



Proceedings of an international Workshop:

**Strengthening policy and
institutional frameworks for
conservation and sustainable
use of Plant Genetic Resources
(PGR):**

**National Programmes and Networks
as Strategic Tools**

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Foreword

Since 1999 DSE/ZEL and IPGRI have joined their resources to organise workshops that address the strengthening of national and regional policy and institution frameworks in Sub-Saharan Africa, West and Central Africa and East Africa that are relevant for sustainable use, exchange and conservation of plant genetic resources.

Whenever relevant and possible also the Food and Agricultural Organisation (FAO) participated and provided resource persons or information to the workshops in view of the fact that nations world-wide have signed and ratified international agreements to implement measures for the sustainable use, exchange and conservation of plant genetic diversity, thus demonstrating their willingness to allocate resources towards that aim.

Policy and institutional frameworks might be in place, but performance at the management and legal level has to be further developed, therefore this workshop brought participants from Eastern African countries together to exchange experiences, to acquire additional knowledge and to develop new skills that can contribute to the effective and efficient operation of the newly established regional EAPGREN network.

DSE/ZEL and IPGRI like to thank the participants and resource persons to their dedication and endurance and, thus, to make this workshop a great success.

Dr. Jan Engels

Ms. Barbara Krause

Executive Summary

Promoting the development of an East African Network on Plant Genetic Resources (EAPGREN) was the main objective of the international workshop held in Zschortau, Germany, in October 2002.

The workshop aimed at contributing to the strengthening of the national level political and institution framework for the effective and sustainable use, exchange and conservation of plant genetic resources within countries of East Africa.

The Director of ZEL training centre welcomed the participants and underscored the importance of addressing issues of teaming up, co-ordinating, networking, reaching agreements and building ownership. He stressed that these issues are important to good governance, linking it creatively to sustainable use, exchange and conservation of plant genetic resources.

The workshop offered an appropriate occasion to present the example of a European network, 22 years after its formal establishment. A historical review of the European Cooperative Programme for Crop Genetic Resources Networks (ECP/GR), a description of its current organizational structure and a summary of the main outputs delivered by the programme were presented, with analysis of the programme's strengths, weaknesses and future perspectives.

It was hoped that the European experience could serve as an inspiration for the foundation of EAPGREN. Although ECP/GR developed in a different context compared to the current situation of East Africa, the overall experience of ECP/GR could offer a useful basis of comparison with EAPGREN, especially as the two networks share the general objective of improving plant genetic resources conservation and use in their respective regions.

The importance of EAPGREN's contribution to better conservation and utilisation of PGR in Eastern Africa was enumerated as:

- Providing a forum for exchange of information, scientific knowledge and experiences among member countries.
- Enhancing the capacity for research with a view to adding value to germplasm and advancing scientific knowledge on plant genetic resources conservation and use.
- Training cadres of highly skilled plant genetic resources specialists in the region.
- Collection and complementary conservation of germplasm important for agricultural production and healthcare.
- Supporting the development of operational national plant genetic resources networks
- Documenting plant genetic resources materials and activities in the region.
- Strengthening the linkages between plant genetic resources conservation and utilisation with particular emphasis on community based user groups.
- Providing a forum for exchanging plant genetic resources material for mutual benefit among member countries.
- Adding value to plant genetic resources work in the member countries, the region and among ASARECA networks due to its crosscutting nature.
- Ensuring gender equity and recognizing the roles played by different gender in plant genetic resources conservation and use, paying particular attention to involvement of women who are the major custodians of plant genetic resources at the smallholder production level.

A framework was proposed against which the success or failure of networks for use, exchange and conservation of plant genetic resources can be assessed. Since the EAPGREN network is in its formative stage and this workshop aims to strengthen it, the introduction and adoption of such a framework by the network is timely.

This initiative to establish a plant genetic resources network for Eastern Africa is a direct follow-up on gaps and needs as identified in the Global Plan of Action (GPA). In the discussions towards the establishment of a formal network on plant genetic resources for the region, it is fully recognised that countries of the region share common ecologies and threats to their plant genetic resources. Plant species and communities spread across their borders. The countries have limited financial and trained personnel for PGR activities. Some countries have already developed technical expertise and infrastructure that could be used for the common good of the region.

Country reports were presented on Burundi, Ethiopia, Eritrea, Kenya, Madagascar, Rwanda, Tanzania and Uganda.

A mechanism for sustaining the network and its activities beyond the initial phase that is supported by Sida was discussed. This may be in form of country contributions and/or establishment of an endowment fund. The NARS need to mobilize more national resources for development of national plant genetic resource networks and subsequent implementation of the activities.

Using guidelines prepared by IPGRI and FAO to enhance the involvement of stakeholders in national programmes for Plant Genetic Resources for Food and Agriculture (PGRFA), with the broader aim of helping countries to implement the GPA, the workshop was taken through a sequence of five steps suggested to assist national focal points to design and carry out a stakeholder involvement process. The importance of indicators of national programme success was discussed and the framework for assessing network success.

The government, focal points of various international conventions (e.g. the Convention on Biological Diversity) gene bank curators and staff, breeders, breeders associations, research and training institutions, farmers and farmers' communities, and many others are deeply involved in or concerned with the conservation and utilization of plant genetic resources.

A participatory analysis and planning method, SWOT (Strength, Weakness, Opportunity and Threat) was introduced to the participants, using the experiential learning approach (learning by doing), to enable them to use this tool in future on their own. By practising the SWOT method, the participants analysed during an intensive communication process in detail the PGR conservation and use in their home countries and developed from the conclusions future priorities and action areas for the EAPGREN Network.

The elements of the Global System for the Conservation and Utilization of PGRFA were discussed, specifically the International Treaty on Plant Genetic Resources for Food and Agriculture (IT) and the GPA, as providing a comprehensive technical legal and policy framework for developing and strengthening conservation and use activities at the national and regional levels.

Governments of the Eastern African countries that are members of EAPGREN were encouraged to ratify the IT and to actively participate in the preparatory processes for the second State of the World's PGRFA report and in the monitoring of the implementation of the GPA. The activities provide opportunities (and obligations) to countries to establish long-lasting processes, procedures and mechanisms to assess the current status of PGRFA. Countries are also able to monitor the status of the GPA implementation through participatory processes that involve key stakeholders and to jointly develop a national PGRFA information management system.

The experience of Germany in national programme development was presented, with focus on the gene bank and breeding research on cultivated plants and matched with a field

trip to Gatersleben. A paper by GTZ on managing agrobiodiversity in rural areas was also presented, to acquaint workshop participants with German Technical Cooperation initiatives in their countries – particularly with activities related to the conservation and utilization of plant genetic resources. The presentation ended on steps required in approaching GTZ for technical cooperation.

Introduction

Welcome Address - Dr. W. Zimmermann

I welcome you warmly at the International Training Centre of Zschortau. The institution in charge of the program is the Centre for Food, Rural Development and the Environment (ZEL) of the Deutsche Stiftung für internationale Entwicklung (DSE). The workshop on "Strengthening National and Regional Policy and Institutional Frameworks for the Sustainable Use, Exchange and Conservation of Plant Genetic Resources" is issued in close collaboration with the International Plant Genetic Resources Institute (IPGRI), one of our most important partners.

The DSE is an institution which provides a forum for development policy dialogue and offers advanced training of specialists and executive personnel from developing and transitional countries. In order to comply with a rich portfolio, DSE relies on several specialised training centers all over Germany. It maintains the largest documentation and information center on development co-operation issues in Germany.

Since 1960 the DSE has given advanced professional training to more than 170,000 decision-makers, specialists and executive personnel from over 150 countries. Every year approximately 9,000 participants take part in the DSE's dialogue and training programmes.

The center here at Zschortau is one of the DSE-training centers. The other one is based on Feldafing near Munich in the south of Germany. While the Centre at Feldafing is dedicated to "Rural and Agricultural Development & Development Management", the Centre at Zschortau focuses on "Natural Resource Management & Transition".

The mission of the Centre is to contribute to future-oriented rural development, to sustainable natural resource use and to food security of our One World, within the framework of the world-wide poverty reduction strategies and the undertakings of AGENDA 21.

In his Report of the Millennium, United Nations – General Secretary Kofi Annan pointed out the urgent and complex challenges faced by humankind, which, he says, demand new cooperative ways of problems solving. "If we want to make the best out of globalisation and avoid the worst, we have to learn to improve on our performance for Good Governance, and we have to learn on how to improve it in doing it together".

This approach is based on partnership, where Nations and international institutions work together on ground of shared beliefs and common goals.

I have studied the program. I denote that you will be dealing with issues like teaming up, co-ordinating, networking, reaching agreements and building ownership. That, too, is improving Good Governance! It is the new, the fourth dimension of sustainability, complementing ecological and economical and socio-cultural sustainability.

The workshop aims at contributing to the strengthening of the national level political and institution framework for the effective and sustainable use, exchange and conservation of plant genetic resources within countries of East Africa. I am, therefore, very pleased to know, that this workshop will be addressing issues which are important to Good Governance linking it creatively to sustainable use, exchange and conservation of Plant Genetic Resources!

National Institutional Frameworks for PGR Conservation

Importance of well coordinated national programmes

J. Engels

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Introduction

Plant genetic resources for food and agriculture (PGRFA) are vital for national food security and development, especially in developing countries. Strong national PGRFA programmes can help countries improve the conservation and use of PGRFA and are the building blocks for efficient/well coordinated international PGRFA efforts.

The need to strengthen national PGRFA programmes has been widely recognized both at a national level and in several international agreements. Effective planning and coordination are essential prerequisites to establish and operate a strong national PGRFA programme. They are particularly effective when combined with a third element, i.e. a high degree of stakeholder involvement in both these activities.

Efficient and well-coordinated national programmes on PGRFA can contribute greatly to national socio-economic development. The recent broadening of interest in the management and use of plant genetic resources calls for the wider involvement of different sectors and stakeholder groups in national PGRFA programmes and planning processes. If PGRFA activities are to meet current and future national needs, they require effective coordination, both horizontally – across different sectors, ministries and stakeholder groups – and vertically – between policy, institutional and field-level activities. Such coordination can minimize duplication of effort and ensure complementarity between activities.

In this paper the aforementioned key conditions and elements for adequate coordination, as well as participation of the important stakeholder groups, will be further explored.

Similarly, arguments to convince the respective decision-makers on the above will be presented. First, the importance of good communication and exchange of information among key stakeholders of the national PGR programme will be addressed, followed by who these stakeholders are. The section on PGR being a vital component of a nation's cultural heritage underpins the critical importance of involving the stakeholders. Thereafter, it will be discussed how well-coordinated national PGR activities will contribute to sustainable conservation and use and how they can help in providing a solid basis for the effective participation in regional and international fora on PGR and related matters. In view of the increased awareness that states possess the sovereign rights over the genetic resources that occur within their borders it is argued that this has to lead to increased responsibility on the part of governments for their conservation. In addition, national policies and legislation that affect PGR should support regional and international obligations as well as national objectives. In the last section it is argued that for PGR to contribute to future agricultural development PGR have to be properly conserved and utilized. Exchange of information on plant genetic resources is necessary to allow adequate coordination and to facilitate effective participation of stakeholders

The effective coordination of plant genetic resources efforts requires regular communication between stakeholders. Unfortunately, however, the flow of information among the many groups associated with conservation and use is often insufficient, irregular and ad hoc. The weakness or, in some cases, complete absence of communication channels between genetic resources conservationists and users can forestall the creation of coherent national policies and strategies. It also makes it more difficult for them to learn about each other's priorities and needs, and

limits the collaboration and the interdisciplinary activities that do so much to support the implementation of national policies and plans.

Although they do not substitute the rationalization and continuity provided by progressive planning efforts, national and local consultation workshops can provide excellent opportunities for promoting regular communication amongst stakeholder groups. Importantly, they also allow all stakeholders to have a voice and the opportunity to help shape national genetic resources policies and programmes. Countries are using such workshops more and more in planning and carrying out national programme activities.

Networks are also a powerful way to promote communication. They provide a platform for information sharing, technology transfer and research collaboration. By forging links among individuals and institutions involved in plant genetic resources activities, networks promote the exchange and use of material. They also facilitate priority setting and defining responsibilities for collaborative activities, such as collecting, conservation, evaluation and pre-breeding and policy development. Most important of all, networks bring together people with complementary expertise and resources, allowing the collective achievement of objectives that would be beyond the scope of individual scientists or institutes. Networks are based on common regional, thematic or crop-based interests. Some examples of effective regional networks are the European Cooperative Programme on Genetic Resources (ECP/GR), the Southern African Development Cooperation (SADC) and its Special Programme on Genetic Resources (SPGR).

The stakeholders of the national PGR programme and the need for proper coordination

The successful conservation and sustainable use of PGRFA requires action by a wide range of people in each country. The involvement of representatives of different stakeholder groups in planning and implementing the national PGRFA programme is vital because it instils a sense of ownership of the programme and hence a sense of responsibility for its success. Germplasm users, including both plant breeders and genebank curators, must be involved in the work of national programmes. Farmers' groups and other non-government organizations (NGOs) are still under-represented in most national PGRFA planning processes, although their involvement is growing. It must continue to do so if political and public acceptance of PGRFA activities is to be sustained. Given the increasing involvement of the private for-profit sector in PGRFA activities, national PGRFA programmes need to integrate private-sector concerns into their planning processes if they have not already done so. A more detailed list of the various stakeholders and partner institutions of a national PGR programme is given in the box below. In addition, in the chapter on monitoring the implementation of the Global Plan of Action details on the involvement of stakeholders in a national coordinated effort related to information management will be presented.

PGRFA activities and the policies that provide the framework for their implementation often span different sectors, such as agriculture, forestry, natural resources, environment, rural development and even tourism. These activities and policies are becoming increasingly complex, often giving rise to problematic issues related to questions of ownership of knowledge and resources as well as which ministry should provide the coordination and the corresponding budget, etc. These circumstances underline the importance of and the need for adequate coordination between the different components of the national PGRFA programme. Coordination needs to be both horizontal – between different ministries and sectors – and vertical – between the policy-making or planning level and the institutional and field levels at which activities are implemented.

Stakeholders and partners in national plant genetic resources programmes

Ministries: Agriculture, Environment, Science and Technology, Trade, Forestry, Foreign Affairs, Culture, Energy, Tourism
Sectors: agriculture, farming, environmental protection, research and development, education, business, trade, economics, intellectual property, forestry, rural development, nutrition and health
Institutions: national agricultural research centres, genebanks, plant breeding stations, managers of protected areas, farmers' organizations, agricultural extension services, agricultural credit services, universities and colleges, research institutes, botanical gardens and arboreta, agri-businesses, export promotion agencies, import substitution agencies, marketing, forestry, land use planning
Stakeholders: farmers, rural communities, plant breeders, biotechnologists, pharmaceutical industry, indigenous communities, traditional communities, scientists and researchers, domestic and foreign NGOs, domestic companies, foreign companies, foresters, extension agents, traders, urban consumers, rural consumers

Coordination at the policy level can enhance programme efficiency by, for example, ensuring that different ministries integrate their approaches to the development of different sectors, ironing out any confusion over objectives, roles and responsibilities. It is also important for the purposes of presenting a coherent national viewpoint at international fora. At the institutional level coordination is needed to avoid conflicts and promote synergism between the activities of different groups. This is particularly relevant given the funding cutbacks currently affecting the public sector, which necessitate greater programme efficiency. Coordination at the institutional level can also help increase the capacity of the programme and bridge gaps in its coverage, for example by enlisting universities and colleges in the collection and evaluation of germplasm in neglected species. Field-level coordination is important in linking the activities of different groups, notably farmers, NGO workers, extensionists and formal-sector scientists, many of whom can benefit from greater contact with one another, particularly in areas such as germplasm exchange.

A well-coordinated national programme can help develop and express a national consensus on PGRFA issues, acting as an intermediary between the higher echelons of government and the many stakeholders in the country as a whole.

Plant genetic resources are a vital element of a nation's cultural heritage and of rural development. The richness of a nation's cultural heritage is a good indicator of its well-being. Plant genetic resources are an important part of that heritage. The socio-economic value of PGR, together with the traditional knowledge that underpins their use, represents significant cultural assets, which shape national identity at the same time as the genetic resources themselves help provide for people's survival. The close relationship between people and plants can be seen in the central role that plants play as a source of traditional foods and medicines and as symbols in local cultural practices, religion, folklore and art.

The diversity found in indigenous plants and traditional crops is a combined result of many years of adaptation to the environment and careful management by local communities. This management is based on traditional knowledge built up over generations and passed over from one generation to the next. Such knowledge can include strategies for landrace conservation, management of pests and diseases, selection and breeding, energy-efficient farming and environmental monitoring. It also embraces information about the various cultural and social uses of the plants and their products.

Traditional knowledge is reflected in folklore and cultural practices. For example, the neem tree that has for centuries been revered by people in India for its medicinal uses and pesticidal properties is believed to have miraculous powers and is referred to as "the village pharmacy" in some places. Local knowledge about the specific properties of plants is often reflected in the common names assigned to many plants, which frequently have their roots in the cultural beliefs and knowledge systems of the communities in which they occur.

Because women's responsibilities in rural crop production systems usually extend from propagation, protection, harvesting, processing and storage through to the final preparation of food, they often have the most complete understanding of the distinct characteristics and uses of particular plants. The specialised knowledge of women about traditional plants and their uses is particularly evident in their prominent role in the management and use of the wide array of plants that grow in home gardens throughout the tropical and subtropical ecosystems of Asia, South and Central America and Africa. Home gardens are used to grow plants for food as well as for other purposes. For example, traditional leafy green vegetables, which often grow in home gardens, serve as supplements to the diet. Herbs are grown for use both as culinary spices, and as sources of traditional medicine, and a range of other home garden plants are used as fuel and for making traditional handicrafts, fabrics, etc.

The plants with significant value to the livelihoods of local communities, whether as sources of food, fuel, medicine or fibre, include endemic species unique to the country as well as locally adapted varieties that originated elsewhere. Many countries have a wide range of crops that are considered relatively unimportant on a global level, but are economically and culturally important as local staples. For example, fonio, which is native to West Africa, is believed to be one of the oldest cereals grown on the continent. Used to make a nutritious porridge as well as serving as an ingredient in a range of traditional dishes, fonio forms an important part of the diet in many West African countries. It is adapted to marginal production areas and requires little labour. This traditional crop is also one of the world's fastest maturing cereals and provides an important safety net in the farm-cycle. Similarly, teff, which accounts for the largest proportion of (frequently water-locked) land under cultivation in Ethiopia, is grown primarily to use in a pancake-like bread called injera. In Amharic, the official language of the country, injera is often used as a metaphor for "food" and/or "livelihood."

Other crop plants that are closely linked to the socio-economic and cultural livelihoods of local communities include green gram in India, and local roots and tubers in the Andes. Such crops are frequently referred to as 'minor', 'neglected', 'underutilized' or 'orphan' crops. They are often adapted to marginal production conditions such as highlands, semi-arid areas and saline soils. Such crops can contribute significantly to food supplies in lean periods of the year and form an essential part of nutritionally balanced diets.

Changes in land use patterns in rural societies, farming practices, and urban migration threaten the survival of plant genetic resources in many countries. The sudden disintegration of communities due to drought, war or civil strife can also result in the loss of genetic resources and the traditional knowledge associated with them. In the aftermath of such calamities, community rehabilitation and the re-establishment of traditional customs and practices linked to indigenous plant resources can be aided through seed distribution programmes, which return traditional crop varieties to the farmer. But this is only possible if the genetic resources are available from other communities or have been safely conserved somewhere else.

If a nation wishes to preserve its cultural identity, it is important not to overlook the contributions of the people who cultivate, manage and use traditional plant genetic resources, keeping them safe for future generations. One of the best ways to ensure that these contributions continue is to empower local communities, for example, through systematic efforts to document traditional knowledge and customs relating to plant genetic

resources, with a view toward sustaining and promoting their use within the communities. Raising public awareness of the role of local people as custodians of genetic resources is another important way to help ensure that their valuable contribution to a country's heritage receives the support needed for it to be maintained. Governments can also provide incentives for the continued maintenance of traditional plant genetic resources by local communities, through supporting broader social development programmes aimed at improving their livelihoods.

