

REVISITING PLANT GENETIC RESOURCE NETWORKS IN SUB-SAHARAN AFRICA REGIONS

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Abstract

Two agrobiodiversity networks in Sub-Saharan Africa region are analyzed. The networks are Eastern African Plant Genetic Resources Network (EAPG REN) and the SADC Plant Genetic Resources Network (SADC PGR Network). The two networks are based on different models centralized hub and spokes model for SADC PGR Network and decentralized for EAPGREN. The SADC PGR Network is ultimately answerable to the Council of Ministers of SADC through the SADC secretariat while EAPGREN is answerable to the ASARECA Committee of Directors through its secretariat. The set up of SADC PGR Network has encouraged long-term funding strategy and visibility in regional and international initiatives. EAPGREN has no acknowledged long-term funding strategy and impact on regional agenda has been limited. These networks have had remarkable scientific and capacity building achievements as well as scientific delivery to their member countries. About 85% of the member countries have operational genebanks while the rest are steadily moving towards this target. The main challenges remain the need for stronger linkages with agrobiodiversity users and spreading out the workload through closer working relations with a wider range of organizations.

Introduction

The purpose of this paper is to highlight the current situation in two sub-regional Plant Genetic Resources (PGR) networks in the Sub-Saharan Africa region (SSA) in order to stimulate further discussions and actions that could improve their efficiency and effectiveness. The two networks are the SADC Plant Genetic Resources Network (SADC

PGR Network) and East African Plant Genetic Resources Network (EAPGREN). The paper was prompted by the felt need to have more tangible results from the two networks and become more effective in mobilizing partnerships in the management and use of plant genetic resources in the sub-regions. The paper has been developed through personal experiences, desk search and contacts with individuals.

Definition

"Networking" can be considered as a *process that creates informal or formal connections among stakeholders leading to two-way transfer of information, delivery of services or materials and cooperation with the aim of achieving common goals*. During analysis of existing networks on plant genetic resources for food and agriculture, Kalaugher, and Visser (2002) indicated that the term "network" can refer to a wide range of different arrangements. The common characteristics that emerged from a range of definitions for networks addressing PGR issues were summarized as:

- voluntary membership
- common goals that address a complex problem better solved by more than one individual or institute
- two-way exchange of research results, materials, information, and/or technologies
- participatory management
- benefits to members from collaboration

Types of Networks

Hovland, (2003) suggested that types of networks in use range from email discussion lists, electronic research networks and regional research networks through policy networks and advocacy coalitions to dispersed organizational teams or inter-

organizational partnerships. Networks may, therefore, be made of individuals, institutions, countries, or regions. Networks can be independent or dependent on specific institutions, organizations or government. Independent networks normally have very strong internal linkages thus relying mainly on members to provide leadership and funding. Dependent' networks normally get their driving force from the supporting institutions, organizations or governments and tend to obtain funding from external sources. Kalaugher and Visser (2002) classified and discussed in detail five plant genetic resources related networks (i.e. regional, sub-regional, crop-based, *in-situ* oriented and thematic networks).

Benefits of networks

Potentially, networks have many benefits (Spillane et. *al.*, 1999; Zehender, 2000; Engels, 200 I, Grum, M. 200 I; Hall, 2002; Hovland, 2003) the most benefits significant being:

- pooling of resources for improved effectiveness and reduced duplication of efforts,
- distribution of information, exchange of experience between organizations,
- accessing decentralized and lesser publicized knowledge and materials,
- simultaneous promotion of several organizations,
- clarifying own objectives and stimulating new ideas,
- fostering trust and transparency,
- meeting a greater diversity of member needs through coordination, use of each others' specialized services,
- maintaining broad strategic awareness among members;

- stimulating a participatory learning process and strengthening capacities,
- fostering creativity and risk taking by removing members from institutional limitations,
- boosting resource challenged members.

How can a network work effectively for its members?

There are many ways in which networks can achieve their goals effectively. Essentially, an effective network will have a defined membership with a shared vision and will work towards its goal with good governance; deliver services and materials for the benefit of its members through collective decisions and joint projects and sustain itself if all members meet their obligations and support each other. In many cases, however, networks need external support to be able to operate at the desired pace. Sustainability of a network depends on a number of factors such as the driving force to its establishment, sources of funds, strength of internal and external linkages, equity. Lack of resources is likely to undermine the willingness/ability to cooperate with representatives of other institutions. Strong internal linkages imply positive control by the members whereas external linkages affect the level of dependency and growth opportunities. It is therefore important to have a good balance of internal and external linkages.

