*" in Swahili) is likely to gain the relevant knowledge from the traditional healers partly through observation but more so through "initiation" into the medical field.

Issues on power relations are even more pronounced at both national and global levels as state policies and legal frameworks protect big agri-business and pharmaceutical companies and allow them the opportunity to research, produce and distribute crop and livestock seeds, pesticides, insecticides and human and veterinary medicine as well as power to control the seed banks (including "livestock seeds" banks) at the expense of local knowledge systems and farmers' self-reliance. Issues of "intellectual property" rights, "patents" and "trade marks" over local knowledge also depict power imbalances as local knowledge providers and managers of agro-biodiversity are increasingly being robbed of the opportunity to establish small income-earning enterprises through the use of local knowledge. These rights are usually acquired by the "well-placed" (influential) and rich companies who are quicker in buying the "patents" before the grassroots people are aware of the legal implications. Yet such patented knowledge originates from the latter through research and botanical prospecting.

Incidentally, even the knowledge on intellectual property rights is unevenly distributed in Tanzania as well as between developed and less developed countries. This is largely to the advantage of advanced countries. Undoubtedly, local knowledge and skills exist and could be exploited for production of commodities, both medicinal and consumables. Knowledge on certain purplish fruits which provide palatable juice which is used for treatment of anaemia cases, wild roots known as "mdudu" in Pare language which produce energy-rich liquid after pounding the roots (used during food shortages) and a powder-like product known as "kimpa cha ibwe" (in Pare language) used by the local people as anti-poison medicine could easily be used to produce industrial products albeit at small scale basis. Yet, the political will to motivate local people to engage in such enterprising activities (on the part of policy makers) seems to be lacking. To a large extent also these processes are not advocated for, neither by researchers nor the donor community.

Power sharing is an essential component of democracy and transformation dynamics. However, contemporary democratic processes initiated globally, Tanzania inclusive, have not yet addressed issues on power sharing of indigenous/local knowledge nor have they adequately challenged the gendered hierarchy associated with both gender-roles stereotyping and knowledge systems. Women are believed to have acquired very unique knowledge on agro-biodiversity management as a result of their role in food production, child & health care, vegetable and firewood collection, etc. Yet most of them have no decision-making powers over productive resources (land, trees, etc.,) and no say on what to grow on such land even where they are more knowledgeable on the best habitat for crop/tree species to be grown on such land (Mascarenhas & Mbilinyi, 1983; Koda & Mukangara, 1997). The unequal power relations which gives men more prominence in socioeconomic and cultural systems are largely maintained both locally and globally amidst the well applauded democratic processes witnessed in Tanzania and elsewhere to-date. The issue of power relations, especially on property rights and security over resources which leads to employment opportunities, adequate incomes and food security, are therefore pertinent in the management of agro-biodiversity and should thus be reflected in contemporary research programmes.

To be able to address all these challenges, however, one has to have a clear gendered vision, mission and commitment to realize such ideals. National political structures, national research institutions and individual researchers are still grappling with these issues as shall be discussed in part two below.

2 RESEARCH AGENDA FOR THE PROJECT ON GENDER, AGRO-BIODIVERSITY AND LOCAL KNOWLEDGE SYSTEMS

2.1 Introduction

It is contended in this chapter that issues related to gender, agro-biodiversity and indigenous knowledge systems are both complex and dynamically linked to each other. Partly this complexity has forced most rural development researchers information seekers as well as advocates of food security to shy away from seriously articulating the relationship between these three variables in their research. Besides, there are very specific underlying factors that have rendered the task of collecting, managing and disseminating information on gender, biodiversity and indigenous/local knowledge systems a difficult venture. The following discussion is an attempt to highlight the dynamism embedded in these factors especially with respect to issues of methodology and communication.

2.2 Approaches used by institutions/individuals

Several approaches have been used to record and disseminate information on gender, agro-biodiversity and indigenous/local knowledge systems. Gathering information on food security is a challenge to researchers not only in terms of broadening the interpretation and understanding of rural development dynamics but also in terms of developing appropriate methodologies for accessing, analysing and disseminating information on such issues. Invariably, this challenge is to be articulated within the areas of choice of the needed information, sampling of information providers, methods of documenting and

recording the acquired information, choice of targeted users of such information and the media of communication.

Understanding research and communication challenges

Research is an essential tool for understanding development dynamics and as a component of the communication sector, it gives opportunity for raising issues of content, domestication, packaging, reproducing and transmitting information (both qualitative and quantitative) on such dynamics. Media choice and language are added components of the communication sector which are a means of reaching targeted groups during research and information dissemination, hence their importance in the research process.