National activities to conserve, improve and enhance the use of plant genetic diversity can best foster the development of the poorest segments of the population if the planning and implementation of these efforts involves the local communities. Their knowledge, and their needs for traditional crop genetic resources, should help steer any effort to manage and use these resources.

Coordinated efforts are essential for the sustainable conservation and effective use of plant genetic resources. Many areas of a national economy are concerned with some aspect of plant genetic resources, including the food, agriculture, forestry, medicine, industry, transport, shelter, energy, tourism, and environmental sectors. Farmers, plant breeders, researchers, government agencies and private companies all contribute to and benefit from the conservation and sustainable use of plant genetic resources.

Often, however, these sectors and individuals do not coordinate their activities and may not even be aware of each others work, no matter how closely it may relate to their own. The result may be fragmented or duplicated efforts and the development of national plans and strategies with conflicting objectives. It is critical that all activities to conserve and use these resources are well coordinated among the main stakeholders in order to realize the full benefit of national investment.

Both the Convention on Biological Diversity and Agenda 21 emphasize that the strategic needs of countries can best be met if national plant genetic resources programmes bring together the full range of experience and knowledge about genetic resources that exists in the country. National coordination is very important in order to make the best use of available human, financial and technical resources and to maximize the overall effectiveness of efforts throughout the country.

A key objective of this coordination should be to help promote the complementarity of local, national and international efforts as well as of strategies and plans of the formal and informal, public and private sectors. In many cases, this will require reconciling environmental concerns with development priorities. Currently, decision-making systems in many countries separate economic, social and environmental activities at the policy, planning and operational levels. Moreover, activities such as ex situ conservation and plant breeding usually fall under ministries of agriculture, while in situ conservation is usually under the remit of ministries or departments concerned with forestry, environment, natural resources and even tourism.

There is no one ideal model for a coordinated national plant genetic resources programme but the common elements of strategic planning, coordination and communication are likely to apply in all cases. The adjustment or even fundamental reshaping of decision-making mechanisms may be needed if environment, agriculture and development concerns are to be fully integrated in national economic and political decision making. The sustainability of all of these efforts will depend upon long-term financial commitment by governments. Financial commitment in turn needs to be matched by commitments from stakeholder groups to ensure that policies and plans are put into action.

National coordination provides a solid basis for participation in regional and international activities on plant genetic resources. There are many reasons why countries might wish to collaborate in the exchange and use of genetic resources, e.g. to increase their access to improved germplasm, technologies and information, but perhaps the most compelling argument for collaboration lies in the fact that no country is self-sufficient with respect to the plant genetic resources needed by its farmers and plant breeding programmes. A

nation's food and agricultural production systems usually rely heavily on plant genetic resources and improved varieties from outside their borders. This interdependence makes international collaboration essential.

Countries have much to gain from partnership with regional and international research and development programmes devoted to the conservation and use of genetic resources. Given the international character of agricultural biodiversity, and the significant global concern for its conservation and use, it is in the interest of all countries to play an active role in policy fora devoted to biodiversity issues, such as the International Treaty on Plant Genetic Resources for Food and Agriculture (IT), or the Convention on Biological Diversity (CBD).

The effectiveness of a country's participation in such international negotiating fora and the benefits that can be gained from that participation will depend on its capacity for national coordination and strategic planning. There is a tendency for both national and international activities to reflect the relatively narrow interests of the national institutions, ministries or international organizations involved. Within any one country the distinct mandates of the various ministries with an interest in plant genetic resources, such as agriculture, environment and trade ministries, for example, may result in a lack of harmony or even conflict among the policies and plans they develop relative to the conservation and use of these resources.

Countries should give serious consideration to the establishment of national focal points for plant genetic resources and related agricultural policies as well as to procedures that contribute to harmonized views and approaches. A country may choose to identify a national committee, a national institution, or an inter-sectoral task force as its focal point. It is most important that the focal point is able to serve as a mechanism for sharing information on national needs and opportunities for collaboration with other countries and for allowing national policies and plans to be established in a transparent and participatory way. Currently, only a third of countries have national coordination mechanisms in place.

Coordination at the national level will not only strengthen a country's negotiating position in international fora, it will also help to focus and make the most of a country's contribution to the emerging international plant genetic resources system and its ability to benefit from participation in such a system. Several of the planned activities by EAPGREN will illustrate the above and from the discussions during the workshop it became evident that most of the members of EAPGREN are in the process of strengthening their national coordination in order to contribute more effectively to the network as well as to benefit from the services it will provide.

National sovereignty over plant genetic resources implies government responsibility for conservation and use. The IT (FAO, 2002) and the CBD (UNEP, 1992), both recognize the sovereignty of nations over the plant genetic resources within their borders. National sovereignty gives countries the authority to determine how and under what conditions these resources are exchanged, used and made subject to property rights. Among other things, sovereignty allows countries to set terms of access that give rise to benefit sharing.

The authority conferred by sovereign rights is matched by a country's responsibility to ensure that its plant genetic resources are conserved and used in a sustainable manner. In exercising these sovereign rights and responsibilities, governments have a particularly important role to play.

Plant genetic resources are essential for sustainable agriculture and food production. As such, they are vital to a nation's economy. Governments need to devise and enforce policies, strategies and programmes to achieve national food security and development goals, while ensuring that over-exploitation and economic activities damaging to the natural resource base are minimised.

Genetic resources conservation requires a continuous and long-term commitment backed by adequate human and financial resources. While both public and private sector organizations will have an interest in genetic resources, many of the activities required for

effective long-term conservation do not return sufficient profit to attract major investments from the private sector. Similarly, commercial incentives are lacking for activities that can help to promote effective and sustainable use. The responsibility for supporting these activities thus falls largely to the public sector, in particular to governments, as do measures to raise public awareness and to achieve adequate capacity in genetic resources management and research through training. National public sector investment in conservation and use can be significantly reinforced when a wide range of partners share the costs and benefits of research.

Government policies in agriculture, trade and other sectors can sometimes inadvertently create situations that result in the loss of genetic diversity. Restrictive national seed legislation, which favours the trade of genetically uniform varieties, is one example of a policy that could lead to genetic erosion. Subsidy schemes, which encourage wide-scale adoption of high yielding modern crop varieties, are another. While such policies might improve production in the short-term and result in higher profits for private companies, they can indirectly discourage the continued use and maintenance of diverse traditional crops and landraces by farmers. The challenge for governments is to create incentives for continued use and maintenance of genetic diversity by farmers and plant breeders and to ensure that national policies in agriculture and other related sectors support these goals.

Above all, the wide range of genetic resources stakeholders operating in any one country indicates the need for a national planning and coordinating authority. Given adequate government and stakeholder support, such an authority can play an important role in developing links between stakeholder groups in the country, helping to ensure an effective and participatory approach to meeting national responsibilities to conserve and use its biological resources.

National policy and legislation affecting plant genetic resources should support both international obligations and national objectives.

National authority to regulate access to plant genetic resources is a pillar of the CBD as is national responsibility for conservation and use; both are conditions of the Convention's recognition of national sovereignty over genetic resources. A country's ability to fully benefit from the potential of genetic resources to contribute to its socio-economic development and agricultural productivity will in large part depend on the development of coherent national policies and regulations.

The adoption of several international conventions and treaties affecting genetic resources reflects a broader understanding of the interdependence of nations with respect to agricultural biodiversity. Some of the most significant treaties are the CBD, the Trade Related Aspects of Intellectual Property Rights under the auspices of the World Trade Organization (WTO/TRIPs) and the International Treaty on Plant Genetic Resources for Food and Agriculture. In developing national genetic resources policies, decision-makers should carefully consider the obligations imposed by these treaties on signatories.

Genetic resources are important raw materials for agriculture, forestry, fisheries and industry, as well as being critical to the health of the environment. The genetic resources-related activities of these different sectors have traditionally been carried out in relative isolation. In many countries, different government ministries have established policies and procedures for the management and use of genetic resources. Developed independently, these policies and procedures do not always complement and may even contradict one another.

Even when governmental policies are not directly concerned with genetic resources, they still can have a significant impact on conservation and use. For example, national trade policies and laws can either serve to facilitate or hinder the exchange of plant genetic resources. For this reason, to be truly effective, the process of developing national genetic resources policies and strategies should include all sectors dealing with these resources, whether directly or indirectly.

In recent years, numerous international policy fora, with different interests and objectives, have emerged or have expanded their mandates to include matters affecting the conservation and use of plant genetic resources. Yet, despite a significant overlap in the issues treated by these diverse bodies, there has been little effort to coordinate their efforts. The closely linked issues of access and benefit sharing, for example, are currently under negotiation by the Conference of the Parties to the CBD, the Commission on Genetic Resources for Food and Agriculture, the World Trade Organisation, GATT/TRIPS and others. Only rarely do countries ensure continuity in representation to the various fora, nor have the different sectors been particularly successful in sharing with each other the developments in these fora.

As a result, national decision-makers are faced with a bewildering array of policy positions in related, but quite distinct fora. Achieving clarity and harmony among these positions is critical to the development of a coherent national framework. Ensuring such harmony is one of the most crucial tasks facing governments. The chapter on PGR policy and legislation will provide more details and approaches how more harmonized policies and legislation can be achieved.

In summary, governments need to review their existing policies and legislation relevant to genetic resources to ensure that they are consistent and that they support national objectives and priorities. Amendments or new policies and laws should be developed in consultation with all relevant sectors. Governments should also assess the full range of their international obligations with regard to biological resources and related issues, in order to identify possible synergies that could lead to more effective implementation as well as any inherent contradictions that might hinder it. This process of national review and assessment should be carried out with the support of relevant intergovernmental fora and should draw on regional cooperation. Such an approach will enable national governments to represent their concerns and interests more effectively at the international level. It will also increase the likelihood that national and international policies are developed and implemented more closely in harmony, to the benefit of countries, both individually and collectively.

For plant genetic resources to contribute to future agricultural development, they must be used as well as conserved. Plant genetic resources need to be conserved now if they are to be used in the future. As raw materials for agriculture, these resources are integral to the sustainability of production systems and hence are key to development. In some cases, plant genetic resources will be maintained and hence "conserved" by the production system itself, as long as they continue to be useful to the farmer. In other cases, they may be subject of a deliberate conservation effort, which seeks to ensure that they remain available for future use.

Some national conservation programmes actively promote the use of plant genetic resources and have strong links to breeders. Unfortunately, the management of genebank collections and protected areas in many countries is often not conducive to the use of the genetic resources they hold. Collections are often maintained in isolation from breeding programmes and other activities that promote use. Both Agenda 21, adopted in 1993, and the Global Plan of Action for plant genetic resources, adopted in 1996, recognize the importance of strengthening the links between the conservation and use of plant genetic resources and urge countries to develop strategies and plans that integrate both activities.

Many curatorial and research activities related to plant genetic resources collections (e.g. genetic diversity studies, characterization, evaluation, the establishment of core collections and pre-breeding) add value to collections by making the conserved material, whether ex situ, in situ or on-farm, more accessible and easier to use. Sustained government support for these activities should be regarded as a long-term investment in a country's future. Collaboration among a broad range of stakeholders, supported and coordinated by public sector agencies, can also contribute to the sustainability and effectiveness of genetic resources activities. In most countries, such stakeholders will include ministries, scientific institutions, private and public sector institutions, NGOs and farmers.

It is important for national agricultural and biodiversity planners to recognize that the strategic and sustainable use of plant genetic resources is vital for achieving their agricultural production, rural development and biodiversity conservation objectives, both now and in the future.

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National programme development activities in Germany

Lessons from IPK and Federal Centre for Breeding Research (BAZ)

A. Graner, K. Peter and L. Frese

The Gene Bank and the Institute of Plant Genetics and Crop Plant Research (IPK) in Gatersleben.

The participants were welcomed by Prof. Graner, head of gene bank, which was found near Vienna already in 1943 and was transferred to Gatersleben in 1945. Unlike the other gene banks, the Gatersleben Gene Bank is part of a research institute, which has five different departments:

- Department of Taxonomy
- Department of Cytogenetics
- Department of Molecular Cell Biology and
- The Gene Banks itself, which is divided into the following research groups:
 1. Resource Genetics and Reproduction
 2. In vitro preservation and Cryo-Storage
 3. Molecular Markers
 4. Gene Bank Documentation
 5. Branch Station South (fruit crops)
 6. Branch Station North (potatoes, oil seed and fodder plants)

The gene bank accessions have notably increased during the 50 years of gene bank activities in Gatersleben. In 1945/46, the gene bank started with about 3,500 accessions. In 1990, already 68,840 accessions were stored. Today, about 100,000 accessions of more than 2,400 species are available. The most numerous collections are in cereals, legumes and vegetables.

The institute owns 75 acres of land, out of which 15 hectares are used for the reproduction of stored material as well as for the characterisation and evaluation work. The gene bank has a very good reputation and is intensively used by researchers, botanic gardens breeders and private persons.

More than 20,000 accessions are distributed to users every year and still free of charge. However, like many other institutions, the gene bank has to reduce costs. Concerning the ex situ reproduction the strategy for saving money is: improve the storage conditions and avoid unnecessary duplicates. The total staffs of all the departments counts about 450 persons, among them 146 scientists. Temporary staff on research grants is supporting the teams.

The tasks of the gene are:

- Collection, conservation and documentation of PGR
- Research on cultivated plants
- Provision of plant material for research purposes

For further information the following internet address can be used: www.ipk-gatersleben.de

Dr. Börner showed the visitors the spike collections of the IPK Gaterleben that serve, besides the herbarium and the seed collection, as a reference collection.

He explained the required storage conditions of various species. Germination tests proved that e.g. wheat and barley can be stored up to 20 years at 0°C without losing germination capacity.

On the other hand *Avena sativa* and *Secale cereale* are pre sensitive. Regeneration on the field to get fresh seed material has to be carried out every 12 to 15 years. For storing the material even longer -15°C are necessary.

Then, Dr. Börner guided the participants through the storage rooms. First the cold store was visited. In an insulated building, four storage rooms (one with 10°C two with 0°C and one with -15°C are available. The participants could watch the large seed collection stored in jars. Each jar has a little bag with silica gel on top of the seeds, which prevents the damage of the material due to humidity. The seeds can be observed in the glasses at any time.

On their way to the different institutes, the group could see some of the seed multiplication fields of the gene bank. Most of the crops had been harvested already. In the multiplication fields, the different accessions are arranged in a way that they cannot be cross-pollinated by other varieties of the same species. A number of multiplications of insect-pollinated gene bank material are carried out in small isolation houses. The isolated pollination in these houses is made by special populations of wild bees and other insects, which are kept and multiplied in a specialised lab. The participants also passed big number greenhouses, which are necessary for plants that are sensitive to frost.

Afterwards, Dr. Knüpffer explained the work of the research group Gene Bank Documentation. Its information system offers plant breeders, researchers etc. a huge amount of knowledge on PGR. Today, passport data for more than 86,000 accessions are available via internet (<http://fox-serv.ipk.gatersleben.de>). Another main task is the national and international co-operation in the creation of multi-institutional PGR databases. Dr. Knüpffer described some of the projects they are working on, such as the European Barley Database or the EVA project. In cooperation with other German institutions, a centralised federal information system for PGR is being established.

These activities were intensified with the start of the project "Federal Information System on Genetic Resources" (BIG; <http://www.dainet.de/genres/big/>) in 1998. BIG is funded by the German Ministry of Education and Research. Data sources of IPK (departments: Gene Bank and Taxonomy), the botanic gardens in Germany and Nature Protection will be made jointly accessible through a common internet search interface. The first activities were dedicated to the development of a taxonomic database based on the "Mansfeld World Catalogue of Agricultural and Horticultural Crops" (www.ipk-gatersleben.d/mansfeld).

Dr. Keller, head of the in vitro storage and cryo-preservation research group, continued and explained that the gene bank collection also contains plants which have to be propagated vegetatively because the plants form bulbels or are not able to set seed under our local conditions. At Gatersleben, these are species of the genus *Allium* (garlic, shallots, top onions etc.) as well as several vegetables, *Dioscorea* species and herbs. About 3,000 accessions of *Allium* are maintained in the collections of the gene bank and the taxonomy department. Accumulation of viruses has been found in accessions which have been maintained vegetatively in field plots. However, plants that does not form storable seeds or which have to be maintained as clones for breeding or research can be maintained apart from sources of infection by in vitro culture and cryopreservation. Both these methods belong closely together, but are in different states of development. Applied investigations as well as fundamental investigations are still necessary for their establishment.

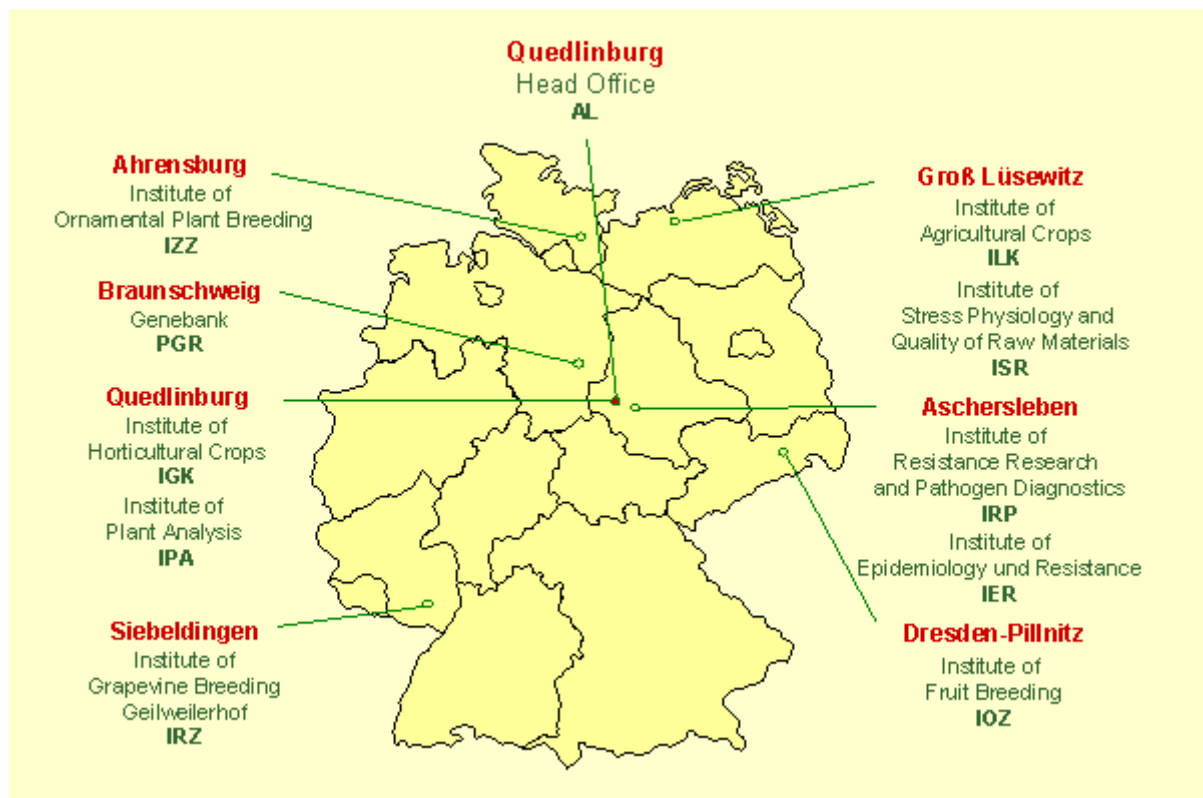
Then a visit to the different labs, the tissue culture room, storage facilities and the cryopreservation lab room was possible. The researcher discussed with the participants several points, like special aspects of in vitro propagation, slow growth storage and meristem culture for virus elimination in garlic and shallots. Some participants were also interested to know more about the detection of viruses in plant material, what is done by ELISA tests.

Federal Centre for Breeding Research on Cultivated Plants. Institute of Horticultural Crops
The participants were welcomed by the head of the institute, Dr. Schumann. He started with an overview on the organisation and the tasks of the Federal Centre.

The climate and the geological conditions in Central Germany proved ideal for the growing of agricultural and horticultural crops. From the Middle Ages on, Quedlinburg has developed into a centre of plant breeding and breeding research, as the natural conditions in this region are very favourable: rain shadow of the Harz Mountains, dry spells in autumn and fertile soils.