Good governance of a network is vital to the life of a network and more so if it has diversified membership that may have problems in indecision making. Similarly, a network may have conservative orientation, limiting growth, because of prior agreements or limited diversity among its members. In both cases, it is important for leaders of networks to have a high degree of professional knowledge, diplomatic skills as well as persuasive power. Transparent decision making process coupled with free flow of

information enhances the process of making decisions objectively and trust among its members.

Potential drawbacks of networks have been discussed by several authors (Zehender, 2000; Engels, 2001; Grum, M. 2001; Hovland, 2003 and Watts, 2004). The most important drawbacks include high costs of coordination, poorly articulated goals, poorly defined responsibilities and domination by stronger members or donors.

Indicators for success in a network

Visser and Smolders (2002) analyzed the effectiveness of PGR related networks on the basis of their objectives, type of activities, outputs, training, organization, source of funding, ownership of network, internal resources and internal communication. Watts (2004) discussed the framework for assessing success in a network on the basis of impact, outcome and operations and suggested that successful networks pay attention to communication, coordination, external resources, membership and programs. These attributes have been considered in this paper.

Characteristics of SADC PGR Network and EAPGREN

Initiation

The SADC Network comprises of National Plant Genetic Resources Centres (NPGRCs) in all member states and a regional centre - the SADC Plant Genetic Resources Centre (SPGRC). SPGRC itself was initiated in 1989 following the establishment of the Regional Program on plant genetic resources conservation under the then Southern African Centre for Cooperation in Agricultural and Natural Resources Research and Training (SACCAR). The major thrust of the program was the establishment of the SPGRC to hold the base collection and coordinate a network of

NPGRCs in all the SADC member countries. Each member country established its own NPGRC as desired to meet local conditions. Bioversity International (by then IBPGR) played a major role in supporting the process by providing technical and scientific advice at various levels.

EAPGREN was established in 2003 under the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), partly, as a collaborative effort of the founding members to the implementation of the Global Plan of Action for the conservation and sustainable use of plant genetic resources for food and agriculture in the region. Again Bioversity International (by then IPGRI) played a major role in supporting the process by providing technical and scientific advice at various levels and coordinated the network in the early days.

Mission

Although initiated at different times, the two networks have fairly similar missions whose ultimate focus is to contribute to the sustainable agricultural development by ensuring food security, improved health, and socio-economic advancement of the rural communities through sustainable use of the diversity of their plant genetic resources. To achieve this mission the networks will need to promote an efficient and well coordinated and functional with capacity and capability to articulate strategies and implement priority action plans addressing issues of agrobiodiversity assembly, preservation and promotion of sustainable utilization.

Membership

Considering that these networks have been to a large extent superimposed on existing geopolitical groupings of countries, then their membership reflect original

geopolitical alignments. In this respect, the SADC PGR Network membership consists of the twelve SADC member countries namely Angola, Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe; EAPGREN is unique in that it was initiated as an additional network under ASARECA. EAPGREN has a membership of eight countries namely Burundi, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan and Uganda.

Funding

The funding of the two networks can be viewed from the national (country) level and the subregional (network). At country level, on one end of the spectrum, well defined budgets for the national agrobiodiversity programs that provide specifically for:

- (a) physical facilities (like laboratories, genebanks, fields, offices, transport and others)
- (b) highly trained scientists and supporting technical staff have been allocated in some countries.

On the other end of the spectrum, there are some countries that have no specific budgets for agrobiodiversity programs although the relevant activities are "hidden" within other national programs. In such countries PGR programs lack the visibility. In both cases funding is being provided by or through the national governments but the level of commitment and sustainability is relatively higher in the first case where agrobiodiversity programs are distinct than in the latter case.

At regional level, the funding situation is a factor of various scenarios that led to the initiation and establishment of the network; such as existing sub-regional geopolitical template and agreements reached and endorsed by the member countries at the on-set of the network and the major donors to the network. In this regard, despite the fact that the two networks started as donor supported projects with full funding, the SADC PGR

Network stands out currently as a network with a well articulated exit plan. SADC governments made a twenty-year agreement Nordic countries as a group to support SADC PGR Network whereby the donor contributions would be sustained at same level for the first ten years followed by a ten years decline from 100% to zero at a rate of 10% annually; while the sub-region through member country contributions would increase from zero to 100% at a rate of 10% annually. This arrangement which has been successfully implemented has guaranteed a continuous funding to the network. In the case of EAPGREN a similar arrangement has not been articulated even though the same major donors are supporting the network.