Communication on the other hand is normally a two-way process involving different stake-holders and ensuring accessibility and control of accurate and appropriate information for development purposes. In the case of research, communication plays the role of channelling information on both the research agenda and the research findings. Gaviria (1999:3) points out that:

“Communication for development efforts start by listening to what people already know, what they aspire to become, what they perceive as possible and desirable and that which they can sustain.”

Inherent in this type of communication is the challenge to create an environment for acknowledging the need to listen to the voices of different stakeholders in order to tap adequate information for addressing development issues. There are other pertinent issues related to research processes that are worth discussing. These include choice of the research theme/topic geographical location (coverage), methodological issues, analysis of gathered information, storage and dissemination of information as discussed below.

Coverage

The word "coverage" as used in research activities is multi-dimensional. On the one hand it connotes both issues addressed (research themes/topics) as well as sampled stakeholders/information suppliers in terms of age, gender, class, ethnicity and even race. It also implies geographical coverage in a country or region.

(a) Choice of research themes

There is a need to redress the balance. It is rare for researchers to respond to the information needs of grassroots people, largely because the research agenda is drawn without their input. Researchers normally choose research themes/topics which are of interest to them as individuals and/or as representatives of research institutions or to donors and financiers.

(b) Geographical coverage

In a country like Tanzania where diverse geographical features are evident, geographical coverage becomes a concern, especially when a national picture is expected to emerge from a single research activity. Survey methods which allow for a bigger geographical coverage are seldom used. The most common approach has been the use of case studies, either purposefully or randomly selected. There has been a tendency to marginalize some regions, districts and villages due to factors such as poor infrastructure (transport, radio wave reception, telephones, etc.), logistics (comfortable accommodation, commonality of language used by research partners, availability of interpreters, etc), location preference by the sponsors of the study, adequate time and financial resources and interest in geographical area of study by the research team. There is also the general tendency for donors to sponsor research activities in areas where there are already some projects sponsored by the same donor, a bias which is also influenced by the quality of infrastructure.

The least popular regions for mainland Tanzania (with varying degree of popularity) include Mbeya, Tabora, Kigoma, Rukwa and Ruvuma. As for the districts, the ones which have received more attention include Singida rural, Same, Sirmanjiro, Ngorongoro, Monduli, Muheza, Kibaha and a few in Mtwara and Lindi regions (Koda, 1999). Even in the so-called "well researched" districts, very little research on agro-biodiversity management has been done and not in the holistic and gender-desegregated manner as expected by the LinKS project.

(c) Who supplies the information: Gender specificities

Another area of concern, is the choice of suppliers of information (information providers) who are interviewed or chosen. Recognizing gender as a useful variable in research requires sensitivity to the differences in women and men roles, needs, aspirations, experiences, status and position of women and men from different age, wealth status and ethnic groups. One needs to be exposed to both knowledge on gender concerns/gaps and differences and skills in gender analysis either through experience or by formal sensitization and training initiatives before she/he can seriously attend to the gender variable in research. The baseline study mentioned above has revealed that most researchers/managers of research institutions are gender-insensitive as reflected in both the content and methodology of implementing their research agenda.

Gender blindness is usually reflected both in who supplies the information and in the type of information collected/recorded and documented. Yet concerns on choice of research partners are broader than the question of gender sensitivity. Because providers of local knowledge and managers of agro-biodiversity are broad-based in terms of gender, age, class, ethnicity and professional orientation. The choice of who participates in the research process should reflect a concern to represent input from all the stake-holders and all socioeconomic groups. Such an analysis could only be done by researchers who advocate for "real" partnership in research.

Methods and research tools

The choice of methodologies used for data/information collection also influences the quality and quantity of the dated or information. There is no single methodology that can capture all the needed information on development issues. However, some methods deliver better gendered results. The marginalized status of local knowledge systems and gender issues in formal research processes has hampered the development of appropriate methods for capturing information on gendered local knowledge. Contemporary research methods are often extractive and essentially predetermined. Researchers generally use research questions that are outside the realm of the value system of the community from which that knowledge is obtained. Hence their inadequacy in capturing gendered local knowledge. The shortfalls of the extractive research methods also include failure to acknowledge the power dynamics involved in local knowledge systems as influenced by age, gender, class, ethnicity and race.

The anthropological approaches which have the ability to capture local values and related conceptual frameworks is as marginalized in today's research processes as local knowledge itself. Even where this approach is applied, it has to use several tools for data collection.

It is encouraging that in the recent past, local knowledge systems have attracted a good number of researchers for various reasons, including the failure of some development initiatives to achieve the intended goals through marginalization of local peoples' participation. With the increasing acknowledgement of grassroots-oriented development thinking, research methodologies capable of facilitating peoples' involvement both as respondents and as research partners are being developed. Participatory Rural Appraisals (PRAS) is one of the methods aimed at people's involvement/participation in research and development processes.