With the reunification of Germany, chance was taken to unite the capacities of breeding research on cultivated plants in Germany in one research centre. By enactment of November 27, 1991, the Federal Centre for Breeding Research on Cultivated Plants (BAZ) was established on January 1, 1992, as part of the research sector of the Federal Ministry of Consumer Protection, Nutrition and Agriculture. The BAZ comprises nine institutes and a gene bank at 7 locations in Germany.

In general, the BAZ is a public institution with research concentrating on plant breeding. It produces the scientific basis to back up political and administrative decisions by the Ministry of Consumer Protection and it promotes the agricultural policy for ecologically sound farming and sustainable agriculture. In addition, BAZ supports private plant breeders, what is mainly done by developing new methods and by providing plant breeding material.



There are two institutions situated in Quedlinburg, of which the Institute of Horticultural crops was visited by group. Dr. Schumann explained the tasks and research activities carried out there. The Institute of Horticultural Crops originated from merging two BAZ institutes founded in 1992, the Institute of Breeding of Vegetables, Medicinal and Aromatic Plants and the Institute for Breeding Methods in Vegetables. Breeding research carried out by the institute is aimed at providing the conditions for an economically efficient plant breeding and an ecologically sound horticulture. It is application-oriented research, conventional breeding as well as biotechnology and gene technology. The main objectives of the institute are the generation of healthy plants, improved product quality, and the development of new breeding methods and strategies.

In the field of breeding methodology, the institute favours an integrated approach of combining classical cross breeding, plant cell tissue and organ culture, molecular diagnosis and gene transfer techniques. The range of species investigated is determined by the current research requirements and their economic importance. At present, the main focus is on vegetables of the genera *Brassica*, *Allium*, *Daucus* and selected medicinal plants, e.g. *Hypericum perforatum* and aromatic plants like fennel (*Foeniculum vulgare*) and caraway (*Carum carvi*).

The importance of stakeholder involvement in the implementation of the Global Plan of Action

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Introduction

Guidelines were prepared by IPGRI and FAO to enhance the involvement of stakeholders in national programs for Plant Genetic Resources for Food and Agriculture (PGRFA), with the broader aim of helping countries to implement the Global Plan of Action (GPA). Stakeholders are people, groups, or institutions who are likely to be affected by the plant genetic resources program (either positively or negatively), or those who can affect the outcome of the program.

The government, focal points of various international conventions (e.g. Convention on Biological Diversity) gene bank curators and staff, breeders, breeders associations, research and training institutions, farmers and farmers' communities, and many others are deeply involved in or concerned with the conservation and utilization of plant genetic resources.

These voices should be heard because their interests are at stake in the implementation of the Global Plan of Action.

Monitoring progress and sharing information are essential components of the Global Plan of Action. Researchers, policy makers, development agencies, and many others involved in the field of PGR conservation and use need solid data and high quality information on which to base their decisions. Effective documentation and information sharing mechanisms are required to facilitate research & development, technology transfer and policy making at national and international levels.

A national PGRFA program can gain a lot from stakeholder involvement both in terms of information and commitment. A multi-stakeholder approach for the management of plant genetic resources in the country is important because it engages more people in the conservation and use of PGRFA, a task that can only be implemented on the shoulders of the entire society. A good understanding of the tasks at hand, shared responsibilities, and an acceptance of same are the foundation necessary for this formidable responsibility.

Participation in data collection, information sharing and decision making alerts stakeholders to their responsibilities and is likely to generate commitment because it usually increases the capabilities and motivation of the people involved. When stakeholders jointly review what they have done or not done, what worked well and what did not work, it helps them to understand each other's claims and concerns better. It tends to reduce stereotypical perceptions and to generate a larger portfolio of ideas. A well managed process of engaging stakeholders in decision making helps to:

- Improve the quantity and quality of information in terms of content (as defined by the number and kind of indicators in monitoring GPA implementation) and coverage (the number and kind of information sources);
- Enhance the quality of analysis and decision making through systematic utilization of expert knowledge. This is important because information sharing is only as useful as the conclusions, recommendations, and actions which it is able to credibly produce;
- Improve the dissemination of information. Only if information is presented clearly and disseminated to the relevant stakeholders is it likely to make a useful contribution to practical improvements in PGRFA programs, projects, or policy environments.

Other potential benefits of participation are increased trust between actors through transparent decision making and joint planning. Increased public understanding of and political support for PGRFA activities is likely to reduce delays for approvals and implementation. Stakeholder participation is thus part of the effort to make things happen.

Individuals who participate in stakeholder meetings also stand to gain. The benefits range from individual learning to building social capital, allowing participants to:

- influence the direction of the professional community;
- meet peers and form new relationships with people who share interests or have different experiences;
- gain additional perspectives to improve one's own performance;
- learn about new challenges and help define ways to address them;
- contribute to defining policies and strategies.

The potential benefits of participation suggest that a long-term approach is needed to involving stakeholders in GPA implementation, information sharing, monitoring and other GPA related activities, whenever possible from the very beginning. It is worthwhile for the National Focal Point organizing the stakeholder process to assess what kind of institutional and individual benefits are most motivating to the stakeholders in the country and to design the activities accordingly.

A sequence of five steps is suggested to assist National Focal Points to design and carry out a stakeholder involvement process. Steps 1 and 2 are related to planning for and preparing the stakeholder process and involve the National Focal Point and the national steering committee. Steps 3 and 4 are about engaging stakeholders in the development of a common strategy, action plans and implementation of activities to achieve common goals. Step 4 is an implementation phase during which the National Focal Point's and the steering committee role is focused on backstopping and assistance to stakeholders and working groups. Step 5 is about maintaining the momentum for follow-up. The National Focal Point resumes the initiative and responsibility at this stage for on-going follow up. In some cases, the sequence of steps may vary slightly from the one presented here to adapt to local conditions and requirements.

Step 1 Designing the stakeholder involvement process

The National Focal Point or the National PGR Committee initiates, designs, facilitates and organizes the whole stakeholder involvement process. First, decisions have to be made about the extent and intensity of stakeholder involvement or consultation. These decisions have to be taken on a case by case basis, depending on the particular requirements. The risks of not involving stakeholders in decision making range from sub-optimal data and knowledge to incomplete planning, to lack of commitment, and, in the worst case, resistance of some groups to the decisions taken. The consequence are poor decisions, or sometimes, no decision at all, and lack of implementation of decisions.

Before beginning to engage stakeholders, National Focal points should make an initial assessment of the expected frequency and intensity of participation that is required or desirable. Will stakeholders attend a one-off meeting or will they need to attend several meetings and perhaps be actively involved between meetings? When stakeholders get involved over a longer period of time, the nature of their input and responsibilities will probably change from providing information to getting involved in planning and implementation.

While different stakeholders may be involved in PGRFA to varying degrees, it is important to note that the Global Plan of Action is not neutral on the issue of the degree to which stakeholders should be involved. It recommends that stakeholders be actively involved. Countries have also recognized the benefits of active involvement of stakeholders,

as was concluded by a number of East and Southern African countries which discussed the issue in 1998. A summary of their conclusions is shown in Box 1 below.

Box 1. Why involve stakeholders in PGRFA?

Involving the full range of stakeholders can yield the following benefits concluded a workshop on national programmes at the Regional Meeting for Eastern and Southern Africa to Promote Implementation of the Global Plan of Action, Gaborone, Botswana, May 1998.

- Broadens the knowledge base and may reduce costs (through sharing of tasks) and increase effectiveness
- Helps to establish national programme objectives through better understanding of needs
- Increases sense of ownership and boosts morale of those involved
- Builds a constituency for PGRFA conservation and use, which helps to generate political and practical support

The advantage of assessing the desired degree of involvement is to alert participants in advance how often they are expected to participate in meetings and how long the overall process is expected to last. This information should be estimated before any stakeholder involvement process is initiated.

Stakeholders need a clear sense of why they are being invited to participate early on because there can be very different reasons for involving stakeholders, with different requirements in terms of staff competencies. The general purpose and the goals to be achieved need to be communicated to key stakeholders and agreed by them before any process details are being worked out.

It is of paramount importance to clarify the linkage of the stakeholder process with official decision-making. Many stakeholder processes are meant to inform policy makers and to improve decision making. The stakeholder process must be effectively linked to official decision making and the information it produces must be of high quality to receive the desired attention. Interagency collaboration needs particular attention and depends on active support from top management. Cross ministerial involvement processes for example can be very complex and require high level authority.

The National Focal Point can consider preparing and signing a Memorandum of Understanding (MoU) or Terms of Reference (ToR) that will serve as a basis for the participatory process. The MoU can spell out components such as:

- the purpose and expected outcomes of the stakeholder involvement exercise,
- deadlines to be respected,
- to whom the stakeholder group will report,
- how outcomes will be integrated into the official decision making process,
- types of information to be shared and agreements on confidentiality,
- resources to be provided by each stakeholder group

Participation requires financial resources for people to prepare for and attend meetings. The National Focal Point or a national PGR Committee in charge of organizing a stakeholder involvement process will need the necessary resources to convene stakeholders and follow-up on meetings. If each stakeholder will need to assume his or her own costs of attending meetings, this should be clarified in advance.

Long-term participation processes need a stable funding base, including secretarial services and communication infrastructure. Staff resources will also be needed to coordinate

the process, as joint decision making almost always requires more time than does making a decision without stakeholder involvement.

In many cases, the National Focal Point should involve some key stakeholders in the design of the stakeholder involvement process. A steering committee with representatives from key stakeholders can be instrumental for getting high level buy-in to the process, the commitment of setting aside enough time, identifying the appropriate cross-section of people, and getting everybody to agree to stay engaged in the whole process, in other words for generating interest and commitment. As a coordinating group, it is essential for designing the details and running the participatory process. Stakeholder involvement starts with the nomination of this steering committee.

Key considerations for composing a steering committee are diversity, balance, and championship. There is no substitute for having the key stakeholders represented in the steering committee. A productive steering committee may involve any number of people from 2 – 20, but a very workable size for a steering committee is 4 –6 people. For GPA implementation for instance, the team could include one person for each of the four priority areas plus a chairperson and an impartial group facilitator.

The initial planning meetings that have to be initiated by the National Focal Point are critically important for ensuring success. The issues to be addressed are largely set by the Global Plan of Action but in most countries the issues will need to be further defined and differentiated in the course of the process.

Give enough time during the initial planning process to establish in the steering committee (and in the stakeholder group later on) a common understanding of the fundamental values that underlie the idea of stakeholder involvement and participation. The overall process will benefit from this initial investment later on. Key values of stakeholder involvement are accountability, effectiveness, equity and inclusiveness.

Once basic principles are clarified, a more detailed plan should be developed for the stakeholder involvement process. Before stakeholders are being invited to engage in a productive collaboration, it must be clear to those who invite them what the task is. As the task description is being refined in the course of the preparations, it becomes easier to specify the anticipated outcome and identify the stakeholders who need to be engaged.

In many cases the problems and opportunities to be addressed have already been outlined by government or by international conventions, to which the government is a member. This means that stakeholders are invited to participate in a process with a preset (governmental) agenda. However, this usually leaves plenty of room for decisions about how policy level decisions will be implemented, which may be as important or more important. It is essential that the scope of the authority and responsibility of stakeholders be clarified at the outset, so that misunderstandings do not arise.

Step 2 Identifying stakeholders

A stakeholder analysis is a technique to identify key people, groups of people or institutions that may significantly influence the success of the activity or project. People and institutions who are likely to be affected (positively or negatively) by the problem at hand or by the project are also stakeholders.

Box 2 The most relevant stakeholder groups (i.e. institutions, organizations, officers etc.) for GPA implementation are likely to be:

1. Gene banks
2. Agricultural research organizations
3. Public and private plant breeding programs
4. Seed sector (public, private, informal)

5. Ministry of Agriculture
6. Ministry of Environment (i.e. Convention on Biological Diversity focal institution)
7. Ministry of Science and Technology
8. Focal points for various international conventions and protocols such as for the CBD Clearing House Mechanism, Cartagena Protocol, Global Taxonomy Initiative etc.
9. Educational institutions (public and private)
10. International organizations such as FAO and CGIAR centers (where relevant)
11. Botanic garden(s), herbarium, arboretum
12. Regional and/or global PGR networks, programs etc.
13. Farmers' organizations
14. NGOs and other civil society groups such as consumers, farmers etc.
15. Development and other relevant projects

There are four steps to stakeholder analysis:

1. Identify key stakeholder groups for each major activity or project and their representative
2. Determine stakeholder interests and concerns
3. Assess the balance of support and opposition to the project
4. Formulate a strategy to work towards a more favourable balance of support

The stakeholder analysis should be conducted as early as possible and refined as new information becomes available. The most important question in a stakeholder process is which bodies to approach to represent stakeholder groups and which persons to invite. Certainly people with information or expertise, people with authority and resources to act, and people who are directly affected by what happens should be considered stakeholders and included in the involvement process.

A stakeholder is a person or a group likely to be affected by a decision or project – whether it is their decision or not. People who think they will be affected are also stakeholders. At this stage, some stakeholders may already be involved in the steering committee, others may have their interests represented in the team. Others still have to be identified. The National Focal Point should identify the obvious categories of stakeholders with an interest in the topic as well as individuals who can represent those views. The key stakeholders should be asked to identify a second round of organisations or individuals who might be able to contribute to the GPA monitoring effort.

A very important question is how exactly stakeholders are affected by the project. What exactly do they hope to get from the project? What exactly do they want to avoid? How important are the interests of this stakeholder for the success of the project? Some stakeholder interests and concerns are more obvious than others. Some interests are difficult to define, especially if they are in contradiction with the officially stated goals of an organisation or individual. To keep the analysis focused, each stakeholder should be linked directly to the proposed activity.

Power and influence refer to the effect stakeholders can have on the project or policy. Stakeholder relationships are as important to consider as their individual relationship to the project or policy. The results of this analytical step will help in approaching the people who are going to represent stakeholder groups. It requires careful analysis and consultation in the steering committee to identify the individuals who need to be part of the process.

The composition of the stakeholder group that will finally be invited to participate in meetings or in project activities will vary according to the task at hand and therefore evolve with time. If the focus of the stakeholder process is on public policy and requires government action, then officials may be more important than other stakeholders. If the focus is on economics, then the private sector may need to be heavily represented.

Diversity is an important consideration when inviting participants to represent a stakeholder group. Make sure to get the right balance of people, for example from different regions, different technical and scientific background, different levels in the hierarchy and so forth. Meetings are normally more effective when there is diversity not only of stakeholders but also at the level of individuals. While it would not be legitimate to tell stakeholders which individual they should send, it might be acceptable to communicate preferences. Increased diversity makes divergence of views and even conflict more likely but is crucial for the quality of deliberations and decisions.

Step 3 Engaging stakeholders

Make sure meetings are well prepared and organized with regard to the agenda, time schedule, venue, transport, meals, chairing, documentation, reporting and so forth. Plenary meetings and workshops critically depend on the conditions and the atmosphere that are conducive to hard work, creative thinking, and proper communication. To ensure all this requires efficient organizational back-up and facilitation to be successful.

Facilitators for meetings and other group processes need to be accepted by all the participants as impartial and familiar with useful group work techniques. Personal characteristics of a facilitator such as commitment, integrity, experience in political processes etc. can be a crucial success factor. Using several facilitators, for example from different stakeholder groups and on a rotating basis, is another option to consider. In any case, facilitators should have been involved in the design process to ensure they fully understand the issues and are committed to the steering committee's decisions.

Some stakeholders might not be accustomed to voicing their opinions. A skilled facilitator is critical for navigating around tough spots, guiding the entire group through new experiences, and stimulating open discussions and negotiation. The facilitator must be a catalyst for setting the process (conference, meeting) in motion and for steering participants toward a closure that leads to action.

Working groups need different types of support to perform effectively. This support will vary in relation to the different working group activities but should normally include methodological guidance through analytical steps, group decision making, and action planning. The basic duties of the facilitator are to make sure that everyone works on the same problem with the same approach, and that everyone participates in an equitable manner.

The more diverse a stakeholder group is and the more important the issues that are being discussed the more likely it is that conflicts will emerge between stakeholder groups or between participants. Many conflicts cannot be solved once and for all, since divergent interests usually continue to exist and thus remain a possible source of friction. The aim is to achieve a constructive and dialogue-based approach to conflict management by the parties involved.

Describe the goal of the stakeholder involvement exercise in terms of concrete goals, objectives and outcomes. Stakeholders will be more motivated and will find it much easier to provide useful and productive inputs if they are well briefed and can see a recognisable, easy to communicate output. In some cases it may be useful to transmit the suggested goals in writing and well ahead of the first plenary meeting to the stakeholders so that they can put them to their constituencies for comments and modifications where necessary.

Outline the sequence of steps and the timetable that will lead to the desired results. It is helpful to identify the intermediate products or results for each step. As a rule of thumb, intermediate goals should be achievable in less than 2-3 months.

Even if specific tasks must be accomplished, there is always room for some negotiation of strategic goals and specific means by which goals will be accomplished. The space for

negotiation should be communicated to stakeholders and their inputs taken into account in the initial stage of taking stock of stakeholder ideas.

A common method for taking stock of ideas in groups is the brainstorm. Brainstorming is best undertaken as a group learning activity. A workshop environment involving up to 15 carefully selected participants is an appropriate forum for eliciting a comprehensive view on the reality of a topic, a problem or a program. A workshop approach is recommended for reaping the full benefit of expert meetings.

Specifying the overarching goal to which the collaborative process is supposed to contribute is the first step in clarifying the thinking and challenging presumptions. Early clarity about the major goals of policy will allow for early consideration of alternative solutions and thus make the work more efficient.

It is often assumed that benefits will arise from collaboration related to plant genetic resources management, but focal points and coordinators often fail to specify those benefits and ultimately to balance the benefits against the costs. This is important because where the benefits materialize affects how collaboration is perceived and the degree to which stakeholders become committed to it.

One of the challenges in stakeholder processes is the move from general analyzing and talking to concrete planning and implementation. A good way to make the stakeholder process productive is to provide a set of draft proposals to focus the discussion. At the beginning of the planning process, project proposals should present a wide range of ideas or options. Only later on should the discussion be focused on a small set of proposals. Sufficient idea notes and perhaps even concept notes will be available from the previous step where stakeholders described the desirable future.

The technical, organisational, and legal costs of information sharing, notably when new information technology solutions are envisaged, are a relatively new and unfamiliar territory for all public organisations. Defining and appraising the costs and risks will be an important step towards the most effective policies. Checking alternatives to collaboration is the very first step in the analysis of alternatives.

In most cases it will be useful for the steering committee to prepare a draft action plan, which is then discussed and in some form adopted by the entire stakeholder group. The action plan should specify the details and sequence of implementation that defines what is to be produced by whom and when. Action plans are most effective if they specify intermediate deliverables that have to be produced by a given date. To do this, stakeholders have to determine the sequence of all major activities and to assume responsibility for delivery.

Let stakeholders assume their responsibilities in plenary, so that everybody knows what can be expected from whom. It is useful to hold stakeholders responsible for signing and committing to the action plan. Stakeholder representatives should endorse the action plan in their own names even if their organisation or group is not able to commit collectively. Signatures should be interpreted as a commitment to do everything possible to assist with implementation.

Seek agreement for a light procedure to monitor the implementation of the action plan. Responsibilities and methods for overseeing the implementation of the action plan should be specified in the written report of the first workshop. A mechanism by which the stakeholders and working groups can be re-assembled if a change in circumstances or a failure on the part of a working group to live up to their commitments suggests that another meeting is necessary.

Step 4 Implementing Collaborative Action

Once plans ideas are gathered, ground rules established, strategic directions set and action plans agreed, the next step is to begin to carry out the collaborative actions needed to

meet the desired goals. This involves several steps, including establishing working groups or task forces if needed to break a large group or a large task into smaller, more manageable units. The coordinator is responsible for on-going monitoring of the group effort to ensure that trouble-shoot any problems that arise and redirect if needed, to ensure that timetables as agreed by the group are being respected and to provide communications linkages between stakeholders between face to face meetings. The coordinator or stakeholders with greater capacity may need to provide technical assistance to other stakeholders during the implementation phase by conducting site visits or on-the-job training. Results are collected and an initial analysis conducted. At this point, stakeholders should be reconvened to review and validate draft conclusions. Reports should be made back to higher level authorities and feedback collected from them before any work is considered complete. At this stage a final analysis can be made and results finalized.