Management

The success of the network will generally be assessed on the impact it has at the member country level through the facilitation and technical guidance in the implementation of the various scientific and policy thematic components, resources mobilization and linkages. The networks management therefore encompasses the governance, scientific aspects and partnership issues. The importance of well structured hierarchy that is answerable to the regional authority acting on behalf of the member countries is crucial for the network to be seen to be responding to regional priorities being implemented by the member countries. In this regard, SADC PGR Network, as a sub-regional institution responsible for agrobiodiversity matters, responds to the SADC Secretariat through the directorate of Food, Agriculture and Natural Resources. The SADC Secretariat has the responsibility of interpreting political decisions for implementation and reports back to the respective governments directly and through higher level meetings at the Sub-Regional Summit. This arrangement also provides a

forum for collective decision making and representation at intergovernmental forums such as the FAO Commission on Plant Genetic Resources for Food and Agriculture (CGRFA) and in the Convention on Biological Diversity (CBD) Conference of Parties. This mechanism of collaboration has been refined by the SADC PGR Network where annual planning meetings are organized for key scientific staff to discuss, among others, issues that require political support. The SADC PGR Network has a board which approves these decisions and makes the necessary recommendations to the SADC Secretariat. Hence all major decisions that require political support are well discussed at home and in the network. This arrangement has given SADC member states coherence in negotiations at regional and global level as it was evident during the negotiations of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

In contrast, ASARECA brings together government decision makers at the level of Directors as members of its Board. However, the operative body for EAPGREN is the steering Committee, whose members are key persons involved in PGR programs in the member countries. There is no formal mechanism for moving sub-regional decisions to higher levels and EAPGREN has not yet fully taken advantage of the governments' presence in ASARECA to make decision on common positions on global issues.

On a day to day basis, the Director of SPGRC and 'Coordinator of EAPGREN run the networks and together with scientific staff or backstopping institutions they have the responsibility of the preparation of regional strategies and overseeing their implementation in addition to searching for funds. They are also the spokesperson of the network. For the purpose of collective decision making they facilitate both management and technical network meetings on annual basis or as needs arise.

Scientific and Capacity Building Issues

Individual scientists working on PGR contribute to the network through the National Plant Genetic Resources programs, the national genebanks and research institutions or as consultants across the network. In EAPGREN, individual scientists also have access to competitive funding mechanisms under ASARECA for specific thematic research areas. Thanks to the donor support, human resources development by the two networks is provided in a well planned program through a range of approaches such as through regional and country based training on specific priorities, individual specialized training at centers of excellence and postgraduate training in relevant scientific disciplines at specific universities.

Discussion

Strengths and Weaknesses

The continued membership by the founder countries and financial contributions as exemplified by the SADC PGR Network countries is a clear indicator of commitment to sustaining the network. Although EAPGREN is at an early formative stage, other indicators such as consistent annual technical meetings where work plans and achievements are discussed are a clear indication of focused network. In both cases, the member countries enjoy equitable benefits irrespective of their sizes. Whereas the scientific staff recruitment at the networks' secretariat is on competitive basis from the respective covered by the network, the member countries have the responsibility in regard to their PGR programs or genebanks. This, generally, results in a situation where

some countries have stronger and more qualified staff and hence enjoy a technical advantage in exploiting the opportunities available through the network. In order to address this discrepancy, scientists from SADC PGR Network provide the necessary scientific backstopping to weaker member countries. A similar arrangement is in place within EAPGREN where scientific backstopping is provided through a Memorandum of Understanding (MOU) with Bioversity International.

Promotion of germ plasm utilization still remains weak and hence the link between these two networks with other relevant networks particularly to commodity crop and thematic networks and non-governmental organizations are generally weak. Even where all the networks happen to be under same management as in the case of those. Under ASARECA, there is no clear evidence active collaboration among them. The SADC PGR Network has made attempts to work with NGOs at community level as well as with international agricultural commodity research centers in the region; however, such attempts are *ad hoc* and limited.

The sub regional agro-biodiversity networks seem to lean more towards influencing the national genebanks as evidenced by participants of major network meetings as well as partners in the day to day activities. While there are strong reasons for various thematic and crop specific networks to exist, it is also clear that the sphere of focus of the agro-biodiversity networks is more towards those networks and institutions interested in conservation and much less to those with direct effects on livelihood strategies as well as other users of genetic resources. There are no obvious or formal linkages between crops based networks and regional agro-biodiversity networks in Eastern and Southern Africa. This is a challenge that needs to be addressed by both

networks. In addition in Eastern Africa there is no clear way of moving issues from scientific fora in EAPGREN to geopolitical bodies. It is therefore difficult for EAPGREN as a genetic resources body to respond to global issues where strength and efficacy is dependent on strong sub-regional political goodwill.