Tanzania has been a late adopter of PRA methods. PRA focuses on the use of local symbols, categories, materials, concepts, and classifications in gathering information and in linking information sharing with

analysis and planning of development activities. The use of PRA methods enhances peoples' confidence (Van Vlaenderen, 1999; Swantz, M-L, 1984). There are few PRA methods which are very suitable for collecting information on local knowledge systems and are therefore worth mentioning. These include mapping, diagramming and video making where data is visualized and analyzed at the same time. Commenting on these methods, Van Vlaenderen (1999:6) contends that:

"The diagram is drawn as a reflection of the knowledge of the people who draw it and simultaneously provides an anchor for the explication of further knowledge ... as the diagram unfolds the visual nature of it helps participants to further access and analyze aspects of their knowledge that are more tacit ... The unfolding diagram enables individual participants' thinking and memory and stimulates them to add to what others have already provided. Diagrams have an added advantage in the dissemination stage where both literate and semi-literate participants can access the intended information"

It is also a truism that existing PRA processes are little documented. For the few institutions such as IRA, TFNC, ERB, SUA and OXFAM/IDS, which managed to collect information on at least two of the three key variables embedded in the LinKS project (e.g. on gender and agro-biodiversity), the use of PRA methods was very instrumental in ensuring collection of adequate and appropriate gendered information. The use of video production and popular theatre both as research tools and a dissemination media has attracted very few users such as the Mtwara based (RIPS) Media Centre (RIPS Media Facility). Yet the issue of copy right of both the video and the knowledge disseminated through the video remains a challenge to be addressed by both the researchers and extension workers who continually advocate for sharing of local knowledge but are less articulate on the issue of intellectual property rights. Advocating for artistic methods of data collection, Gaviria (1999:3) contends that:

Beyond listening, communication for development requires participation from local artists and media specialists in preparing and testing messages for each specific audience ... It requires efforts to enable local people to document and share their own knowledge so that they become partners able to articulate their perspectives.

The use of PRA (research) tools calls for training/capacity building since not all research institutions/individuals are well versed in such specialized skills. PRA tools also call for team work as well as proper sampling to ensure they recognize of the diversity among population of suppliers of information.

Information dissemination/communication issues

Issues of communication cut across media and language choice. Information has to be packaged, stored and disseminated. This has implications for the choice of language and format in which such information is packaged and stored. Mechanism need to be put in place to make stored information easily accessible in terms of affordability, reachability and readability, hence the issue of media choice.

(a) Language and media

In Tanzania, although Swahili is widely used both in urban and most rural communities and used even in research, it is seldom used for information dissemination. Out of more than 70 references on Tanzania assessed in April-May 1999 on issues of gender, local knowledge systems and agro-biodiversity, only one was written in Swahili. The rest were in English. Any information is "no information" if needs and interests of targeted clusters of cannot understand.

The choice of what of media to use is also pertinent not only during information collection but also during dissemination of such information. As previously highlighted, rural people use songs, riddles, stories, proverbs, and other verbal media to pass on their knowledge. Information sharing with information providers is not only a matter of basic democratic rights but also a component of the

research process. Yet, this is seldom done. This assumption belittles the importance of both intra- and inter-community dialogue emanating from the research process, which as noted earlier contributes to raising peoples' confidence in their ability to manage agro-biodiversity and ensure household food security.

Unfortunately, traditional media such as theatre, songs and plays which women and men more so for old women are to communicate (Koda & Ngaiza, 1991) are over-shadowed by electronic and print media which is more popular among the elite and urban-based groups.

(b) Electronic media

Dissemination of information on issues related to biodiversity, gender and indigenous knowledge systems is also done through the radio which is more accessible to semi-illiterate people. However, the predominance of English language as the medium of communication, the complex form of the documented information, the uncoordinated manner in which such information is disseminated to the rural-based communities and the poor system of distribution of--print and electronic media due to the underdeveloped communication system especially in reaching remote villages are additional stumbling blocks. Women's lack of control over cash income also limit their control over use of family-owned radios (Koda & Mukangara 1997).

Packaging and storage of information

Most institutions and individual researchers, record the information from their research initiatives mainly in print media in the form of articles in journals and newsletters, chapters in published books, bibliographies, printed indexes, booklets, pamphlets, magazines, reports, newspapers. Others store information in tapes and computers. All institutions visited during April- May (1999) baseline study have documentation rooms of varying capacity and sophistication both in terms of number of documents stored, storage format and numbers of employees and related support systems. For the University of Dar es Salaam there is an attempt to have a collection of materials on biodiversity on an electronic database. There was concern on the failure of researchers to feed information to the relevant libraries for inclusion in the databases and collections. As a result reports on Tanzania are more easily located in Europe than in Tanzania itself.