To achieve large and complex objectives, it may helpful to allocate the responsibility for implementation of smaller parts of the job to designated working groups appointed by the full set of stakeholders. Depending on the size of the countries and the scope and complexity of its activities in the field of PGRFA, a number of working groups may be needed. A possible grouping could be by major activity areas of the GPA:

- in situ conservation and development
- ex situ conservation
- use of plant genetic resources and
- institutions and capacity development

The steering committee can prepare suggestions about the need for working groups but the stakeholder plenary should decide how working groups should be used to achieve the objectives and how stakeholders should be represented on each group.

Working groups are not independent and they are not permanent. They draw their mandate from the commitments made by stakeholders in the plenary. They need to have clear terms of reference listing as precisely as possible the assignment to be completed and specifying the reporting format and deadlines for submission of reports. Working groups should be free to organise their work within the terms of reference. They should not have decision-making responsibilities.

Given the wide range of stakeholders involved in conservation and use of plant genetic resources in each country, there are likely to be widely differing capabilities among different stakeholders. Organizations based in capital cities for example, might have access to communications services that are unavailable to stakeholder in remote areas. Languages may differ from one part of a country to another. Some stakeholders will have computer equipment and the skills to use it, whereas others may have barely had an introduction to the technology. The coordinator should make an initial assessment of the capacities amongst different stakeholder groups to determine how differences might affect the ability of the stakeholders to work together to accomplish their collaborative programme of work. Means of overcoming differences in capacity should be discussed and negotiated among the stakeholders and assistance provided to weaker stakeholders to the extent possible. Assistance could be in terms of provision of supplies and equipment, or in terms of training or site visits to provide on-the-job assistance. Effective stakeholder involvement requires that differences be balanced out to the extent possible so that stakeholders can make effective contributions towards the programme of work.

Focal points should monitor progress to address any problems that arise unexpectedly during implementation. Another important job of the focal point is to maintain communications between stakeholders during the implementation phase, so that a sense of common purpose is maintained, to discuss problems that may have arisen during implementation and to report on progress. Without regular communications from the focal

point, participants may feel isolated from the group and lose motivation to continue to provide input towards the common objectives. It is important to remember that even though stakeholders have agreed to participate in carrying out a joint programme of work, that all of them have other responsibilities that also demand their time. Motivation and sense of common purpose must be stimulated by the focal point during implementation to help maintain the commitment of stakeholders to the common goals.

When the individuals or working groups have completed their tasks, the whole group of stakeholders needs to engage in an analytical effort to look at the overall picture of a problem and broaden their thinking. This is largely achieved by having the “whole system in the room”, that is by the diversity of the stakeholders who participate in the group. To take all relevant information into account and still being able to trigger creative thinking in the stakeholder group requires both efficient communication and sufficient time for the participants to process the information and make sense out of it. The principle of “optimal ignorance” applies here: Stakeholders need to see the big picture without getting lost in details and information overload.

A second plenary workshop is suggested for analysis and validation. How should this second workshop be started? Preferably not with presentations of featured experts. Such an approach tends to prematurely narrow down the focus of the stakeholder meeting. Moreover, it takes away much of the time that would otherwise be available for stakeholders to make their points and to interact. And it tends to discourage the less eloquent stakeholders.

If there is written information to be shared with stakeholders (reports, proposals, background papers etc.), this should be done beforehand. Providing written information in advance is beneficial because it forces the organisers of the stakeholder process to be precise and concise with regard to the information they are giving. And it gives stakeholders time to prepare and, where required, to consult within their constituencies.

Often, the best way to focus a consensus building dialogue is for working groups to provide a set of preliminary data and information to focus the debate. But the findings of the working groups should be seen as only an input into the overall consensus building process. Differences in interpretation as well as conflicting interests among the stakeholders often mean that the results of the working groups will not be accepted unanimously. Preliminary data should be seen as a means to focus conversation, not to end it.

The facilitator should create a visual record that captures the key points of agreement and disagreement. Recording can be done on large sheets of paper tacked up in front of the room. The important thing is to have an on-going visual representation of what the group has discussed and agreed. Such a “group memory” may use drawings, maps and other illustrations. The visual record ultimately needs to be written up in a summary and reviewed in draft by the participants to ensure that everyone agrees with the results.

Individuals or single groups should not insist on claiming authorship of a particular set of data (for example in an effort to improve its standing with its constituents). This bears the risk of provoking criticism or counter-proposals. Consensus is much more likely to emerge if participants avoid attributing or claiming authorship of specific sets of data or information.

As the dialogue proceeds, stakeholders should focus on “improving” consolidated sets of data and information prepared by the working groups. When changes to a set of data are made, try not to indicate where they originated. Preferably revisions should be accepted by the whole group and thus become the product of the whole group.

Step 5 Maintaining the momentum

Give stakeholders something back in return to the effort and information that they have provided. It would be very de-motivating for everybody if they provided inputs and did not get anything back for it. Document and communicate both the stakeholder process and its

outcomes. A facilitator's summary will usually be a good choice. Endorsement by the stakeholders is a necessary component. All documentation should be made available to the stakeholder groups and become accessible for the public.

Communicate stakeholder decisions and their implicit strategic orientation in simple concepts and plain language, so that the general public and other "outside" but interested parties who have not been involved in the process will understand the issues and have a chance to react. Transparent information about the stakeholder process and its outcomes is essential for coalition building and fostering public support. In the long run, it can help to make fund raising efforts more successful.

Hold a dissemination workshop when the monitoring report is in its final draft stage. This will allow sharing of results of the stakeholder effort with a larger public at a stage when the findings have been drafted but before the report is finally endorsed.

Mind the obvious. Participants usually appreciate good documentation. This can range from background papers that get prepared in the process, reports and other inputs from working groups, arguments and decisions from the plenary meetings. Many people do mind and appreciate simple things such as getting in time the list of participants with their addresses and telephone numbers.

The best way to keep stakeholders engaged is to move consciously and boldly from information giving to information sharing and dialogue, and further on to joint implementation. The orientation on a specific product such as the monitoring report on the implementation of the GPA can be a valuable trigger for creating change energy and new partnerships.

At this stage, concentrate on the implementation of the new projects and the new work procedures that came out of the stakeholder involvement process. Success will come from practical pilot projects that yield tangible results in a relatively short time. For this reason, it is important to break long-term outcomes down into intermediate outcomes that can be achieved faster and celebrated earlier.

Do not worry about larger changes that may eventually be required. People and organizations do have an impressive capacity to respond to problems yet unknown to them (but likely to occur in future) and to find appropriate answers once they get the opportunity. Strategies and plans that stick too close to present day problems are unlikely to bring about significant improvements. The commitment and energy for the program will come from perceived opportunities and visions of the future. The time and effort invested in the elaboration, documentation, and dissemination of appealing images of the desired future will pay off now.

Do not try to make detailed action plans with the whole stakeholder group. Large and diverse groups are not good at making operational plans. Rather spend time on getting strategies and outcomes clear and accepted by defining what will be produced and who will use the products. If there is consensus about fundamental strategic orientations, and if these orientations are widely communicated, the partners involved will develop solutions on their own. New working groups or sub committees can also be established to prepare operational plans and report back to the plenary in another workshop later on.

When in doubt, or short of resources, go for a few projects only and focus even more on communication and participation. Stakeholders should decide on how to monitor and evaluate the implementation of their decisions. Monitoring and evaluation plans should also answer the question of what happens in the case of non-compliance.

New knowledge can only grow and spread when it is accepted. Acceptance, however, is not automatic. The motivation of people to share and use information or knowledge can not be designed or ordered. It rather emerges (or not) in the usual modes of communication and information use, depending on the opportunities provided to enable participation and the processes used to enhance people's commitment.

Even if agenda, rules of communication and so forth have been agreed at the outset, stakeholders will need a space for reflection upon that same process and how it is working. Meta-communication should be assured by the facilitators who can ask for reflections on the process at certain points in the process.

Another good thing to do is to establish public channels through which the stakeholder group can register concerns and suggestions from non-participating parties at any time.

Also plan for a systematic analysis of substantive (i.e. scientific and technical) experiences and lessons learnt in the course of implementation. This may be done periodically and in small groups. It is important to communicate the results quickly in order to avoid the emergence of “island solutions.” A key step in ensuring that results are brought to the awareness of higher level authorities is to hold a meeting to present results and discuss the application of the results to national decision making and priority setting. It helps to ensure that higher level decision makers are informed throughout the process to the extent feasible, but that they are actively engaged during the planning phase, when draft results are being analysed and in drawing conclusions and applications from the final results.

At the end of every important step, the steering committee may want to conduct a self-assessment of the effectiveness of the process followed and the appropriateness of the approaches, tools and methods that were used.

Country reports

Burundi

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Introduction

Burundi has 27 834 km² and 5 to 6 millions inhabitants. More than 90% of the population is living in rural area depending on agricultural income. The main cash crops are coffee, tea, cotton, palm oil, sugarcane etc, which gives around 53% of the national gross product. The main food crops are maize, wheat, rice, sorghum, dry beans, Irish potatoes, sweet potatoes, cassava, banana, soybean, peanut etc. Fruits are mainly banana, orange, avocado and other tropical fruits. They are many minor crops based-community being lost due to lack mechanisms for proper conservation and use.

1. National agriculture and biodiversity strategy

The overall strategies to contribute to food security in line with the improvement of appropriate management of lands, soil fertility, water, forestry and natural resources protection. The specific target is to alleviate poverty at all community levels by maximizing available resources and developing technologies to increase crop production and income of the population. The ultimate objective is to transform agriculture of subsistence into the economy oriented market with regards to the promotion of a competitive national seed industry.

2. Organization and stakeholders involved and institutional arrangements for PGR conservation use

Plant genetic resources activities involve the Ministry of Environment, the Ministry of Agriculture and Livestock and to some extent, the Ministry of Education.

The Ministry of Environment is mainly involved in the conservation and protection of forestry, national reserves (parks) which house both plants and animals, water and land management and soil fertility.

The Ministry of Education is responsible of training aspects in agricultural areas in collaboration with other agricultural.

In the context of germplasm activities, the Ministry of Agriculture is dealing with animals and plant germplasm for food and agriculture. The National Agricultural Research Institute (ISABU) is the mandated public institution to carry out research activities related to crops improvement: collect, characterize, evaluate, conserve, exchange germplasm, breed, produce and supply improved varieties of seeds to producers and farmers. In other words, it provides new technologies to the population with respect to fit their needs.

The main partners are:

- the public and private universities of crop germplasm exchange, studies related to indigenous medical plants, to plant taxonomy, to wild crop related species, to botanical gardens etc.
- the Sub-regional network Agricultural and Livestock Research Institute (IRAZ) is dealing with germplasm activities and research in agrobiotechnology.
- the public and private seed producers
- NGOs are getting interested in proving funds for some research activities, seed production, and farmers working in association
- farmers.

The country is a member of ASARECA, EAPGREN, many other networks in the region, and International Agricultural Research Centres.

3. Policy elements related to PGR

The strategies related to PGR conservation have been established in the global plan of natural resources protection. This includes integrated sectorial development plan of the Ministry of Agriculture and the Ministry of Environment which has a specific department related to agrobiodiversity protection and use.

However, there is not yet a national technical committee on PGR activities involving all stakeholders to set up a global policy for conservation and sustainable use of PGR for food and agriculture. There is not yet a tangible training programme and capacity building at all levels to support the global plan for national conservation and use of PGR

4. Legal framework for PGR

Burundi has ratified CBD, IT, FAO Commission, WTO, TRIPS, COMESA (Common Market for East and Southern Africa), etc. The Ministry of Environment has set off regulations related to natural resources conservation, forestry, water management, lands protection There are not yet specific regulations related to PGR for food and agriculture, but the programme on PGR activities related to food and agriculture is recently established as a component of the National Research Agricultural Institute. There exist drafts of crop seed legislation and phytosanitary seed regulations as well.

5. Key ongoing activities on PGRFA conservation and use

Activities on PGR for Food and Agriculture are under planning process since the programme is at the early stage of development. In the sectorial development plan of the Ministry of Agriculture, primary activities in the field of conservation and use of crops and variety diversity focuses on:

- the restoration of germplasm in rural agricultural system
- the rehabilitation of seed centres for in situ conservation
- the development on appropriate technologies related to post harvest and seed storage based-community level
- the promotion of initiative of private seed sector development
- the promotion of participatory research based on on-farm community

6. Some major limitation of PGR activities

- lack of legislation on PGR for food and agriculture
- lack of coordination mechanisms among stakeholders
- insufficient funding support at the national level
- insufficient appropriate infrastructures for PGR conservation
- neglected and under-utilized crops and related wild crops are being lost due to dynamic migration of rural population, over-utilization because of famine, overgrazing, high population growth rate, etc.

Ethiopia

G. Mengistie

Ethiopian Science and Technology Commission

Introduction

National agricultural and Biodiversity Strategy

- Agriculture led industrial development strategy
- Federal and Regional Conservation strategies:-
 - are broad and comprehensive
 - conform to international instruments etc.

Organisations and stake holders involved institutional arrangements for PGRs conservations and use.

- Government organisation
 - Institute of Biodiversity Conservation and Research (IBCR)
 - Environmental Protection Authority
 - Ministry of Agriculture
 - Seed Industry Agency
 - Ethiopia Agricultural Research Organization (EARO)
 - Universities
 - National herbarium etc.

Relevant PGRs policies and Policy elements

- Relevant Policies
 - environmental policy
 - biodiversity conservation and research policy
 - agricultural research policy
 - seed policy etc
- Elements of policies
 - specify basic policy directions in the conservation, development and utilization of PGRs
 - address a number of policy concerns and issues such as involvement of communicates, sharing of benefits, value adding, institutional linkages. etc.

Nature of policies

- Broad and non-binding
- Need implementation tools such as laws, directives and standards

Legal frame work

- Federal and regional laws
- Can be classified as:
 - general
 - specific

General laws

- Constitutional laws
- Land laws
- Intellectual property laws
- No plant breeders rights protection law

Specific laws

- 1994 forestry proclamation
- Relevant laws:
 - IBCR establishment proclamation

- seed laws
- forestry proclamation
- wildlife conservation laws
- approaches adopted
- Prohibition:
 - outright – forest proclamation
 - conditional – wildlife law
- Conditions/procedures not defined by law
- Use of MTAs
 - no PIC of local communities
 - no scheme for sharing of benefits to communities etc.

Membership of treaties and networks

- Member of CBD, Signatory of the International Treaty on plant genetic resources for food and agriculture
- Member of regional networks such as ASARECA and EAPGREN
- Not party to WTO and UPOV

Ongoing key activities

- Preparation of draft laws
- Detailed action plan and program in the process of being developed under GEF funded project BSAP
- Capacity building measures-development of infrastructure such as the forestry gene bank with the assistance of German Government
- Traditional medical plant project supported by a loan and grant obtained from the World Bank

Conclusion

- Clarity of policy objectives, directives and strategies
- Existence of relevant institutions
- Some commendable achievements etc:
 - a dynamic farmer based approach to the conservation of Ethiopia's PGRs – 12 community gene banks, 193 farmers crop conservation association
 - use of PGRs in crop improvement programs etc.
- A number of limitation and weaknesses
 - overlap of mandates
- Weak institutional capacity
 - discontent between policies and conflict between conservation and development oriented institutions
 - lack of policy dynamism and impact assessment mechanism
 - a lot needs to be done.

Eritrea

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Introduction

Eritrea has a wide and diversified agro-climatic conditions related with altitude which goes from below sea level up to 2400 m. and, few locations above. Based on agro-climatic and soils parameters, the region can be grouped in six zones (the central highland, western escarpment, south western low land, north western lowland and the green belt zone). Based on the diversity of agro-climatic conditions, Eritrea is one of the centres of diversity. The country therefore, has very unique genetic resources with a lot of intra and inter-specific diversity. It is a centre of diversity for such important crops as barley, durum, wheat, taff, sorghum, sesame, sunflower, chickpea, cowpea, etc. , this diversity has not been systematically documented and conserved over the years. This important germplasm is currently under threat due to over exploitation, overgrazing, prolonged war, drought, pests and diseases, introduction of improved varieties, and mechanized cultivation. It is therefore, important to encourage the already established national centre for, plant genetic resources with gene bank facilities and equipment's to undertake responsibility for germplasm exploration, collection, conservation, documentation, evaluation and utilization.

Introduction to Eritrea and its Agricultural Sector Location and size

Eritrea is in the north-eastern country of the Africa bordered on national needs and opportunities.

The Eritrean people and its economy have terribly suffered from the effects of a prolonged often combined with the occurrence of natural calamities (drought, outbreak of hazard pests, etc.) and is currently among the poorest countries in the world. Since the destruction of habitat and drought are one of the major factors causing genetic erosion, most probably several cultivars of the different crop species are seriously threatened to loss and some could have possibly irreversibly disappeared. In such a situation, it is extremely urgent to conduct an extensive program of crop germplasm exploration and collection to conserve the existing genetic diversity of land race materials and make available a reservoir of gene pool useful in the national and south by Djibouti, and the north and west by Sudan. It has a land area of 125,000 square kilometres and a population estimated 3.5 million. The country has an estimated annual population growth of 3.3%.

Agro-climatic conditions

Eritrea in spite of its limited area, a wide range of agro-climatic condition related with altitude which goes from below sea level up to 2400 m and, few locations, above. Based on agro-climatic and soils parameters, the region can be grouped in six Zones.

Country needs and opportunities

Eritrea, therefore, requires financial, technical, and logistical support in the following areas:-

- Development of national centre for Plant Genetic Resources with following facilities
 - Short and modest long term storage facilities
 - Seed handling and processing equipments
 - Laboratory facilities
 - Computers hardware and software packages
 - Information and documentation centre for plant genetic resources and related activities
- Inventory of in-situ conservation site and collections for a natural habitat, forestry species and agricultural crops found in the various different agro-ecological zones which have different type of plant resources.

- To carry out a systematic country wide germplasm exploration and collection of cultivated, agricultural crops, their wild relatives and other economically important wild plants forestry species
 - in-situ conservation of a natural habitat and on-farm.
 - ex-situ conservation through long and short term seed-storage and in-vitro
 - Establishment of field gene bank of vegetatively propagated crop and recalcitrant species, important forestry species, medicinal plants, species and herbs.
 - Establishment of arboreta and botanical gardens for ornamental plants, threatened species and other economical important species.
- Documentation of Eritrean plant resources including taxonomic study, collection of herbarium specimen, species list in natural habitat, endemic species, areas of high inter and intraspecific diversity of agricultural crops and wild relatives.
 - Documentation of indigenous knowledge on use of plants, traditional plant breeding techniques and traditional environmental conservation strategies.
 - Documentation of national plant genetic resources activity, project institutions and people involved in genetic resources work.
- Development of a national herbarium, for documentation and repository of Eritrean plant resources base.
- Regeneration, Multiplication, Characterization and Preliminary Evaluation of germplasm already held in the gene bank and that, which will be collected in the future mission.
- Evaluation and Utilization of germplasm in crop improvement programs. This is very important in view of the information provided in chapter 3 of land races is a sustainable agricultural production system.
- Repatriation and duplication of germplasm: - germplasm originally collected from, Eritrea by other countries and organizations need to be repatriated, evaluated and used in crop improvements. For safety precautions a duplicate set of all germplasm would be kept in another gene bank outside the country.
- Development of man power in plant genetic resources is crucial. Training at all levels (PHD, MSC, BSC and Diploma) is required. The skills are required in all technical areas of plant genetic resources, as mentioned in Chapter 5.
- Development of a legal framework and policy, guidelines governing the conservation and utilisation of plant genetic resources, particularly:-
 - access to germplasm
 - exchange of genetic resources
 - biotechnology and biosafety issues
 - quarantine regulations
 - establishment of a national centre for plant genetic resources
 - intellectual property rights including, farmers' right.
- Development of a national coordination committee and programme on plant genetic resources, regional and international linkages.

Kenya

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¹Kenya Plant Health Inspectorate Service

²Help Self Help Centre

³International Plant Genetic Resources Institute

⁴National Genebank of Kenya

Introduction

Background information

The Agricultural sector plays a major role in Kenya's economy. The sector contributes 28% of GDP, generates over 60% of foreign exchange earnings and employs 70% of the population. The sector is characterised by small scale holders who account for 75% of marketed agricultural products.