Sustainability

Three elements needed for sustainability of plant genetic resources programs i.e. resources, high quality results and voice of beneficiaries. The three elements can be brought together if governments are fully aware of the importance of the network activities to the scientific world as well as the political arena. Opening up of joint research activities at sub-regional level exposes the strengths and weaknesses of network members, especially the smaller ones with possible positive effects if they exploit the opportunity availed to them through the sub-regional network. However, negative effects may occur if nationalistic tendencies are not well managed. Network coordinators, therefore, need to be skillful to demonstrate to governments how they fit in the development agenda and very diplomatic to encourage internal sources of funding as much as possible. Further, network coordinators and scientists have the burden of delivering and publicizing high quality results in order to convince beneficiaries of the networks. The mode for sharing the opportunities and costs should be agreed upon at an early stage with beneficiaries since the needs and financial capacities vary in time and between the network members. The SADC PGR Network case has demonstrated the value of making firm prior agreements on financial matters.

These networks rely heavily on national partners particularly the National Genebanks which also happen to be the focal centers for other relevant national and

international initiatives including the CBD, The Global Plan of Action for the conservation and sustainable use of plant genetic resources for food and agriculture (GPA), the ITPGRFA and managing Material Transfer Agreements. The staff profile of National Genebanks is generally thin when compared to the diversity and number of tasks that they have to do with partners. Various country reports have reported this problem (Engels *et al.* 2001). Further, genebank personnel are generally exposed to a broad range of experiences that make them highly adaptable to different job demands. As a result the turnover from genebanks in some national partners is very high. The Curators of national genebanks are therefore constantly under pressure that sometimes leads to reduced output in networks and other partnerships. This situation may have strong effect a decentralized network like EAPGREN than a centralized network because a centralized network like SADC PGR Network has core staff dedicated to network activities. The need for addressing partnership levels within the networks and between in-country programs is therefore evident. Curators of national genebanks will very likely be more efficient if they had sufficient grip of the network activities without losing sight of the other partners who by design must continue to work in collaboration with the genebanks.

Are These Networks a Success?

Based on the criteria outlined by Watts in 2004, both networks ensure smooth and transparent flow of information among the members and the outside world through regular meetings of the steering committee or the board. EAPGREN has developed a strategic plan (Kamau and Abebe, 2004) which has helped the steering committee to guide development of the network. Similarly the SADC PGR Network has plan of operation (Anonymous, 1989) implemented in phases and in addition, conducts annual

planning meetings and regularly produces in print a semi-annual newsletter, annual reports and occasionally other forms publications. The network also has a web portal that opens more horizons to access to information including information on the germ plasm collections in their own database (SDIS). External Reviews are conducted in every phase of funding from the current major donor in both networks. These reviews have given the networks opportunities to demonstrate their ability to keep the course of the agreed plan as well as respond to global changes in policies, science and technology.

In terms of coordination the SADC PGR Network planning meetings enhance the efficiency and commitment to complete activities on time. Since in both networks members differ in their capability and budget allocation, differences are bound to occur in relation to implementations. For example the use of the materials maintained by the networks by breeders and others is still low and has been a concern to in the SADC PGR Network (documented in an in-depth review report done in 2005). However, it is clear that decisions made in the network are respected by all and each member state takes steps towards their implementation. Growth in number of activities and quality of results is relatively good thanks to the short and long training courses conducted regularly for both networks through the Nordic Genebank and other institutions. Creativity is also growing among scientists, depending on the availability of financial and technical resources, especially in field methodologies and use of modern technologies.

Conclusions

The two networks have unique characteristics associated with the geo-political environment in which they operate. The strength and direction which they have taken has been influenced by the level of decision makers of the parent organizations. Whereas in

SADC the driving force is derived from political machinery, in the ASARECA sub-region the driving force is derived from scientific leaders.

The relationship between sub-regional level networks and the key players in PGR management appears to be strong with genebanks. However, exchange of information and materials with crop specific networks and thematic networks needs improvement. The sub-regional networks need to ensure more contact with thematic and crop specific networks in the region to have more direct effects on livelihood strategies.

The model used by SADC creates strong ownership of the network by the member states, information flow is good and governments have sufficient touch with the network activities. The model used by ASARECA while being very helpful to circumvent political differences also leaves a gap where political support might be needed at a sub-regional level. However, the EAPGREN has the opportunity for its members to access facilities and use the services of network members who already have comparative advantage in terms of facilities and human resources without the need of creating separate facilities.

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