Much of the information generated by Tanzanians on Tanzania is seldom found in international journals because most Tanzanian authors do not have a tradition to publish in international journals. As for local publications, the area is still grey since the publishing sector is still very rudimentary. Few institutions such as the University of Dar es Salaam have started their own journals, usually with the donor support and with this comes the attendant danger of continuity. Some manage to survive for a longer time while others die after producing only a couple of issues. A few positive initiatives also exist for joint publications between local institutions or authors and external partners. Accessibility of some of these publications can also be arduous because only a limited numbers have been printed overseas, the distribution is erratic and it is not rare to find only a single copy available in the whole of Tanzania.

The quality of institution based documentation centers is mixed. For the documentation centers are user-unfriendly in that very little professional input has been invested in them. For almost all these centers and even libraries, donor support has been very instrumental in putting them in their present shape. The University of Dar es Salaam Library and the Botany Department benefited from FAO support. Documentation centres or communication initiatives which receive support to distribute such publications freely or where the price is heavily subsidized have done well. These include:

- The WRDP newsletter called "Mwenzangu" which is a quarterly Swahili publication targeted to both rural and urban communities,
- The TGNP newsletter known as "Ulingo wa Jinsia" which contains articles on gender issues both in Swahili and English languages,

- TAMWA's magazine called "Sauti ya Siti" which reports on various socioeconomic and political issues with a gender focus and which is in both Swahili and English
- Others include "Mazingira Yetu" and "Misitu" published by DONET. Although these publications contain little information on gender, biodiversity and indigenous knowledge systems, they are potential distributors of such information.

Addressing communication hurdles

Attempts to address information dissemination hurdles include the use of PRA methods, action-oriented research and animation methods where acquired information is continuously shared by the research partners during the data collection process. The use of workshops, seminars, meetings, round-tables discussions, and other fora where information is shared/discussed, analyzed and internalized for development purposes is another fast means of information sharing. Nevertheless, most research budgets do not cater for dissemination fora despite their high value.

It is also true that some people are good at attending workshops/seminars but are less efficient in utilizing knowledge and skills gained from such fora. Worse still, most workshop/seminar organizers do not have a follow-up mechanism to assess the impact of these fora on intended development concerns. A challenge is therefore posed for the workshop organizers to ensure that such workshops become an in-built component of a research/development activity.

2.3 Partnership in generating and disseminating relevant information.

Information gathered from the few institutions which were visited, from individuals interviewed during the survey and from secondary sources point to the fact that although very little information exists on the linkages between gender, biodiversity and indigenous knowledge systems, a good number of individuals/institutions are interested in these issues (See Box 5).

Box 5. Institutions Interested In LinKS Agenda

Donors and international organisations:

- FINNIDA/RIPS
- DANIDA
- NORAD
- Oxfam
- SIDA/SAREC
- UN organs such as FAO, UNEP, UNICEF, UNESCO and UNDP

Research/Government institutions:

- Sokoine University of Agriculture (SUA),
- University of Dar es Salaam (especially IRA, IDS, ERB, Library, Department of Botany & Department of Zoology),
- Institute of Traditional Medicine based at the Muhimbili University College of Health Sciences (MUCHS),
- Tanzania Food and Nutrition Center (TFNC),
- Ministry of Agriculture and Cooperatives
- Ministry of Natural Resources and Tourism
- National Environmental Council (NEMC).

NGOs:

Women's Research and Documentation Programme (WRDP), University of Dar es Salaam Tanzania Gender Networking Programme (TGNP), Journalist Environmental Association of Tanzania (JET), Tanzania Women Leaders in Agriculture and Environment (TAWLAE), TAWOSTE

Ethical and practical implications

Invariably, most of these partners' activities are embedded in the mission statements, as verified by the case of NEMC. It is envisaged that collaboration with these institutions will ensure coverage of issues of research, training and documentation/ dissemination of the relevant information for various uses including awareness creation, policy design, technical support and conservation of flora and fauna.

A fear haunts some researchers as to whether the grassroots people would willingly supply information on indigenous/local knowledge systems. One way of addressing such a fear is to ensure that research is geared towards addressing peoples needs and that local peoples' contribution is given its due recognition and people's rights and knowledge are protected. There is a tendency however for local knowledge to be "captured" from grassroots people, and transformed to global knowledge without acknowledging the original owners (pirating on/and commercialization of indigenous knowledge). Hence the immediate need to address legal aspects of patenting local knowledge and intellectual property rights.