Kenya is endowed with unique heritage of diverse germplasm of forages (grasses and legumes and browse plants), cereals (sorghum and millets), pulses (pigeonpeas and cowpeas), tuber crops (Cassava, yams and sweet potatoes), oil crops (castor, groundnuts, sesame and vernonia), fruit trees (tropical and indigenous species) and vegetables including indigenous species such as cucurbits and amaranths.

1. National agriculture and biodiversity strategy

A taskforce was formed in 1996 to develop National Biodiversity strategy and Action Plan (NBSAP) on Plant Genetic Resources (PGR) with the objective of implementing Article. 6a of CBD

Vision:

Kenya's National vision is that there will be a health environment providing abundant biodiversity resources and ensuring food security for the people. Our biodiversity resources will be sustainably conserved and utilised by sensitized and empowered communities through participatory management practices and the application of modern and indigenous technologies. Best practices in biodiversity conservation will be integrated into national development planning and through good governance there will be sustainable utilization and equitable sharing of benefits ensuring improved social, cultural and economic status of the people of posterity.

2. Organizations and stakeholders and institutional arrangements

The Kenya government founded the National Environment Secretariat (NES) in 1974 as the lead environment agency to co-ordinate and oversee environment activities. These roles have been taken over by the National Environmental Management Authority (NEMA) formed in the year 2002. NEMA coordinates the inter-ministerial committee which is multisectoral and multi-disciplinary team with members from the government departments, private sector, Non Governmental Organization (NGOs) Community Based Organizations (CBOs).

Institutions like The National Genebank under Kenya Agricultural Research Institute (KARI), National Museums of Kenya, Kenya Forestry Research Institute, Forestry department and Kenya Wildlife services (KWS) play a major role in germplasm conservation while Kenya Plant Health Inspectorate Services (KEPHIS) facilitate safe exchange of germplasm. NGOs such as Help Self Help Centre mobilize conservation and promote utilization and management of plant genetic resources at farm level. Other major stakeholders in PGR activities include universities, government departments, CGIAR, CBOs and International Research Organizations.

Kenya has a National Biosafety Committee (NBC) hosted by the National Council of Science and Technology, which is a regulatory body on biotechnology.

3. Policy elements related to PGR

The following are some of the issues to be addressed on PGR:

- Integration of PGR conservation in the constitution
- Integration to address ECO-Tourism

- Revise and harmonize existing policies
- Recognise farmers' rights
- Inventories public biodiversity

4. Legal framework

- Kenya has ratified the Convention of Biological Diversity (CBD), is a signatory to IT for PGRFA, UPOV, IPPC, OECD, ISTA, WTO, GPA, CITES, Montreal protocol and Cartagena protocol among other international treaties.
- Kenya is also a member of the ASARECA, EAPGREN, EAC
- Integration of PGR conservation in the constitution
- Kenya has the following chapters of the laws that guide the protection, utilisation and management of PGR:
 - the environmental management ACT 1999
 - the seed and plant varieties ACT CAP 326
 - the crop protection ACT CAP 324
 - the agricultural produce (export) ACT CAP 319
- Kenya has Biosafety guidelines and a draft
- Recognise farmers' rights
- Inventories public biodiversity

5. Key activities

The following were some activities that were proposed by the NBSAP to be undertaken by various institutions:

- Strengthen of institutional and community capacity
- Promote the conservation and sustainable utilization of forests
- Support utilization of indigenous knowledge
- Strengthen National ex situ/on-farm conservation
- Capacity building
- Creation of awareness

Madagascar

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Introduction – National Report About Plant Genetic Resources

1. National strategy for a sustainable management of biodiversity

- Elaborated in 2000
- Stakeholders: Ministries (Forestry, Environment, Agriculture, Research, University), ONE (National Office of Environment)/SAGE (MinEnv), CNRE (National Research Centre upon Environment), FOFIFA (National Research Centre for the Rural Development), Implementing Agencies of Environment Program (ANGAP, ANAE), NGOs, Private Institutes.
- 3 main orientation lines:
 - Biodiversity conservation
 - Sustainable development of biodiversity
 - Reducing pressure on biodiversity resources

2. Organisation and stakeholders involved on PGR

- Forestry:
 - Ministries of Forestry, NTSC (National Tree Seed Center), ONE/SAGE, NGOs
- PGRFA:
 - ONE/SAGE (Department of Transfer of Natural Resources and Biodiversity), FOFIFA, FIFAMANOR, EAPGREN, ASARECA

3. Policy elements related to PGR

- Forestry: exist
 - National Strategy Plan of the Management of Forestry Phylogenetic Resources
- PGRFA: on preparation
 - national committee do not exist yet, due to frequent turn-over of partners,
 - a strong collaboration exist between ONE/SAGE and FOFIFA for activities related to PGRFA
 - basic and active collections of all crops belong to FOFIFA (rice, legumes, maize, coffee, cassava, clove, fruit, vanilla, banana....)
 - the conservation and use of wheat, underutilized cereals (oat, barley, sorghum....) belong to FIFAMANOR
 - wild relative crops growing in the forest are partially protected by on going activities related to the forestry management.

4. Legal framework

- CBD ratified in 1995
- quarantine legislation
- right properties
- seed legislation (on preparation)

5. On going activities related to PGRFA

- Inventory and collect use of neglected PGRFA in the south region of Madagascar (2000-2001) by FOFIFA – SAGE/ONE (underutilized and wild relative crops). Collection of about 500 accessions belonging to more than 120 species (tuber root, sweet potatoes, cucurbita, leave legumes, wild fruits....)
- After collecting, difficulties to find funds for:
 - on field station transfer
 - improving the knowledge of interesting accessions
 - popularization of results

6. Weakness of national policy for the sustainable use and conservation of PGRFA

- Lack of public awareness
 - PGR was never seen as a priority for the development of the country by the decision-makers
 - PGR is an unknown word even for high technicians which work in the agricultural domain
 - Course about plant genetic improvement was stopped by 1980 at the University
 - Weakness of plant genetic teaching at the primary and the secondary school.

Rwanda

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Introduction

Rwanda is predominantly a rural economy with more than 90 % of its population (about 8 million people) dependent on peasant farming for their livelihood (MINECOFIN, 2001a). The fact that less than 10 % of Rwandan population live in the urban and the semi urban areas make it the least urbanised country in the sub Saharan Africa (MINECOFIN, 2001a). The country is also densely populated (population density of about 300 inhabitants/km²), leading to threats towards the conservation of environment and biological diversity. Food insecurity resulting from continued land fragmentation and degradation is a serious constraint. Another challenging issue is long standing poverty. Sixty five per cent of the population live below poverty line, and the GDP per capita was estimated to be US \$ 260 with a growth rate of 6.2 % in 2000 (MINECOFIN, 2001b).

Conservation is mainly done in situ (forest reserves and national parks, swamps, on farm conservation for crops) and in cold rooms where different collections of germplasm exist. The government currently strongly support the conservation of PGR as evidenced by the on going formulation of the environmental policy and legislation (the two in preparation) Gatera (2001) and Mugemana (2001) respectively.

Plant genetic resources (PGR) play a major role in different sectors of national economy: agriculture, livestock keeping, forestry, tourism, medicine, research and education. The existing regulations however are restrictive and community participation in management and utilisation of forest reserves for instance is not generally allowed. Only few activities are done under some agreements, or in some cases, against the legislation.

National Agricultural and Biodiversity Policy

As mentioned earlier, over 90 % of the Rwandan population depends on agriculture. The new National Agricultural Policy emphasises on transforming agricultural sector into a high value and high productivity so as to ensure food security. Market oriented agriculture is also aimed at in order to combat the outstanding poverty. As one of the strategies, a 14-year World Bank funded Rural Service Support Project geared at fostering agricultural production to achieve the two major goals through environmentally sound agriculture was established. A strong emphasis is also put on the conservation of biological diversity. This is supported by the establishment of a Biodiversity Strategy and Action Plan (BSAP) (Twarabamenye and Gapusi, 2000), which is in the final stages of preparation.

Organisation and Stakeholders

A number of partners in the conservation and use of PGR exist at all levels in the country. These include Governmental Research Institutes (NAR's); Departments (Forestry, Environment, Tourism, Land Management, ...); higher learning institutions, non Governmental Organisations and farmers and farmers' associations. Rwanda is a member of regional organisations such as the East African Sub Regional Development Centre (EASDC), Common Market for East and Southern Africa (COMESA) and the "Institut de Recherche Agronomique et Zootechnique" (IRAZ). It soon will be a member of East African Community (EAC). It further is a member to regional networks such as the Association for Strengthening Agricultural Research in Eastern Africa (ASARECA), the Eastern and Central African Programme for Agricultural Policy Analysis (ECAPAPA), Eastern African Plant Genetic Resources Network (EAPGREN), Agroforestry Research Network for East and Central Africa (AFRENA-ECA), and many other commodity based networks like the Eastern Africa Bean Research Network (ECABREN), etc. All these organisations have to deal with PGR in one way or another. The country is still a member to different International Organisations dealing with Agricultural research and development issues, example the Organisation for Economic Cooperation and Development (OECD),

Convention for International Trade of Endangered species (CITES), International Seed Testing Association (ISTA), It further collaborates with international organisations dealing with research in specific commodity crops such as CIAT, CIMMYT etc. and multilateral international research organisations such as the Consultative Group on International Agricultural Research (CGIAR) and the International Plant Genetic Resources Institute (IPGRI) and others.

Policy elements related to PGR

The Rwandan government is developing an agricultural sector strategy with the objective of increasing rural income, enhancing food security, and converting the agriculture into a viable sector by moving away from subsistence to market oriented agriculture (MINECOFIN, 2001b). The agricultural policy therefore advocates for the ecologically sound, market oriented agriculture so as to increase food security and alleviate poverty.

A strong support of environmental and biodiversity conservation exists, aimed at ensuring the protection of the environment and the biological diversity patrimony (Twarabamenye and Gapusi, 2000). A broad based national committee comprised of diverse number of partners has been established at national level, which advises the government on environmental and biological diversity conservation and technology transfer issues.

Legal Framework

Significant efforts to conserve the environment and the biological diversity have been and still are being made by the government. The indices include the existence of forestry policy and action plan, formulation of the environmental act and the Biodiversity Strategy and Action Plan (BSAP) (the two in preparation) Gatera (2001) and Mugemana (2001) respectively. Rwanda has also signed or in the processes of signing different international conventions dealing with the conservation of environment and/or the biological diversity. These include the following:

- The Conservation of Biodiversity (CBD), signed and ratified on 10/6/1992 and 29/5/1995 respectively (Twarabamenye and Gapusi, 2000; Mugorewera, 2002)
- Vienna convention for the protection of ozone layer, under signing process (Nyilimanzi, 2002)
- Convention against desertification signed (Mugorewera, 2002)
- Stockholm convention on persistent organic pollutants signed (Mugorewera, 2002)
- Cartagena protocol for the prevention of biotechnological risks signed (Uwimana, 2002)
- UN convention on climatic changes signed (Mugorewera, 2002)
- Convention on international trade for the endangered species signed (Mugorewera, 2002)

On going activities in the field of PGR

Many plant species are conserved in their natural habitats. In this context, several conservation projects exist, examples including Akagera National Park Natural Resources Conservation Project funded by GTZ, Integrated Management and Protection of Critical Ecosystems Project funded by Global Environmental Facility (GEF), etc. Many crop species and varieties are mainly conserved on farm in their respective breeding programmes. Many collections, local as well as exotic, agricultural and forestry, exist in the breeding programmes at different stages along the breeding lines. Many others are conserved in seed production areas, seed stands, orchards and/or arboreta.

Regeneration, characterisation, multiplication and evaluation activities are also carried out in different commodity crops/varieties in their respective breeding programmes. Gemplasm (seed) of different agricultural crops as well as forestry trees are stored for a

short term in cold rooms to ensure their availability for future breeding programmes and use. Facilities for long-term germplasm conservation are however still lacking. This restricts our capacity to conserve germplasm in a long run, which has a serious effect in the conservation of endangered and/or rare species.

Most of the germplasm for local use is produced locally, except for the little quantities imported for research purposes. Production and multiplication of improved germplasm is a primary objective so as to contribute to food security. Some PGR in wild ecosystems are being domesticated as high value trees under an IUCN/CEFDHAC funded project.

Exchange of PGR with neighbouring countries in the region and at international level is mainly in small quantities of germplasm for research purposes. This is effected through regional networks and follows acceptable and legal procedures. Uncertified germplasm is also expected to be crossing borders in some places. This is because there may be no clear policies for the exchange of PGR germplasm across the region as well as the unawareness of the farmers on the existing procedures and legislation. Although most of tree seeds are used locally, some are exported to the neighbouring countries like Burundi, Democratic Republic of Congo and Uganda.

Preparation of draft laws related to PGR conservation and biodiversity strategy and action plans are in final stages. The latter is funded by GEF. In effort to make use of PGR, traditional medicine is not only being used by local communities but also there is a laboratory manufacturing various medicines from wild plants for curing different diseases. Many other small community projects exist using PGR. Examples include: farmers associations producing honey, mushrooms, art crafts, etc.

Conclusion

In the light of limited resources, Rwanda is struggling to establish a strong PGR programme so as to effectively conserve, use and exchange the PGR. Its success is obviously expected to be fortified by an effective regional and international collaboration in the conservation, sustainable utilisation and exchange of PGR and information. Mobilisation of physical and financial resources, capacity building and effective co-ordination of PGR activities and stakeholders at national level, together with effective networking are necessary for the functioning of PGR programme in Rwanda.

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Tanzania

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Introduction – Issues related to Plant Genetic Resources Management in Tanzania

The United Republic of Tanzania, consisting of the mainland and Zanzibar, lies between longitudes 30° and 40° east and latitudes 1° and 12° south. The land area is about 95 million hectares (950,000 km²) of which only 7% is cultivated and 26% is under various levels of protection. Protected areas contain a wide range of biological resources with a relatively high endemism. The population of Tanzania is estimated to be 36 million of which 80% depends on agricultural production for its livelihood. The rural population maintains a large number of traditional varieties of a wide range of crops.

1. National Agricultural and Biodiversity Strategies

Several case studies carried out an inventory of in situ conservation of Plant Genetic Resources in the country and it indicated a serious loss of genetic diversity and threat of extinction of some species.

Some of the major causes of these threats were identified as:

- displacement by improved varieties
- firewood collection and charcoal making
- bus fires
- over-grazing
- climatic hazards
- uncontrolled exploitation of forest resources
- loss of habitats during development projects
- departure from useful traditional culture
- loss of indigenous knowledge

2. Organisations and Stakeholders involved in Plant Genetic Resources

Realizing of the great importance of PGR and threats facing them, the Ministry of Agriculture formed the National Plant Genetic Resources Committee (NPGRCom) in 1987. The NPGRCom organised a stakeholders workshop in 1990 that, among other things, advised on the establishment of the National Plant Genetic Resources Centre (NPGRC) whose establishment started in 1991. The NPGRC is responsible for the management of plant genetic resources and for coordination of activities related to plant genetic resources. Other institutions whose activities directly affect the management of plant genetic resources include:

- National Agricultural Research Institutes (located in seven agro-ecological zones)
- Natural Resources Research Institutes
- Universities
- Institute of Traditional Medicine
- Tanzania Official Seed Certification Agency (TOSCA)
- The National Herbarium of Tanzania
- Local NGOs and CBOs

- Regional and International Organisations
- SADC Plant Genetic Resources Centre
- ASARECA
- IPGRI and other Future Harvest organisations
- International Centre for Underutilized Crops

3. Policy elements related to Plant Genetic Resource

Various implementation mechanisms have been put in place for the existing laws and those under preparation. Issues related to movement of plant genetic resources are based on the conditions set out by the International Plant Protection Convention, even though Tanzania is not yet a member of this convention.

A Seed Industry Development Programme was approved in 1992. The programme addresses the production of quality seed by the formal and informal sectors. As yet, there is not specific policy document on plant genetic resources. The NPGRC has the responsibility of dealing with policy issues and will soon be involved in the preparation of relevant policies on PGR conservation and use. Similarly, there is no specific policy document prepared on agricultural Biosafety. However, National Biosafety Committee was recently established and it is reportedly working on a draft on biosafety policy and its administration mechanism.

4. Legal frameworks related to PGR Management

The government ratified the CBD, in 1996. The country is a member of WTO. Tanzania is a member of FAO and intends to be a member of the International Treaty on Plant Genetic Resources for Food and Agriculture. Preparations are underway, to sign and ratify the treaty.

In order to support the efforts aimed at strengthening PGR conservation and sustainable use, the government of Tanzania has instituted various legal frameworks in accordance with changing trends.

For example, the system of seed production in Tanzania is governed by the Seed Act No. 29 of 1973 and the Seeds (Registration of Standards) Act. The Tanzania Seed Certification Agency (TOSCA) is responsible for the implementation of this Act. Because several changes have occurred in the seed subsector, the Act is now being revised to include, among other things sections relating to Plant Breeders Rights and Farmers Rights. A Tanzania Seed Trade Association (TATSA) was established in mid-2002.

To ensure safe exchange of PGR among countries, the Plant Protection Act of 1997 was promulgated and it is being implemented under the supervision of the Ministry of Agriculture and Food Security (MAFS).

The Government is in addition, due to enact laws on the following:

- Plant Genetic Resources Conservation and Use
- Biosafety
- Plant Breeders Rights
- Implementation of the International Treaty

5. Ongoing Activities in the field of PGR Conservation and Use

The NPGRC of Tanzania, in collaboration with various partners, is currently involved in carrying out eco-geographic surveys on PGR. This is necessary activity for the efficient collection of PGR from various parts of the country. NPGRC and its collaborators are also vigorously involved in carrying out germplasm collection and conservation.

The Genebank has been actively involved in the commendation, multiplication and characterization of PGR already collected as a way of adding value to the collection and to promote its utilisation. The latter is achieved by providing materials to various users.

The NPGRC has been providing training opportunities to its staff at all levels with support from Nordic Gene Bank, DANIDA, SIDA and IPGRI; but the resources available are limited and additional support is needed.

To keep abreast with advances in modern technology in the field of PGR conservation, the NPGRC is currently improving its infrastructure by acquiring modern equipment and establishing laboratories. Funds provided for this improvement are a small part of what is needed, but are nevertheless greatly appreciated.

Uganda

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Introduction – The Policy, Institutional and legal Framework

Uganda has an agrarian economy and the contribution of PGRFA to its economic growth will continue to be a central importance. PGRFA are the biological basis for the nation's food security as about 90% of the country's population live in the rural areas and directly depend on these resources for their livelihood. PGR activities are as old as agricultural research. The oldest research unit is the Entebbe Botanic Gardens, established in 1989 as a reception centre for introduced crop germplasm.

By the 1920's agricultural research stations have opened up and gradually took over the role of germplasm.

Uganda shares centers of origin and/or diversity of several crop species like sorghum, finger millet, pigeon pea, yams, banana and plantain. Major crops have evolved great diversity of land races/farmers' varieties and breeder's lines.

Policy Strategies

It is worthwhile to note that Uganda does not have a coordinated policy on PGR. What amounts to a policy to be found in various documents that touch on PGR. Even then the existing policies do not address the PGR on people's farms or in non-protected areas.

General

1. Plan for the Modernisation of Agriculture
2. The Poverty Eradication Action Plan
3. The National Environment Action Plan
4. The National Biosafety Framework

Specific

5. The National Biodiversity Strategy and Action Plan (2001), which explicitly identifies strategies and action for PGR conservation and sustainable use
6. The National Environment Policy
7. The National Agricultural Research Organisation (NARO) Medium Term Plan (2001-2005) has a project on PGR. The goal is to conserve PGR and increase its utilisation through scientific knowledge enhancement. The purpose of the project is to ensure an adequate and stable supply of diverse plants for economic gains
8. The Forestry Policy
9. The Seed Policy
10. Policy on PGR in Protected areas

Institutional Arrangements

1. International/Regional

Uganda is a member of the following organizations

1. FAO Commission
2. ASARECA
3. IPGRI
4. EAPGREN

2. National Arrangements

At the ministerial level, the relevant authorities are:

5. The Ministry of Agriculture, Animal Industry and Fisheries
6. Ministry of Natural Resources, Lands and Environment
7. Ministry of Finance

3. Institutions

8. The National Agricultural Research Organisation (NARO)
9. The National Environment Management Authority (NEMA)
10. The Forestry Department
11. Uganda National Council for Science and Technology (UNCST)
12. Plant Protection and Quarantine Department
13. The National Biosafety Committee
14. Makerere University
15. Uganda National Farmers' Association
16. National Coordinating Committee on PGR comprising various stakeholders.
17. Crop Working Groups
18. Local NGOs
19. Cultural Institutions eg. The Buganda Kingdom

4. Legal framework

Uganda is a member of the World Trade Organisation and The Convention on Biological Diversity. Work is in progress to enable the country to ratify the International Treaty on PGRFA.