A particular need related to local knowledge is the "value adding" to such knowledge for income generation. Payment for information given/shared, as is done in formal institutions where publications are sold and instructors/information givers are paid, "value adding" is a general challenge on how local knowledge givers can benefit from their accumulated knowledge on agro-biodiversity. Examples are found elsewhere in Africa where local knowledge givers have benefited in several ways after their knowledge was applied in pharmaceutical industries. The case of preparation of the preparation of "aloe" juice for pharmaceutical purposes supports this contention (Van Vlaenderen, 1999).

Much more needs to be done to help the processes to be started in Tanzanian rural communities to enhance small scale businesses through application of local knowledge system by identifying available skills and facilities and where necessary upgrading them for this purpose. Other needs of local knowledge providers include legal protection to their right to control their knowledge systems especially where such systems are integrated into the commercial world as an effort to apply available knowledge for greater developmental utility and for income earning to alleviate poverty.

In Tanzania where the pharmaceutical industry is at an embryonic stage, local knowledge providers are not aware of the dangers of non-discretionary sharing of local knowledge. The researchers who are relatively more aware of commercial use of such information are also equally slow in questioning the current knowledge dissemination practices which do not raise issues related to "intellectual property rights" to creditable local knowledge providers. Indeed this is one of the grey areas which should form part of the future research agenda and challenges for the LinKS project.

Collaboration with CBOs, and NGOs is another useful strategy for winning the support and confidence of information givers. It is also argued by most researchers that there are "silent"/informal ways of getting grassroots people to support and share knowledge. This can be achieved by learning by observation, having an inquisitive mind, acknowledging that some groups have more knowledge than others, knowing these groups and talking to their members are just a few hints on how a confident researcher can generate useful knowledge from rural partners.

2.4 Knowledge gaps, areas for further research and the partnership challenge.

Knowledge gaps

Although there are several institutions interested and involved in agro-biodiversity (see Box 5), nevertheless there are many knowledge gaps. Local knowledge on varieties of both plants and animal species is closely related to issues of gender. To be able to determine knowledge gaps and consequently issues for further research, it is necessary to thoroughly assess available information through probing on the following issues/questions:

- (a) Who are the local keepers/managers of biodiversity

- (b) What do women and men know about positive practices and local technologies related to sustainable use and management of agro-biodiversity
- (c) What influence women and men's ability to manage agro-biodiversity'.
- (d) What were the traditional mechanisms used in the past for collecting, packaging and disseminating local knowledge for addressing issues of food security.

From the information gathered from the April-May baseline study suffices to make some preliminary opinions, a modest assessment of the 'content' of knowledge gaps:

(i) Research done on agro-biodiversity components

Plant species

Information gathered from baseline study shows that more research has been done on varieties of plant (including seaweeds) than on animal species. This is partly explained by the fact that a substantial number of projects have been initiated on source of energy, exploitation of forest products, knowledge on vegetables, and fruits, general issues on environment including soil conservation, and the traditional medicine sector. As far as the linkage between energy sources/ forestry activities and indigenous knowledge systems is concerned, at least 35 studies conducted in Tanzania were assessed during the baseline study (Box 6).

Box 6. Examples of studies on local knowledge in Tanzania

- Traditional methods of preserving local vegetables and fruits (TFNC, MCDWAC, UDSM etc)
- Local technologies in production, processing, utilization and marketing of crops and vegetables (TFNC, TAWLAE, UDSM)
- Indigenous soil conservation practices (UDSM, SUA)
- Traditional/Local structures for food storage facilities and methods of food preservation (TFNC, TAWLAE, UDSM).
- Traditional techniques for preparation of weaning foods (Kimea) (TFNC)
- Traditional diets (including togwa) and nutrients' content (TFNC)
- Level of Community awareness on biodiversity values (TFNC, UDSM, SUA, ME&T MOA&C, Several NGOs, etc.)
- Indigenous knowledge on tree and shrub species and their use (UDSM, SUA, NGOS)
- Knowledge on local indigenous trees and herbs useful for medicinal use (ITM, NGOs, MoE&T, etc)
- List of plants used by traditional healers (REPOA, UDSM, ITM, etc)
- List of fauna and flora resources and implication on environmental and related policies (individual researchers etc.)
- Issues of access and dependence on forest and tree products in relation to household food security (UDSM, MONR&T, NGOs, SUA, etc.)
- Forest products as source of firewood and medicine (MoNR&T, SUA, UDSM, NGOs, etc)
- Impact of forest activities on food security and identification of plant species (wild fruits and vegetables in tropical countries including Tanzania) (MoA&C, NGOs, UDSM, etc)
- Deforestation and impact on household food security and agro-forestry initiatives (MoNR&T, NGOs, UDSM, SUA etc.)

Most of the information gathered on the above-mentioned aspects is basically gender insensitive except for very few cases which will be highlighted shortly. Most of these studies were case-studies, hence the small geographical coverage. The University of Dar es Salaam (especially the department of Botany), TPRI and the Institute of Traditional Medicine have done various scientific researches on agro-biodiversity with bias on botanical characteristics, an area which is very useful for addressing the "value-added" component of local knowledge systems.

Animal Species

Information on the relationship between animal species and local knowledge systems is scanty These are mainly concerned with issues on:

- Small animal stock keeping
- Indigenous/local knowledge on shrubs and tree species for veterinary purposes.

As with plant species, very little was said on the gender aspect. Besides, the geographical coverage was even more limited and was almost confined to pastoralist communities. At the above mentioned workshops in June 1999, participants expressed their concern on this marginality, which is said to have drastic effects on the livestock sector. Therefore, a number of recommendations to this effect were proposed as highlighted in section 0 below

(ii) Research on the gender dimension of agro-biodiversity

This is one of the areas that received minimal attention in previous research activities. Information from the baseline study mentioned above shows that less than ten references were more articulate on the linkage between gender and local knowledge systems. See Box 7 for more details.

Box 7. The gender dimension of agro-biodiversity and local knowledge systems

Some of the areas covered, aspects highlighted, and conclusions made in research activities in Tanzania include:

- Appreciation of women as main care-takers of agro-biodiversity
- Differing needs of women and men with respect to agro-biodiversity as influenced by gender roles stereotyping
- Gendered roles in gathering of wild animals, fruits, leafy vegetables and wild foods.
- Issues on women and men's roles/workload
- Women empowerment in relation to forest and environmental activities
- Women marginalization in decision-making processes in planning and management of rural projects' geared towards agro-biodiversity management;
- Women's work patterns in relation to the use of both local and modern technology.
- The prominence of women's role in procurement and management of energy resources.
- Women's abundant knowledge on food processing, preservation and storage in relation to household food security and marketing of food.
- Women's role in fish production, processing and marketing.
- Women's role in commercial mushroom and seaweed production at small scale level.

Conclusions proposed in studies conducted so far on gender, biodiversity and indigenous knowledge systems include:

- That most forest products directly related to household food security (collection of wild vegetables and fruits) are collected by women while those associated to cash earning are a "man's domain"
- That most foresters (forest professionals) are men (Koda 1994, Koda & Mukangara, 1997) and that most forest programmes are organized and managed by men even where women provide the bulk of the labour force e.g. in tree planting activities
- That women are the main custodians of agro-biodiversity
- That the type of training offered in schools and the value systems promoted there-in tend to downgrade the importance of women's local knowledge. A good example is knowledge on "inter-cropping" and "transplanting" which tends to be more practised by women but which was considered unprofessional in the teaching of agricultural sciences in Tanzania in the past. It is only recently that this agro-related science is being re-introduced to farmers (personal interviews with agricultural experts in May, 1999).

Another often cited example is the use of local knowledge for food preservation such as banana drying and preservation, whose marginalization has resulted into abandonment of banana preservation as a coping strategy for food security. Consequently, huge losses of bananas and hence food insecurity has

been noted amidst abundant harvests. This reiterates the fact that policy makers, planners and educationists marginalize women's local knowledge systems during decision-making on development issues.

Much efforts were made to articulate these issues in relation to gender, agro-biodiversity and local knowledge systems, the connections between the three variables as portrayed by contemporary researchers still leaves a lot to be desired. The main focus on gender issues for instance was in relation to women's role in the collection of wild vegetables and food processing/preservation and storage. But even here very few case studies were cited to validate the implied connection between women's knowledge systems and agro-biodiversity.

There are also other pertinent areas with respect to local knowledge systems which are yet to be addressed. Little is known for instance on the level of security over control of property such as land, natural forests and other natural resources which women and men use to perform their gender-based roles in agro-biodiversity management. More information is also needed on the dynamics involved in addressing women and men's conflicting interests arising from the gender roles stereotyping as it relates to agro-biodiversity management and household food security. This has to be juxtaposed with issues of copyrights, patents, intellectual property rights and the policy framework for protection of providers of local knowledge systems. This therefore calls for evaluation of both the policy and legal frameworks put in place in Tanzania on issues of gender, agro-biodiversity and local knowledge systems, an area which is beyond the scope of this report.