On the nation level, Uganda has over the years developed laws pertaining to its natural resource management. However, there is no specific law relating to PGR. Instead, the laws take care of biodiversity in general.

Such laws include:

20. The National Environment Management Authority Statute and regulations made thereunder
21. The NARO Statute
22. The Forest Act
23. The Seed Act
24. The Plant Protection Act
25. The National Biosafety Guidelines

There is pending legislation in the following areas:

1. Plant variety protection
2. Access to genetic resources and benefit sharing
3. Indigenous knowledge

Major PGR challenges

1. Strengthening in situ conservation and development e.g. on farm management and the improvement of PGR and promoting conservation of wild crop relatives and wild plants.
2. Strengthening ex situ conservation. This would include for example, ensuring good quality collections, carrying out target collections, developing and/or employing alternatives ex situ conservation methods as appropriate
3. Promoting use of PGR through:
 - Extensive characterisation and evaluation
 - Diversification of crop production and diversity in crops hence promoting sustainable agriculture
 - Development and commercialisation of underutilised crops and species
4. Strengthening physical and human capacity through"
 - Developing a strong PGR program
 - Building an effective information management system
 - Training and education
 - Creation of public awareness

Planned Activities

4. Establishment of documentation and information system in order to facilitate access to PGR information and thus enhance PGR utilisation
5. Enhancement of public awareness on PGR conservation and value so as to involve a cross section of the Ugandan community in safeguarding PGR and to appreciate their own role in PGR sustainable utilisation
6. Community traditional PGR management and on farm conservation with the purpose of obtaining the local community in-put on PGR management planning process.
7. Germplasm transfer and ex situ conservation. The purpose is to establish facilities that would reduce germplasm vulnerability in crop research programmes and ensure systematic collection, characterisation, utilisation and facilitation of germplasm exchange.
8. Genetic Diversity/Monitoring genetic erosion studies in order to assess the status of indigenous plant species and promote their protection in the natural and modified ecosystems.

Regional institutional frameworks (including the Regional PGR Network)

Importance of Regional Networks in the Conservation and Use of PGR: Framework for Assessing Network Success

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Objectives of this paper

This paper aims to propose a framework against which the success or failure of networks for use, exchange and conservation of plant genetic resources (PGR) can be assessed. Since the EAPGREN network is in its formative stage and this workshop aims to strengthen it, the introduction and adoption of such a framework by the network is timely. The framework could be used as:

- A checklist to ensure that all key aspects related to successful management and implementation of the network are addressed during the planning phase
- A set of indicators against which the network could be monitored and evaluated over time and
- A tool for promoting and communicating network accomplishment and success.

Networks are often expected to produce impressive results in a manner that is more efficient and effective than could be achieved by any partner operating alone. As a result more and more networks have been established in the last decade. However, networks do not always live up to the expectations of members and donors (Smutylo and Koala 1993). Assessing a network is important to tracking its progress towards achieving intended results, identifying changes that might be needed during implementation of the network's programme that can help to make the network more successful, and helping to ensure that the network has credibility with external parties. Certainly many donors require periodic assessment of their funded projects, and may expect that proposals include indicators against which of success can be assessed.

While assessing success is important in promoting the network to outside supporters, it is also critically important to network members and management. Network managers need to ensure that the network is functioning well or make the necessary changes to maximize performance. Since they exist to benefit the membership, networks need to monitor such things as accomplishment of activities, leadership and coordination, and communication to ensure that the network remains relevant to its members (Smutylo and Koala 1993). Network members need a thorough understanding of the benefits of networking and how performance can be improved. (USAID 2001).

The importance of networking in PGR

The need for collaboration and cooperation increases when knowledge becomes more specialized and problems more complex, and networking has emerged as an important means of increasing communication and collaborative research in the field of agricultural research (Hawtin 1991). When facing difficult problems, the old adage "two heads are better than one" applies. The realm of plant genetics resources is a complex technical area with political and social dimensions that might be characterized by the following types of challenges that could be addressed through a collaborative approach (Watts 2000):

- Genetic research, particularly biotechnology is undergoing a period of rapid growth and change.
- Individual farmers, research scientists, institutions and governments have often failed to satisfactorily address emerging problems through their independent action.
- Adversity increasingly characterizes the debate as different factions struggle to gain rights to plant genetic resources.
- The amount of expertise, infrastructure, resources, information and power varies greatly among the different parties which have a stake in plant genetic resources conservation or use, for example, between developed and developing countries, or, within countries, between government and rural farmers and indigenous people, or between the public and private sectors.
- Many different groups and individuals have vested interests in plant genetic resources including plant breeders, agribusiness, farmers, environmentalists, governments and international organizations.

In the face of this complexity, networks have emerged as an important means of bringing people together to find solutions to commonly felt PGR problems and challenges. Plucknett, Smith and Özgediz (1993) remind us that networking is not new, just a new name applied to a phenomenon of human behaviour that has existed for millennia, humans working together to meet mutual needs. Simply put, networks are a mechanism for people to collaborate to find solutions for problems that are too great for them to solve on their own. Involvement in networks is significant within the field of agricultural research and technology. In 1990, the Food and Agriculture Organization was working with about 135 networks in such technical areas as agriculture, fisheries, forestry and rural development (FAO 1991). Most of these networks have come into being since 1980. Networking is one of the main means by which IPGRI conducts its work (IPGRI 1997). Due to the increasing confidence in networking as a tool to solve agricultural research problems, International Development Research Centre (IDRC) support to networks increased dramatically within a ten-year period. In the 1980's IDRC supported 79 networks and committed 24% of its annual appropriations to network activities (Smutylo and Koala 1993). In a 1997 study, IPGRI reported significant involvement in eleven regional plant genetic resources networks and nine international commodity focused networks. These numbers do not include numerous formal and informal research networks, or more recently established networks such as EAPGREN. A recent study identified 105 active networks related to genetic resources alone (Thormann 2000).

Drawbacks/potential problems of networks

While the potential benefits of networks are well known and widely discussed, there are also potential drawbacks to networks or pitfalls that networks may be encountered that will reduce their effectiveness. An analysis of 15 UNDP funded regional projects identified the following constraints (Hariri 1994):

- Incomplete survey of national institutions needs and interests
- Long time needed to develop a country's own network policy and strategies
- Low level of country commitment to the network
- Long time frame between network launch and commencement of activities
- Common activities not well defined
- Attempts by networks to do too much with too few resources
- Domination of networks by full time coordinators and their institutions

In spite of expectations that networks will be more efficient and effective in achieving certain goals than any single country operating alone, it is not always certain that networking actually is more effective or efficient. High costs of coordination for example

may mean that networking is less efficient than other alternatives. Goals may be poorly articulated in a network, or responsibilities not well defined, so that the network approach is less effective in accomplishing tangible outcomes than alternative approaches. Research scientists carrying out research for the network may be less accountable than they might be to their own supervisors and administration (Faris 1991).

Networks can also be dominated by the network coordination, by stronger members, or by donors. This means that the needs of weaker members are not taken into consideration adequately, priorities and activities distorted in favor of stronger members and benefits not equitably shared.

Networking can actually detract from the priorities of any individual country, if the network has enough resources to drive the research agenda of a small, poorly funded national programme. In one case (Riley 1993 and Eyzaguirre 1996) a network was able to shift the oilseed research priorities in Nepal towards groundnuts, because the network brought in funding resources directed towards the crop, in spite of the limited economic value of the crop (and thus priority) within the national programme.

Networks can have very high transaction costs that reduce efficiency. Network coordination costs can run as high as \$500,000 per year for an international network with a coordinator paid an international salary, associated travel, and costs of meetings, communications and publications (FAO 1991). Benefits must clearly outweigh such costs, or costs must be kept at a more moderate level to better match the means of the network membership.

Sustainability is the ability of the network to continue its activities and produce benefits over time. Financial sustainability is a problem of many networks, especially those that rely heavily on external funding support. Some networks rely on one or a few donors that have committed to a limited period of support or whose priorities may change. Other networks have failed to develop sufficient member commitment to support a basic level of operation or to complement external funding support. Networks in such situations face an insecure future.

Framework for assessing success

Monitoring and evaluation can help networks assess their success, identify strengths and weaknesses and make the necessary adjustments in order to improve their effectiveness. Broadly speaking, evaluation can be used to assess short-term or longer-term effects or impact or for decision-making related to planning and implementation (Horton et al 1993). Assessing success or the likelihood of achieving it is useful for network members, network coordinators and management to help them become aware of potential problem areas and readjust their programmes to avoid or address these problems and become more effective. External parties, such as donors are also interested in assessing success so that they have confidence that resources directed towards the network are being put to good use.

A framework for assessing the effectiveness of a network might include three hierarchical levels at which success could be assessed, depending upon the key questions that need to be answered, funds available to carry out an assessment and data availability. The three levels at which a network might be assessed include:

- Impact
- Outcome and
- Operational processes

Impact assessment evaluates the effect of the network and implies assessing concrete changes that have taken place as a result of the network activities. The key question at this level is "To what extent has the network caused significant positive change in the areas upon which it focuses its work?" The expected impact of networks will vary depending

upon the goals of the network. However, generally speaking, regional PRG networks aim to improve PGR conservation and use through regional collaborative actions. Indicators of impact based upon such a goal might include:

- Proportion of the region's genetic resource conserved; and
- Proportion of material conserved that is exchanged and used

Impacts could also be thought of in terms of impacts to the research institutions involved. For example, facilitation of the flow of technology among network members could reduce overall research costs, and networks may be better able to attract international donor funding to the benefit of individual country members (Gómez and Pingali 2002). Indicators related to these expected impacts might include:

- Reduced research costs (presumably for national programmes); and
- Increased funding for national research programmes (or on a regional basis)

Studies could be done to assess changes in conservation, exchange and use of a region's genetic resources. An assessment could also be done of member institutions and their costs and funding. However, it should be recognized that impact assessment is one of the most difficult and expensive types of evaluation that can be carried out (Horton et al 1993). Impact assessment also implies establishing or assessing the causality between the network and the effect. Impact assessment of networks and other partnerships is even more complex since it may not be possible or practical to isolate the causal links between the network and accomplishment or failure to accomplish goals. Impact assessment is also generally conducted after the completion of a programme and is not normally designed with a goal of improving on-going programmes, which might be a higher priority for network managers and members (Mackay and Horton 2002).

Outcomes refer to more tangible results produced directly by the network. A key question that can be addressed at this level is "To what extent has the network achieved its planned outcomes?" Outcome indicators will vary depending upon the objectives of the network, however, some probable indicators for many regional networks include:

- Percentage of relevant countries involved as network members
- Information system established and functioning
- Collaborative research conducted and expected outcomes produced
- People trained (through regional training programmes)

Most networks will report on their outcomes to members and donors and should plan for concrete outcomes that have been agreed upon by the membership. The ECP/GR network in Europe plans for established periods of 3-5 years and then reports accomplishments at the end of each period. Such reports serve as the basis for decisions about the design of subsequent phases and enable members to determine whether or not they wish to continue to participate in network activities (ECP/GR 2001).

In addition to outcome indicators, many authors have promoted the development of a simple set of indicators that focus on network operations that can be used to assess the likelihood of a network being successful and to help improve network management and operations. Traditional impact oriented or outcome studies rarely provide the type of information needed by decision-makers to improve operations, whereas an operational focus could be more directed toward management information needs (Smith 2002).

Operational level assessment asks the question "To what extent is the network operating in a manner that will make it most likely to succeed?" A number of studies have been conducted of network success over the years and have come to surprisingly similar conclusions about the operational traits of successful networks. These traits could be used as a checklist of networking effectiveness, which could be useful for network coordinators, members and donors to help ensure that the network is operating in a manner that makes it most likely to succeed. Operational indicators are discussed in the following section.

Assessing operational success

Successful networks pay close attention to five broad categories of operational activity (Faris 1991) and the extent to which these are addressed by networks can provide a simple and practical set of indicators of probable network success. These categories are coordination, programme, membership, communication, and external resources. This section elaborates upon these five key dimensions.

Coordination

Effective coordination was identified by eight out of eight studies as a key characteristic of successful networks (Plucknett et al 1993). Network coordination generally consists of a steering body and a coordination unit. The coordination function varies between networks, but generally includes facilitation of processes to establish guiding principles, setting a research agenda and coordinating action among members to carry it out, promoting communication among members, facilitating network decision-making, and monitoring and reporting. The coordinator or coordination unit implements the priorities established by the steering committee. The coordinator must be a good communicator and must walk a fine line between providing leadership while not dominating the network. Several studies highlight the importance of the personal capabilities of the coordinator to communicate, facilitate interaction among members, provide leadership and establish and maintain effective working relationships with members, external parties and donors.

A steering committee is usually established to guide planning and priority setting and for decision-making. The steering group is accountable to the membership either by being elected or appointed by members or by being composed of a representative from each country (Faris 1991). The coordinator normally serves as Executive Secretary of the steering committee. Many networks also have an advisory committee that helps to ensure that network objectives match national objectives, provide a means for making binding commitments from the country members and financial backing from national budgets (Perrault 2001). To help ensure adequate technical inputs and political support, advisory committees may be comprised of a scientist and an administrator from each member country.

Indicators related to the coordination function include the following. Many of these indicators must be assessed by member perceptions, but some could also be validated by quantitative data and network records (for example, number of meetings, participation in meetings, agenda focus on problem solving and decision making):

- Effectiveness of network steering committee in establishing and communicating broad goals
- Effectiveness of steering committee in establishing binding member commitment for network goals and plans
- Effectiveness of network coordinator in translating steering committee goals into work plans
- Ability of network coordination unit to stimulate and maintain communications among and between network members
- Ability of network coordination unit to maintain effective communications with external parties
- Effectiveness of coordination unit to raise and manage external funds for network activities (number of proposals and percentage of successful proposals, changes in amount of funding available, percentage of funding from external versus internal sources)

- Effectiveness of coordination unit in providing secretariat duties, such as organizing and facilitating meetings
- Periodic election of coordinating unit or systematic reconsideration by network members of coordinating unit hosting institution

Research programme

Effective networks are bound by a common research agenda that can best be addressed by working together. Without a firmly established research agenda based on a common problem, members are unlikely to devote the resources (time, physical and financial) needed to sustain the network.

Needs assessment and priority setting are important activities undertaken by successful networks and are the foundation of network objectives and action. Successful networks undertake deliberate and systematic assessment of member needs, and reassess them periodically during the life of the network. These activities may take place through meetings, surveys or site visits to define the problem areas and explore the potential for a network to address them (Faris 1991). Meetings are a common means of establishing a common understanding of problems and agreeing that a network is the most reasonable means of addressing them. Successful networks move beyond problem identification to establish clear and concrete objectives that are formally agreed upon by the membership through binding decisions.

Priority setting is necessary to isolate those areas upon which the network will focus from all of the possible areas needed to address identified problems. Priority setting establishes which areas need most urgent action, which need to be accomplished before action can be taken in other areas, and to identify cross-cutting issues that address the needs of the collective membership. Donor priorities also come into play to identify those areas most likely to attract donor interest. Because of the high transaction costs associated with networking, Perrault (2001) recommends that networks should focus on addressing those issues that cannot be effectively dealt with at the national level, either because the costs are prohibitive for an individual country, or because the solution to the problem requires regional coordination.

Successful networks carefully plan for action by negotiating among the members a set of activities, complete with timetables, and clear responsibilities as to which members will undertake to do what. Action plans must be linked directed to objectives (Riley 1993) and should leave no uncertainty as to what must be done and who will do it (FAO 1991). Action plans must be realistic within the capabilities of the membership otherwise they will not be accomplished (Riley 1993). An FAO study (1991) suggests that networks are not suitable means for promoting an area of work in which the participants collectively have limited capacity, because of the substantial requirements of outside assistance. Networks may also not be suitable where rapid results are needed because of the extra time needed for coordination and cooperation and establishment of the network. Some authors suggest that action plans that address a small, but manageable number of items are more effective than ambitious plans that cannot realistically be accomplished, because they demonstrate tangible actions arising from the network, engage members in satisfying work that leads to results to address real problems, and are sustainable because they do not rely overly on external resources (which may or may not materialize) for their accomplishment (FAO 1991).

Monitoring and evaluation mechanisms help ensure flexibility and responsiveness. They also help to reduce criticism by members or donors by demonstrating success and accomplishment, and ensure recognition of results. Monitoring on-going activities is a way of helping to ensure that actions are meeting member needs and to provide signals of changes needed if actions go off track (Perrault 2001).

Indicators related to the research programme include:

- Clear definition of the purpose of the network and its research objectives, normally in a founding document
- Strongly held agreement among network members as to the network's purpose and objectives
- Needs assessments carried out periodically and used as the basis for objective setting and priority setting
- Criteria for establishing priorities developed and used in decision making
- Action plans developed and periodically revised that address priority areas, identify tangible actions, timetables for completion and clear responsibilities shared among network members
- Action plans agreed upon by the membership and actions planned within the capabilities of network membership
- Monitoring and evaluation systems in place
- Monitoring undertaken periodically during research implementation
- Evaluations undertaken and used as the basis for future decision making

Membership

Members participate in a network because of their expectation and ultimately, their experience that their interests will be served to a greater extent than they could be by acting alone. Benefits to network members were reported in a recent study to include the following (Watts 2002):

- Facilitated access to information, training, materials and resources
- Efficiencies of scale achieved by pooling resources
- Ability to overcome obstacles of political borders, problematic in plant genetic resources research where germplasm or knowledge must be shared across political boundaries
- Funding support received as a result of participation in a network.
- Positive professional development of individual scientists

Perrault (2001) ties self-interest of members to network goal and objective setting. The focus on shared goals means that a network addresses only issues that cannot be tackled effectively at the national level, either because the costs are prohibitive for one country or the solution to the problem requires some regional coordination. These goals should become the core of regional programmes (like networks) to ensure maximum efficiency. If goals are not truly shared, a network may find itself in a situation where countries say that they are supportive of networking, but they fail to back this up with a firm commitment of resources. This implies that the self-interest is either not great enough or is not appreciated by the membership.

If goals are truly shared, members should be expected to commit their own resources to the network. Effective networks define resource commitment by members in broad terms to include time, funding, physical facilities, and hosting of network activities.

Some issues have also been identified that relate to defining the terms of membership (Watts 2002). It is important that the network clearly define the parameters of membership, for example, is membership by country, by individual research institute, or by participation on the basis of the individual scientist. Membership obligations and authorities should also be defined and agreed upon at the start.

Membership indicators include the following:

- Membership contributions expected, as stated in founding documents and accounted for in budgets

- Membership contributions agreed for well defined periods of work, backed up with a formal country agreements
- Staff time contributions, physical facilities, hosting of meetings costed and accounted for
- Clear and agreed objectives agreed upon by membership
- Tangible benefits recognized and reported by membership
- Basic operations maintained at a level within the means of the membership

Communications

Effective networks facilitate effective communication among members. Meetings of the steering committee take place to review results, approve work plans, set priorities and make decisions. Information sharing mechanisms include training, site visits, and workshops convened to report findings and develop recommendations or an action plan. Many networks also communicate among members and with external parties through publications that capture research results and through newsletters that keep members up to date about network activities.

Several studies indicate the importance of good direct communications among members rather than limiting communications with members through a central hub of coordination unit. (Plucknett et al 1993). Frequent face-to-face meetings are usually necessary to establish relationships between members and to foster a sense of trust and sharing (Plucknett et al 1990). Two kinds of meeting are normally needed. Steering committee meetings are convened to review programmes and policies and to make decisions. Scientific meetings convene researchers to present scientific results and share information and to foster the exchange of new ideas and techniques. A balance must be achieved between too much and too little face-to-face interaction, as meetings held too frequently can sap researchers' time and drain financial resources.