Areas for further research

Based on the literature review, there is no doubt that very few studies on gendered information on the issue of agro-biodiversity and local knowledge systems in Tanzania. Qualitative data from interviews held with individuals from institutions visited during the baseline study and the input from the two June (1999) workshops point to several limitations which have either caused or aggravated the noted gendered information gap. These include:

- (i) Little conceptual knowledge and analytical skills on gender and more so on the symbiotic relationship between gender, agro-biodiversity and local knowledge systems. This situation is aggravated by the fact that most researchers pay little attention to the multi-disciplinary nature of research on agro-biodiversity management and food security. Most professional disciplines which are "inward" rather than "outward" looking in that experts in each discipline such as botany, zoology, chemistry, economics and sociology work on their own without involving research partners (such as gender specialists). This imbalance could be addressed by forming multi-disciplinary research teams such as the case of the research project implemented at the University of Dar es Salaam etc. In the Rural Food Security project based at IDS economists, political scientists, sociologists and educationists have teamed to work together.
- (ii) The general lack of awareness among researchers on how to articulate the gender dimension of their research themes. This gender-insensitivity is partly attributable to cultural values promoted in both informal and formal socialization processes. Women and their knowledge systems are accorded inferior position in society. Since indigenous/local knowledge systems as a whole were considered inferior by the formal schooling curriculum, women's knowledge systems suffered double marginalization. During the 1970s for instance, research on women's knowledge systems was considered non-academic/non-professional even by social science faculties at the University of Dar es Salaam.
- (iii) Limited policy framework for dissemination of indigenous knowledge systems in schools and colleges. There is a need for guidelines on the contents/syllabi for subjects taught in schools.

- (iv) A general lack of workable institutional policies on dissemination/ sharing of research findings and information collected from consultancy work (absence of a sound and implementable library policy). Indeed, there is a regulation which obliges researchers to deposit copies of their research/ consultancy reports in public libraries but like many other laws, there is little enforcement. There is need to revisit and streamline this law in relation to the manner in which consultancy/research reports on local knowledge systems should be disseminated with emphasis on the concern on intellectual property rights.
- (v) There are very few NGOs/CBOs dealing with gender and biodiversity issues. Both NGOs and CBOs are addressing issue on gender, agro-biodiversity and local knowledge systems in a very limited manner. (See Box 8).
- (vi) Most research institutions allocate very small budgets for research Activities. There is inadequate capacity in terms of funds, material resources (computers, office-space etc.) and researchers and policy makers are ill-equipped with gender analytical knowledge and skills for assessing local knowledge and agro-biodiversity issues.

Box 8. Research on Gender Issues at the University of Dar es Salaam

There are at least six research groups addressing gender issues in research at UDSM. These include TAWOSTE, IDSWG, WRDP, MEWATA, TRHG, WED and SWAAT. However, although the main focus of their research is gender analysis, their concentration has been confined to the generally mainstreamed subjects such as politics, economics, health, education, agriculture, and environment but not in local knowledge systems per se. Invariably, focus on local knowledge systems and biodiversity is still missing in their research and analytical work and this also applies to the work of other NGOs such as JET, TAWLAE, TAWLA, TAMWA and TGNP. Failure to address the multiplicity of gender issues in local knowledge systems and biodiversity is not just a matter of lack of research funds but rather a function of limited conceptual framework on the inter-relationships involved as well as the needed push/ motivation, to adopt such a framework in their research activities. Introducing a specific project on gender, agro-biodiversity and local knowledge systems would definitely stimulate such an interest/motivation.

As noted in the definition of local knowledge systems existence of a democratic dissemination mechanism and media is a major factor in sharing information on agro-biodiversity management and concerns on food security. Implicit in this report are three types of groups targeted for information dissemination.

- (a) **Individual Partners:** These need to know both the research agenda and the research findings. Accessing the generated information either for further re-packaging to ensure wider dissemination or for immediate use in planning their development interventions is a felt need by this target group.
- (b) **Advocacy level** (groups) where available information could be repackaged, disseminated and used for advocacy on rights, policy changes and legal reforms on agro-biodiversity management and food security.
- (c) **Mass level** where there are more consumers of information and where challenges for developing alternative media (popular media) need to be stimulated and addressed. Advocacy on issues of property rights/copy rights on local knowledge systems could also

Specific Areas for Further Research

Several heads of institutions interviewed during the baseline study mentioned earlier, that the area of gender, agro-biodiversity and indigenous knowledge systems in its perceived connectedness, as highlighted in the project document, is not only new but also calls for a well grounded conceptual framework. The need for more research and analysis on issues of gender, biodiversity and indigenous knowledge systems is therefore widely acknowledged by the research community, policy makers,

advocates of food security and human rights and experts on rural development and environmental issues. A national picture can emerge by broadening the analysis, showing symbiotic linkages between the three issues of concern as well as expanding the geographical coverage. At the workshop held in Morogoro, a number of specific areas were considered important for further research (see Box 9).

Box 9. Areas for further research: Recommendations from workshop in Morogoro, 22-23 June 1999

- Analysis of socioeconomic and political factors which have led to erosion and/or marginalization of local knowledge systems and their institutions;
- Impact of AIDS on local knowledge systems;
- Impact of Structural Adjustment Programmes on local knowledge systems;
- The erosion of traditional social systems (community socialization of children and youth, respect to old people, traditional structures/institutions/media for knowledge dissemination) and impact on local knowledge systems.
- Modalities for "adding value" to local knowledge for entrepreneurship development (commodity production)
- packaging and re-packaging local knowledge for use in production of pharmaceutical drinks and other commodities, etc.
- market assessments for such commodities
- Review and assess existing policies and laws with respect to property rights on issues on local knowledge systems.
- Different power relations between local knowledge systems and the so-called modern knowledge systems.
- Household based and gendered power relations over local knowledge systems.

These are just few examples of research areas which could be addressed together with areas already started e.g. on livestock, agricultural promotion and environmental protection and management.

2.5 Proposed mechanism for sharing existing information and literature on gender, agro-biodiversity and local knowledge systems

Existing mechanisms for dissemination of information on gender, agro-biodiversity and indigenous knowledge systems are not only underdeveloped but are also largely user-unfriendly. As yet, there is no serious attempt to systematize the collection and storage of reports, papers, publications and other forms of records on this subject matter. Of-course occasional and adhocly organized workshops/meetings, round-table discussions and electronic media announcements have been organized as useful dissemination strategies but their impact has been minimal due to small coverage in terms of content and audience.

Sharing information especially with grassroots people is even more curtailed by the issue of language used in packaged materials. The use of Swahili and even local (ethnic) languages is a necessary factor for information dissemination to non-English speakers who are the majority in Tanzania. As noted earlier also, the use of PRA research methods and the traditional media is acknowledged as a mechanism for information sharing, but which is still very much underutilized. Currently the liberalized publishing business has to a limited extent helped matters.

A new mechanism for sharing of information on gendered local knowledge systems is therefore needed to address these and related limitations. The task in setting up this mechanism is however simplified by opportunities offered by available/advanced information technology, the use of which is gaining popularity among research institutions, government ministries and the NGO community. This include the use of e-mails and internet. An added advantage is the increasing acknowledgement by both researchers and the donor community (as verified by the LinKS) project) of the key role played by local

knowledge systems in agro-biodiversity management and rural development. Nevertheless, communities need to be motivated and assured of gainful returns so as to win their active participation and commitment in sharing their local knowledge with other development partners. Box 10 gives an idea of the range of activities that could be carried out.

Box 10. Some Important Activities For Sharing Information

The following activities are proposed:

- Develop training packages on the linkage between gender, agro-biodiversity and local knowledge systems for different target groups highlighted in this report.
- Initiating training/sensitization programmes on gender, agro-biodiversity and local knowledge systems.
- Establish a central data bank/unit on institutions, individuals, networks and materials on local knowledge systems, agro-biodiversity and gender.
- Initiate a national & sustainable journal/publication on gender, agro-biodiversity and local knowledge systems
- Advocating for laws/policies on protection of rights of givers/bearers/managers of local knowledge systems.
- Establishing a national network on gender, biodiversity and local knowledge systems (probably through the LinKS project).
- Preparing/Publishing & disseminating an annotated bibliography (with national and regional coverage) on gender, agro-biodiversity and local knowledge systems (probably under the LinKS project).
- Promotion of small scale (local based) pharmaceutical and related enterprises with the aim of "adding value" to local knowledge and providing incomes to appropriate knowledge providers.

This calls for initiation of pilot projects addressing issues of development of appropriate technologies with farmers for the same purpose, joint priority setting with the government and farmers and actual production of commodities at rural-based small scale level. To some extent also this would act as an incentive for more sharing of local knowledge systems.

- Publicize existing laws/conventions on local knowledge systems (if any) and intellectual property rights.
- Lobbying and advocating for establishment of by-laws at local level on biodiversity management.
- Propagating for the use of traditional media (stories, songs, riddles, etc) in disseminating information on local knowledge systems.
- Enhancing/strengthening existing information dissemination channels/networks.

3 CONCLUSION

Previous sections of this report have shown that information gathering and dissemination and hence networking on issues of gender, agro-biodiversity and indigenous knowledge systems has tended to be limited in Tanzania. Few attempts made to articulate the relationship between these three variables have also been inadequate both in terms of content (addressing the pertinent issues involved) and the geographical coverage, despite an increasing number of interested partners. Limited knowledge and analytical skills in articulating and problematizing inherent relationships between these three variables is considered a major stumbling block. Little appreciation of the important role played by both local knowledge systems and gender analysis in planning and policy designing has also been noted as a factor which made this venture even more difficult.

The challenge to come up with a research agenda and related approach which ensures adequate linkages between gender, agro-biodiversity and local knowledge systems therefore need to be addressed. This will not only promote local knowledge systems but also assist in creating a new perspective to agro-biodiversity management.