Indicators related to network communications include:

- Existence and effectiveness of meetings of the steering committee to review programmes and make decisions (meeting reports, agendas, action items and participant lists)
- Existence and effectiveness of meetings of researchers to share research findings and techniques (meeting reports, agendas, action items and participant lists)
- Communications related activities such as training, publications and newsletters planned, budgeted and implemented

External Resources

Very few, if any networks, are currently sponsored totally by their members, since most involve developing countries with limited resources to dedicate to plant genetic resources conservation and use. Therefore, most successful networks secure external resources to enable them to meet their objectives. However, successful networks carefully manage external resources to ensure that they are balanced with member contributions and that they are directed carefully towards network priorities.

It is important that external contributions are balanced by membership contributions, to help ensure that member need remains the driving force for the network, rather than donor need. Buy-in to the network by members contributions in cash or in kind helps to ensure that the balance remains adequately focused towards the priorities of network, implying that network priorities are well established and agreed upon by the membership. This set of priorities is used as a basis for funding requests.

External funding can stimulate the establishment of a network if it underwrites a minimum level of coordination and management (FAO 1991). Hariri (1994) suggests that

external assistance (presumably funding, leadership, and technical support) can provide a catalytic effect during the beginning stages of network development by assisting potential member countries to identify their needs and objectives in being involved in the network. Once this pre-network national needs assessment and coordination is completed, potential member countries come together and negotiate the purpose and objectives of the network, and agree to its establishment. External resources could also support bringing potential members together for this establishment meeting.

Hariri also recommends that the countries themselves should fund national level activities in the context of the network. If sufficient funds are not available, bilateral funding mechanisms should be established between donors and member countries to cover the gaps, rather than creating an expectation that the network itself will fund national level activities.

Plucknett, Smith and Özgediz (1993) reported that external funding is needed for coordination, meetings and travel and as seed money during the establishment phase. However, they go on to say “collaborators should not be bought: prolonged and heavy subsidies are not a good idea.” If collaboration is not given willingly by the network membership, questions must be raised as to the extent to which member country research programme managers have made networking a priority, and create a sense of competition among members and lead to questions as to sustainability. It might also suggest an overly ambitious research agenda that exceeds the capabilities of network members.

An over-reliance on external resources ultimately brings into question the long-term financial sustainability of the network, as donor interest inevitably waxes and wanes with time. Such uncertainty can seriously disrupt research progress and demoralize network members. Financial sustainability has been defined as the ability to generate over the long term the resources greater than or equal to the cost of maintaining the network (USAID 2001). Some problems identified by USAID that can lead to unsustainable finances include failure to account for the real costs of the network (including management and staff costs), lack of long range financial plans, reliance on one donor rather than a diversified and complementary funding base, in addition to problems identified above related to focus on network goals and membership contributions.

Indicators related to external resources include:

- Projects funded by external resources are directed towards network objectives
- External funding balanced with member contributions
- Expectations for member contributions clearly elaborated in network plans and membership agreements
- Member contributions accounted for and including financial, human, infrastructure and hosting
- Financial plans and budgets elaborate the full and real cost of the networks, including management costs and costs of coordination and meetings
- Adequate financial control and accounting systems in place
- Development of a long range financial plan
- Diversified and complementary funding base (bilateral development assistance, development banks, foundations, private companies, national, regional and international NGOs)

Conclusions

Since EAPGREN is in the start-up phase, application of the operational indicators and identification of areas of potential operational weakness can be used by EAPGREN to help develop its action plan. In order to tailor the indicators for EAPGREN, a selection should be made of the appropriate indicators in terms of EAPGREN's specific objectives and goals. The indicators should be developed further to make them more concrete, good indicators

being measurable and including dimensions of quality, quantity and time. Moreover, they should be practical and objective (Uribe and Horton 1993; USAID 1996). In terms of assessing the specific indicators to apply, EAPGREN should consider carefully how such information might be collected and the source of such information. If it is difficult or impossible to imagine a source of data and a means of gathering it, the indicator is probably not practical.

As an example of transforming one of the suggested indicators into a more specific indicator for EAPGREN, the indicator related to membership, which was presented in general terms as “Membership contributions agreed for well defined periods of work, backed up with a formal country agreements” might be elaborated as follows for an imagined planning period from 2003-2008:

- Country agreements for 2003-2008 signed by the National PGR Programme Focal Point for each EAPGREN member country by June 2002.
- 100% of country agreements specify membership contributions for 2003-2008, accounting for financial, human, infrastructure and hosting contributions.
- Members contributions including financial, human, infrastructure and hosting contributions accounted for in EAPGREN programme of work and budget as agreed by the EAPGREN steering committee.

The call for the development of indicators would help give the network and its members clear operational objectives towards which to aim, mechanisms to achieve the operational objectives and standards against which to guide the network towards eventual success even now during the network development process. Lessons from the literature suggest that if such an exercise to develop operational indicators is undertaken, and the network adopts these indicators as a set of broad operational guidelines, the network has a greater likelihood of success and a sustainable and productive future (Watts 2000, and Kalaugher and Visser 2002).

The network could use the logical framework approach as a planning tool that provides a hierarchical structure in which impact, output and operational goals, and their associated indicators can be elaborated. The development of a log frame can also help the network to consider how each indicator can be verified and the risks and assumptions that might influence success at each level. Operational level objectives could be included in a log frame as activities related specifically to network operations. Successful network operations could also be an assumption for the achievement of higher-level objectives; or vice versa related constraints could be expressed as a risk that operational weakness will be an obstacle to the network’s achievements. Through this approach, the network can better assure itself that in order to assess impacts and outputs at a later point in time, the network has defined its expected outputs and impacts clearly at the start-up phase, has addressed operational issues that will affect network success and has developed monitoring systems to track progress along the way.

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Importance of regional networks in the conservation and use of PGR: EAPGREN case study

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Introduction and historical background

In the last two decades, some attempts have been made in mobilising resources and networking for more effective PGR activities in the region. While these initiatives provide an important base upon which to build collaboration and networking on PGR development in the region, they do not go far enough to ensure that plant genetic resources of the whole region are sustainably managed and utilised into the long-term future. Such were the concerns addressed during a regional meeting held in Nairobi, Kenya in September 1995 with the objective of reaching consensus on the status and strategies for PGR in the sub-region and making recommendations for the Global Plan of Action for adoption by the 4th FAO International Technical Conference on Plant Genetic Resources (ITC). Among the major opportunities and comparative advantages identified in this meeting and recommended to the ITC was the need to strengthen capacities and promote sub-regional collaboration through the establishment of a PGR network in the region. The Leipzig Declaration (1996) of the ITC adopted and launched the Global Plan of Action for the Conservation and Sustainable Utilisation of Plant Genetic Resources for Food and Agriculture (hereafter referred to as the Global Plan of Action or GPA) in the contexts of (a) world food security, (b) the Convention on Biological Diversity, and (c) Agenda 21 of the UNCED network of action. Among other highlights, the Global Plan of Action (GPA) emphasised the centrality of national networks and the importance of improving co-operation through regional and crop networks. The GPA underscored the potential impact of PGR networks in providing important platforms for scientific exchange, information sharing, technology transfer, research collaboration, and sharing of PGR responsibilities.

Networks can also promote exchange of material and, thus, enhance the utilisation of germplasm. Thus, the 20 top priority activities identified in the Global Plan of Action include Promoting Networks with specific calls for strengthening the existing ones and the establishment of new networks in the Pacific, the Caribbean, Central Asia and the Caucasus, West and Central Africa, East Africa, and the Indian Ocean Islands (Section 16, paragraph 254). This initiative to establish a PGR network for Eastern Africa is, therefore, a direct follow-up on gaps and needs as identified in the GPA. In the discussions towards the establishment of a formal network on PGR for the region, it is fully recognised that countries of the region share common ecologies and threats to their PGR. Plant species and communities spread across their borders. The countries have limited financial and trained personnel for PGR activities. Some countries have already developed technical expertise and infrastructure that could be used for the common good of the region. Above all, a regional network offers to all the countries a framework to address PGR issues of both common and specific interest towards overall conservation and sustainable utilisation of PGR in the region.

The Stakeholder's meeting to consider needs and plans for the establishment of an Eastern Africa Plant Genetic Resources Network was held in Kampala, Uganda 3 - 5 November 1997. The meeting was organised by IPGRI in collaboration with National Agricultural Research Organisation of Uganda (NARO) with funding from the Swedish International Development Agency (Sida). At this meeting, representatives from the various

countries resolved to establish the Eastern Africa Plant Genetic Resources Network (EAPGREN) with the initial participating countries being Burundi, Eritrea, Ethiopia, Kenya, Madagascar, Sudan and Uganda. The representatives further resolved that the Association for Strengthening Agricultural Research in East and Central Africa (ASARECA) be requested to have EAPGREN operating under its umbrella and this was approved by the ASARECA Committee of Directors in December 1997.

Network goal and objectives

Mission

EAPGREN's mission is to harness, conserve, and to promote greater use of PGR for food security, improved health, and socio-economic advancement of the rural communities of the present and future generations. It will accomplish this mission largely through capacity building and developing sustainable linkages between PGR conservation and utilisation among the various stakeholders including rural farming communities, at the same time ensuring that gender considerations are internalised in the planning, implementation, monitoring and evaluation of all the network activities.

Goal

The overall goal of the network is to develop and to strengthen capacities in the countries of the region for more effective conservation and utilisation of PGR for food security and sustainable agricultural development while relying on interventions which are in conformity with the Global Plan of Action on PGRFA, the Convention on Biological Diversity, and Agenda 21 of the UNCED. EAPGREN will strengthen collaboration, networking, and linkages between conservation and utilisation of plant genetic resources at both national and sub-regional levels through the pooling of resources and use of comparative advantages available in the various institutions and countries.

Objectives

The long-term objectives of the project are (a) to promote sub-regional collaboration and networking through exchange of information and material, research and development, capacity building, adoption of common approaches and methods, and regional integration in PGR activities, and (b) to ensure that all countries in the sub-region fully benefit from active crop-based and thematic regional and international networks.

Towards achievement of the above, the immediate objectives of EAPGREN are as follows:

- To promote regional collaboration in identification, priority setting, and implementation of PGR activities through the establishment of a network of national programmes.
- To build capacities for greater research output in priority areas as identified by national programmes and the network thematic working groups.
- To enable the countries of the sub-region to optimally conserve and use their genetic resources by strengthening national programmes particularly the improvement of co-ordination mechanisms in the implementation of PGR activities.
- To develop and adopt complementary conservation methods and strategies including ex situ, in situ and on-farm approaches for the conservation of plant genetic resources.
- To facilitate the participatory utilisation of plant genetic resources through establishing linkages between conservation and utilisation at the formal and informal levels.

- To support human resource development through training of a minimum complement of staff for PGR responsibilities in each country.
- To strengthen PGR documentation and information services for the region.
- To advocate for policy changes and to increase the level of public awareness and support for PGR conservation and use

Importance of the network in the region

Enhancement of conservation and use of PGR

The network will contribute to better conservation and utilisation of PGR in the region by:

- Providing a forum for exchange of information, scientific knowledge and experiences among member countries.
- Enhancing the capacity for research with a view to adding value to germplasm and advancing scientific knowledge on PGR conservation and use.
- Training cadres of highly skilled PGR specialists in the region.
- Collection and complementary conservation of germplasm important for agricultural production and healthcare.
- Supporting the development of operational national PGR networks
- Documenting PGR materials and activities in the region.
- Strengthening the linkages between PGR conservation and utilisation with particular emphasis on community based user groups.
- Providing a forum for exchanging PGR material for mutual benefit among member countries.
- Adding value to PGR work in the member countries, the region and among ASARECA networks and networks due to its crosscutting nature.
- Ensuring gender equity and recognizing the roles played by different gender in plant genetic resources conservation and use, paying particular attention to involvement of women who are the major custodians of plant genetic resources at the smallholder production level.

Complementarity with related national and regional networks

EAPGREN's activities are designed and implemented to avoid duplication, complement and add value to related national and regional initiatives. For example, EAPGREN activities will directly complement the existing and future crops networks in the areas of PGR conservation and use. In addition to crops and their wild relatives, EAPGREN will also have a focus on potentially useful species in the wild, which are currently not covered by national and regional networks. Moreover, through strengthening of national and regional networking, areas of potential duplication will be identified and avoided. Indeed, one of the specific tasks of EAPGREN regional thematic working groups will be to ensure that there is no duplication in efforts among participating institutions and individual scientists. In its organisational structure, EAPGREN has five thematic working groups in which members of other ASARECA networks and regional networks will participate in, depending on themes addressed.

Building upon collective regional capacities

The identified immediate PGR tasks call for human resources and facilities way above that which is currently available. For example, the resources needed for comprehensive range-wide collections cannot be realized by any individual country in the region. Most countries in the region lack the critical mass of scientists needed for effective mainstream PGR activities of national networks. In these specific circumstances, great economies of scale can

be achieved through networking. Network individual scientists, institutions, and countries will join efforts to accomplish tasks by capitalizing on economies of scale.

Value addition to national agricultural research systems

The network will promote and support the efforts of scientists and institutions in keeping pace with developments in other countries even in situations where they may lack capacities or conducive environments for development. This additional value of networking can be critical in the working environments, which exists in some countries of the region. Since PGR is crosscutting in many other networks of national agricultural systems, it is to be expected that networking will catalyse other related activities.

Value addition to regional and international efforts

The success of EAPGREN will provide a good model for similar developments in the neighbouring regions. Its planned training activities will attract scientists from the neighbouring regions to catalyse the development of similar networks in those regions.

It is important to recognise that EAPGREN has been born in the post-UNCED period when there are on-going global dialogues on PGR conservation and utilisation. These dialogues have important spill-in effects in the formulation and implementation of the network. Moreover, EAPGREN has the advantage of directly benefiting from the experience of the SADC Regional PGR network in the neighbouring region to the south.

The network will work towards the convergence of PGR policies among participating countries of the region. It is expected that, through policy interventions, networking will promote and support the implementation of international commitments which the countries have ratified, such as the Convention on Biological Diversity, relevant principles of Agenda 21 of UNCED, International Undertaking on PGR, and the Global Plan of Action (GPA) on PGRFA. These and other contributions, which EAPGREN may make to regional Inter-governmental agreements, will be important value addition of the proposed network.

Improving services to farmers

EAPGREN recognises the significant role of gender relations among farm families and communities in conserving and utilising PGR and places priority on increasing usefulness of PGR to breeders and farmers. Moreover, EAPGREN gives high priority to small-scale farmer based PGR conservation and use. It is in this regard that the network is expected to make additional impact in improving PGR services to farmers through the planned on-farm conservation and participatory germplasm enhancement activities.

4.0 Major problems addressed by the network

4.1 Genetic erosion and under-utilization of PGR

The countries of Eastern Africa (Burundi, Democratic Republic of Congo, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, Sudan, and Uganda) and the Indian Ocean Islands (Comoros, Madagascar, Mauritius, and Seychelles) are endowed with a great wealth of plant genetic resources and biodiversity. For example, Ethiopia/Eritrea region is a centre of origin and diversity of important crops such as coffee, barley, finger millet which are not only useful in the region but also in the rest of the world. The forests of Madagascar are very rich in the diversity of plant species with high levels of endemism. Countries of the Great Lakes have the easternmost extensions of the rich diversity of the Congolian Tropical Rain Forest while the expansive Somali-Maasai savannah and steppe is the centre of origin and diversity of important species of grasses. Yet the great wealth of PGR indigenous to the sub-region

has been little explored, under-exploited, and highly vulnerable to genetic erosion despite the fact that the sub-region is an important centre of diversity of many crops and their wild relatives.

PGR of the whole sub-region is under high degree of threat due to a variety of forces. Desertification, particularly in countries to the north, is rapidly changing plant associations with rapid loss of PGR. Deforestation is high in most countries of the sub-region with serious genetic erosion consequences. For example, estimates of deforestation in Kenya are as high as 5,000 hectares per annum. Much of this accelerated deforestation is for conversion to agriculture to meet the food requirements of the rapidly growing populations. Overgrazing and frequent wild fires cause large losses of PGR in the dry open woodlands throughout the sub-region. The extreme scenario is exemplified in countries like Eritrea and Somalia where the scale of loss of natural vegetation now threatens the country's agricultural productivity base and food security.

4.2 *Lack of a regional mechanism for collaboration in PGR activities*

Since 1960s, PGR activities including exploration, germplasm collection and conservation activities have been carried out in several constituent countries. Some of these activities have been supported by FAO and IBPGR/IPGRI. However, in the context of the whole PGR challenge, such efforts have been sporadic and insufficient. For example, except for a few cases, the efforts have not involved cross border collaboration for comprehensive range wide exploration and collection. In some cases, different methods of managing collections and documentation have been used in various countries making it difficult to compare the results. To date, countries of the sub-region lack both the platform and mechanism for co-ordinated cross border PGR activities. Moreover, the various countries are presently not uniformly and adequately endowed with capacity and facilities required for their PGR activities. However a baseline survey to assess the actual status of conservation infrastructure and plant genetic resources activities is necessary as a benchmark on which evaluation of progress made through the network could be based.

In the region there is great variation in the capacities for, and level of PGR activities among the countries. Some of the countries are more advanced than others and could offer their technology, experiences and information related comparative advantages to the less developed ones. Currently there is no mechanism for facilitating horizontal transfer of knowledge from the more to the less developed national networks. However, such mechanisms could be created through study tours and exchanges visits that would enable members of the network to learn from each other and also transfer skills and knowledge to those who need them most.

4.3 *Inadequate capacities for PGR conservation and use*

Most of the NARS in the region lack the necessary capacities in form of conservation facilities, equipment and critical mass to undertake plant genetic resources activities. In a number of countries such as Rwanda and Uganda, the existing conservation infrastructures need rehabilitation to make them suitable for use as gene banks. In most of the NARS the necessary conservation equipment is inadequate.

4.4 *Insufficient political support for PGR conservation and use*

Policy-makers and politicians in most countries of the region are not fully aware of the social, economic, ecological and political values of plant genetic resources. Many do not have a full appreciation of the importance of plant genetic resources in addressing their countries' food insecurity related problems. Awareness for policy makers is therefore essential in order to provide them with the necessary organizational and negotiation skills

to enable them to participate effectively in both national and international policy fora. The regions participation in international fora (e.g. the FAO Commission on Plant Genetic Resources, the World Trade Organization) is inadequate. They also need information and skills for the development of policy options that will integrate PGR in the agricultural research agenda and overall economic development. Regional workshops would therefore be essential for creation of awareness through sensitization and demonstration of the importance of PGR to agriculture and food security. Such workshops are also crucial as platforms and mechanisms for discussions and debates on plant genetic resources policy issues affecting the region, development of common positions for international negotiations and discussing mechanisms for access and exchange of germplasm within the region.

Despite the importance of plant genetic resources in agriculture, awareness among the public, the policy makers and the academia is still low in the region. A greater appreciation of the importance of plant genetic resources at all these levels would greatly contribute and increase commitment to their conservation and use. Policy awareness materials targeting different audiences therefore need to be developed and disseminated.

Poor documentation and information exchange systems

Many of the region's plant genetic resources are poorly documented relative to what should be known about them for optimal conservation, access and efficient use. Documentation of wild relatives of crops and on-farm genetic resources located in situ is particularly poor. In ex situ collections, basic value-adding information such as descriptions of morphological and agronomic characters, viability tests results, pertinent ethnobotanical information, farmer and indigenous knowledge are largely lacking. It is essential that network endeavours to raise the level of priority given to data management documentation systems, GIS technologies and other related activities in formats that can be used not only to assist conservation efforts but also add value to plant genetic resources. Plant genetic resources activities in the region have not included a strong linkage to development in communication infrastructure, information management and exchange. Considering the growing importance of information technology it is imperative that the network provides a mechanism for communication and information access. This will facilitate information exchange thereby enhancing the integration of individuals and institutes as part of a framework in which their work is seen as a component. In this regard, a regional documentation and information training workshop will be useful in order to expose the network members to the various software packages. Adoption of similar documentation systems would be crucial in information and data standardization and exchange.

Programmatic activities

EAPGREN has three main programmatic areas. These are:

Capacity building

This includes development of operational and effective national programs, support for countries to develop minimal conservation facilities and equipment, assistance in conservation of ex situ collections and development of human resources.

Research and development

Research activities mainly focus on objectives that address national or regional PGR constraints including adding value to germplasm to make it more useful for enhancement and breeding programs; advancing the science of PGR conservation and utilization through the of appropriate technologies and methodologies. These research activities will include:

- Carrying out strategic and applied research on exploration, inventory, collection, conservation, characterization and evaluation of PGR in consistence with identified national and regional priorities.
- Use of complementary conservation strategies

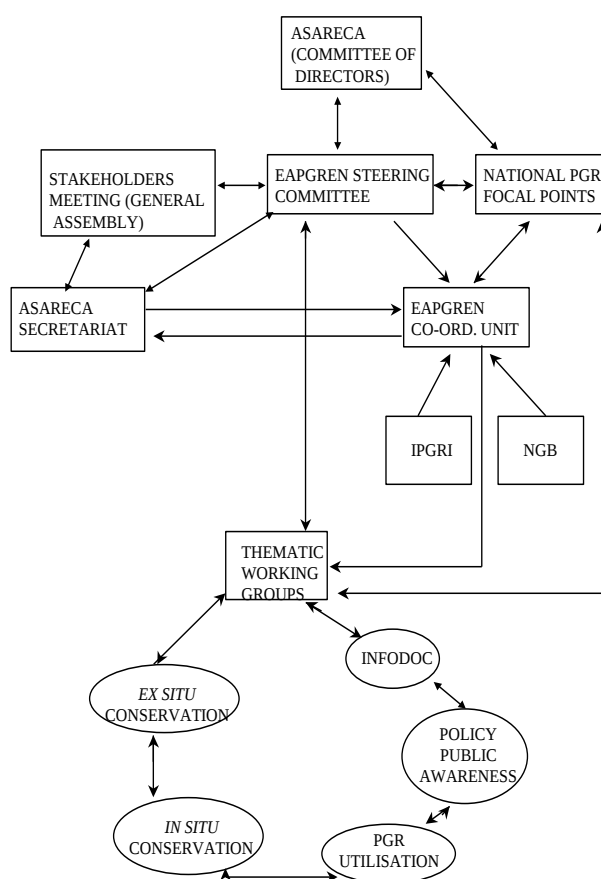
PGR support services

These comprise a compatible regional PGR information and documentation system as a platform for scientific exchange, information sharing and technology transfer; strengthening linkages between PGR conservation and use and; raising the level of awareness of the importance of PGR conservation at scientific, public and policy levels.

Governance structure

EAPGREN maintains a simple organisational structure, which at the same time draws from technical and intellectual inputs from a wide range of the network partners, particularly through the national co-ordination mechanisms and regional thematic working groups (See Figure 1).

Figure 1: EAPGREN FUNCTIONAL STRUCTURE



The Committee of Directors

It provides the overall policy guidance of the network activities including ratification of the Steering Committee members and approval of networks, budgets and work plans.

Stakeholders Meeting

In accordance with the ASARECA institutional framework, the General Assembly has been configured into the Stakeholders Meeting and will comprise plant genetic resources interest groups including NGOs and CBOs, Universities, private sector, Government departments and research institutions, CG Centres, relevant ASARECA networks and networks. Its functions are to provide guidance to the Steering Committee on key issues pertaining to the network's development such as priority setting and development of strategic plans.

ASARECA secretariat

As the implementing agency, it will administer network funds including disbursements to NARS and sub-contracts with relevant technical backstopping institutions and oversee the implementation of the networks activities. It will be represented in both the Stakeholders meeting and in the Regional Steering Committee.

Regional Steering Committee (RSC)

The Committee provides the overall technical guidance in the implementation of the network activities and will oversee the development of budgets and work plans. The Steering Committee comprises lead professionals from the focal institutions in each of the participating countries. Additional members of the Steering Committee will be co-opted as necessary in order to fill identified technical gaps. Nominations to the Steering Committee will be ratified by the ASARECA Committee of Directors.

EAPGREN Co-ordinating Unit

The Unit will be headed by the Co-ordinator who will report to the Steering Committee and will be responsible for the overall co-ordination of network activities. He/she will develop mechanisms for the network's horizontal and vertical integration into the ASARECA regional framework and also serve as the convenor and secretary to the RSC and Stakeholders Meeting.

Thematic Working Groups

Initially, five Thematic Working Groups on Ex Situ Conservation, In Situ Conservation, Utilisation, Information and Documentation, Policy and Public Awareness will be established. The Working Groups will not only provide an opportunity to a wide range of stakeholders to make specific contributions in their area of expertise but will also serve as a means for review and maintenance of scientific standards on thematic basis, promote collaboration for complementarity and avoidance of unnecessary duplication. The members of the working groups will be experts from in NARS, IARCs, NGOs, private sector, UN agencies, Universities, crop networks and regional networks. The Working Groups will take responsibility for synthesizing issues related to the theme, develop research network proposals and make recommendations for consideration by the Steering Committee. These recommendations will form the basis for scientific standards, priority setting of regional activities. The composition of the Working Group will comprise between 5-10 members in their individual capacities and will be broad-based within the limits of the theme. The Thematic Working Groups will be established by the Steering Committee and their functions overseen by the Secretariat.

Management of network activities

National organisational structure

Co-ordination and networking at national level will be structured around national PGR Centres as focal points or the equivalent and clearing houses for all PGR activities in the

country. The Centres will be the lead agencies and focal points of on all PGR activities inside and outside the country. The Centres will be directly linked to relevant country-based networks, institutions and individuals. It is important that the Centres maintain active linkages with all the major actors and beneficiaries including NGOs, CBOs, and the private sector.

Regional organisational structure

Regional networking will operate through the EAPGREN Co-ordinating Unit that will maintain direct linkages with national Centres and with relevant regional and international organisations. EAPGREN will build upon the existing regional crops networks. In addition, EAPGREN will sustain regional networking through an information and documentation system and the activities of five thematic working groups on (i) Information and Documentation, (ii) Ex situ conservation, (iii) In situ conservation, (iv) Policy and Public Awareness and (v) PGR Utilisation. In addition, countries will explore bilateral agreements and/or Memorandum of Understanding to facilitate such activities like exchange and duplication of PGR.

Priorities and way ahead

Capacity building: training and conservation facilities and equipment

The effective and efficient implementation of plant genetic resources activities will largely depend on the availability of a cadre of well-trained scientific staff in all the thematic areas the network addresses. The network will therefore initially carry out a needs assessment with a view of developing an effective strategy that will address both the short term and long term training needs. Of particular interest is the building of PGR training capacity in the local Universities in order to make training more cost-effective, relevant to the specific needs of the region and create sustainability on the long run.

The efficient management of ex situ collections will only be ensured by the availability of minimal conservation facilities and equipment that are necessary for maintenance of the genetic integrity of germplasm on both short and long term basis. The network will therefore assist the countries to acquire and install cost-effective and flexible conservation equipment such as deep freezers for maintenance of germplasm to ensure that breeders have a continuous supply of high quality germplasm as raw material for the breeding networks.

Increased use of germplasm

Plant genetic resources for food and agriculture provide the biological basis for world food security and support the livelihoods of the rural majority. These resources serve as the plant breeder's most important raw materials and the farmer's most essential input and therefore very essential for sustainable agricultural production. Gene bank collections should enable users to respond to new challenges and opportunities. Plant breeders and most other users are interested in having a manageable number of genotypes that possess or are likely to possess the traits needed in their breeding networks. Identification of those traits through characterization and the establishment of core collections are measures that can encourage greater and more efficient use of collections. Evaluation could also aid identification of germplasm with potential for more direct use by farmers. It is therefore necessary to increase and improve the ease of use of conserved plant genetic resources, facilitate innovative progress in plant breeding through promoting the identification of useful accessions or their genetic components for introduction into crop enhancement and plant breeding networks.

The conserved germplasm will be characterized and evaluated and used in crop improvements network for the development of high yielding varieties through promotion of collaboration and complementarity between breeders, researchers, farmers and gene banks. The network will in particular work in close collaboration with ASARECA commodity

networks and national gene banks and plant genetic resources centres to promote the characterization, evaluation and utilization of germplasm in the region for increased production and food security.

Promoting research and development of under-utilized crops

The greater awareness on the role that “minor crops” play in the livelihood of people around the world is creating new opportunities for the rescue of their resource base. The focus on a few widely used species has helped to sustain the explosion in human population over the last two hundred and fifty years, but it has narrowed down dramatically the number of species upon which global food security and in general economic agricultural pursuits depend. With over half of humanity’s calorific and protein needs being met by only three crops - maize, wheat and rice- humankind faces a highly vulnerable situation and an urgent action to promote crop diversification is needed.

The narrowing base of global food security is limiting livelihood options for the rural poor, particularly in marginal areas in this region. Addressing their needs requires that we broaden the focus of research and development to include a much wider range of crop species. Many of these species occupy important niches, adapted to the risky and fragile conditions of rural communities. They have a comparative advantage in marginal lands where they have been selected to withstand stress conditions and contribute to sustainable production with low-cost inputs. They also contribute to the diversity-richness and hence the stability of agro-ecosystems. These species have a strategic role in fragile ecosystems, such as those found in arid and semi-arid lands, in mountains, savannas and tropical forests. Ethnobotanic surveys indicate that hundreds of such species are still to be found in each country, representing an enormous wealth of agro-biodiversity with potential to contribute to improved incomes, food security and nutrition in Eastern Africa. However, these locally important species are frequently neglected by science. Lack of attention by research and development has meant that their potential value is under-exploited. This neglect status places them in danger of continuing genetic erosion thereby further restricting development options for the rural poor. The network will raise awareness and also promote research, using both conventional methods and biotechnology applications, to increase their value and make them more widely available, would broaden their resource base and increase the livelihood options and food security for rural communities.

Development of documentation and information exchange systems

Many of the regions’ plant genetic resources are poorly documented relative to what should be known about them for optimal conservation, access and efficient use. Documentation of wild relatives of crops and on-farm genetic resources located in situ is particularly poor. In ex situ collections, basic value-adding information such as descriptions of morphological and agronomic characters, viability tests results, pertinent ethnobotanical information, farmer and indigenous knowledge are largely lacking. The network will therefore endeavour to raise the level of priority given to data management documentation systems, GIS technologies and other related activities in formats that can be used not only to assist conservation efforts but also add value to plant genetic resources. It is clear that historically, development in agriculture has not included a strong linkage to development in communication infrastructure, information management and exchange. Considering the growing potential that information technology has to offer, the network will provide sustainable communication and information access. This will facilitate information exchange thereby enhancing the integration of individuals and institutes as part of a framework in which their work is seen as an integral component. This will result in increased access to and better management and utilization of plant genetic resources through the compilation, exchange and provision of useful information.

Increasing political support for PGR

Political support for conservation and use of PGR is necessary for the long-term sustainability of the national networks. This will be sort through support to development of the necessary policies and legal frameworks for the conservation and use of plant genetic resources. These policies will lead to recognition of plant genetic resources as an important and strategic natural resource worth giving high priority. It will also lead to integration of PGR conservation and use concerns into the economic development plans and they will also form the basis for more for allocation of national resources (financial and human) in conservation of PGR.

Sustainability

A mechanism for sustaining the network and its activities beyond the initial phase that is supported by Sida is vital. This may be in form of country contributions and/or establishment of an endowment fund. The NARS need to mobilize more national resources for development of national plant genetic resource networks and subsequent implementation of the activities.

The ECP/GR, an example of cooperation for crop genetic resources in Europe

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Introduction

Promoting the development of an east African network on plant genetic resources (EAPGREN) was the main objective of the international workshop held in Zschortau, Germany, in October 2002. This context offered an appropriate occasion to present the example of a European network, 22 years after its formal establishment. This paper contains a historical review of the European Cooperative Programme for Crop Genetic Resources Networks (ECP/GR), the description of its current organizational structure and a summary of the main outputs delivered by the programme. The author's analysis of the programmes' strengths, weaknesses and future perspectives is also presented. It is hoped that the European experience can serve as inspiration for the foundation of EAPGREN. Although ECP/GR developed in a different context compared to the current situation of East Africa, it is possible that the overall experience of ECP/GR can offer a useful term of comparison for EAPGREN, especially considering that the two networks share the general objective of improving PGR conservation and use in the respective regions.

Historical review

Preparatory phase

The original concept of ECP/GR, a "European Cooperative Project for Conservation and Exchange of Crop Genetic Resources", was identified in the mid-seventies by the European office of the United Nations Development Programme (UNDP), as one area of useful cooperation to be established between east and west Europe. The preparation phase (1975–1979) of this project was based on the background evidence that, on one side, the rapid disappearance of older varieties could have limited the ability of plant breeders to respond to the needs of a changing world and, on the other end, the potential of plant material held in collections was not being fully exploited. It was considered that many different programmes under way at that time could have contributed to truly international genetic conservation efforts only if coordinated in a worldwide collaborative network. Considering that more than two thirds of the world's collected plant germplasm was maintained in Europe, the European Association for Research on Plant breeders (EUCARPIA) was undertaking efforts to develop inter-institutional links between genebanks in Europe. The role of ECP/GR would have been to strengthen inter-governmental and sub-regional links and coordinate activities, thus becoming the European component of a global network. At that time, four sub-regional initiatives for plant genetic resources were active in Europe, i.e. the European Commission Programme on Better Use of Gene Banks and Resistance Breeding (9 countries), the Genetic Resources Network of the Council for Mutual Economic Assistance (CMEA) (7 countries in the eastern Europe), the Nordic Gene Bank (5 Nordic countries) and the Mediterranean Germplasm Programme of the International Board for Plant Genetic Resources (IBPGR), involving 13 countries of which 8 from Europe. The task to formulate the ECP/GR project was assigned to the Food and Agriculture Organization (FAO) as the executing agency and Ms Erna Bennet acted as the first coordinator of the programme in this preparatory phase. An intense series of consultative missions and discussions took place between 1975 and 1979, involving the UNDP European office, the EUCARPIA Gene Bank Committee, FAO and IBPGR (FAO 1979). A project document,

finalized by a UNDP/FAO Coordination mission, was eventually unanimously endorsed in 1979 by the representatives from twenty-two countries (FAO 1980). A development objective was set as “to contribute to development of agriculture in the member countries by the more effective use of plant genetic resources, which are well conserved and accessible, and to further the activities of national and sub-regional institutions for plant genetic resources in Europe, by strengthening cooperation between such institutions”. Immediate objectives were also defined as: 1) to create the means for full and free exchange of available plant genetic resources (PGR) and related data, in order to make this material available to all European plant breeders, 2) to coordinate collection and conservation of European PGR not yet existing in collection, 3) to make the above-mentioned PGR material and related data available to the plant breeders in developing countries and facilitate participation of Europe in the global network of PGR, 4) to coordinate evaluation of PGR, to be carried out by national and sub-regional centres for PGR in Europe and allow reduction of duplication of efforts regarding rejuvenation of PGR. A strategy was defined whereby each country would contribute in kind to the project, by inserting its national activities in the field of PGR conservation for plant breeding into the coordinated regional programme.

Phase I (1980 – 1982)

The ECP/GR became operational on 1 October 1980, after the first eight countries had signed the project document. This initial two years phase was funded by UNDP, with FAO as executing agency. The executive secretary (Mr G. De Bakker) was based at the UNDP headquarters in Geneva, Switzerland. A Governing Body was composed of members (21 member country representatives; UNDP; FAO; Executive Secretary, Chairman of Scientific Advisory Committee) and observers (sub-regional European organizations; IBPGR; other European countries; ECP/GR Scientific Advisory Committee, UPOV; consultants to the Executive Secretary). Accomplishments of Phase I consisted in meetings of eight crop working groups, the appointment of national coordinators, stimulation to funding and organization of genetic resources activities by a number of countries, and training of scientists from various countries.

Phase II (1983 – 1986)

At the request of the member countries, starting from 1 January 1983, the project was operated under the aegis of IBPGR, with FAO as the executing agency. An Executive Secretary (Mr P. Perret) was appointed and based in Rome. As initially planned, during Phase II the member countries matched the UNDP funding with 50 % of the programme's budget.

A project evaluation mission, commissioned by UNDP/FAO during Phase I, clearly recommended not to impute to ECP/GR capabilities that it could not possess, such as “creating the means for full and free exchange of available plant material...”. Consequently, a modified set of objectives, that would remain unaltered for the following 10 years, were defined (Table 1)

Table 1. ECP/GR objectives (Phase II)

- | |
|--|
| <ul style="list-style-type: none"> • Create a system to facilitate: <ul style="list-style-type: none"> a) direct contact between workers engaged in genetic resources activities b) unhindered exchange of PGR c) establishment of information systems and data exchange between genebanks • To place at disposal of all interested plant scientists up-to-date information on collections of both seeds and living plants held by public institutions and private breeders in Europe • Establish for specific crops joint activities including: <ul style="list-style-type: none"> a) expeditions to collect genetic variants not held in existing collections |
|--|

b) characterization and evaluation of germplasm

- Establish a self-sustaining cooperative network of genetic resources activities between the participating countries, which will be effective for Phase III and in the future without UNDP help.

The Governing Board was replaced by a more agile Technical Consultative Committee, composed of scientists that would advise IBPGR in their individual capacity on decisions regarding the programme. The Programme work was based on Crop working groups and limited initially to six selected crops (Allium, Avena, Barley, Forages, Prunus and Sunflower). The first European Crop Databases were established and increased exchange of information lead to the production of preliminary inventories.

Phase III (1987 – 1989) and IV (1990 – 1993)

In Phase III, the programme became completely self-sustained and the UNDP contribution ceased. In Phase IV the coordinator's time was reduced to part time and the programme changed name into European Cooperative Programme for Crop Genetic Resources Networks, in order to give emphasis to its main networking function. The most impressive development in these phases was the implementation of crop databases for some 24 species, group of species or genera, located in 13 countries. The collaborative initiative promoted by the working groups also allowed significant developments in other areas: gaps in the collections were identified and coordinated collecting missions undertaken; descriptors lists were developed; standard reference varieties selected; core collections started to be defined; national programmes development was facilitated; training needs of genebank personnel were supported; and the flow of information and germplasm was largely improved.

Phase V (1994 – 1998)

The reduced secretarial support of the previous phase was acknowledged to have led to a less proactive approach and provision for a full time coordinator was reintroduced in Phase V, along with a number of modifications to the general structure of the programme. The phase duration was increased from 3 to 5 years. Objectives were reviewed and more general targets were addressed, such as ensuring long-term conservation and encouraging increased utilization of PGR in Europe. Collaboration between national programmes remained a primary focus of the programme, aiming to increase joint activities and developing joint project proposals also in view of a new European Commission programme for conservation and use of genetic resources in agriculture. The strengthening of links between east and west European programmes characterized this period, after the fall of the Berlin wall and the threat to genetic resources programmes in eastern Europe (see Table 2).

Table 2. ECP/GR objectives (Phase V)

- To ensure the long-term conservation and to facilitate and encourage the increased utilization of PGR in Europe
- To increase the planning of joint activities
- To strengthen links between east and west European PGR programmes
- To develop joint project proposals to be submitted to funding agencies
- To contribute to monitoring the safety of plant genetic resources collections and take appropriate action when required
- To increase public awareness at all levels of the importance of PGR activities

The concept of networks (crop and thematic) was introduced, as broad organizational structures that accommodate activities contributing to general objectives of the programme. The operational units however remained the working groups. The programme was meant to

provide funding for WORKING GROUP meetings and the publication of meetings' reports, while the working groups (eight at the end of Phase V) would agree on workplans of actions to be carried out by participating institutions as inputs in kind to the programme.

The new structure (Figure 1) was planned to allow more flexibility and to extend the scope beyond a limited number of crops or themes. The Technical Consultative Committee was renamed Steering Committee, composed of national coordinators, with observers from the International Association of Plant Breeders (ASSINSEL, now ISF-International Seed Federation), the Euro-MAB Programme (Man and Biosphere), FAO, IPGRI, the Nordic Gene Bank and a representative from the European Non-Governmental Organizations. The European Commission was also invited to become a full member of the Programme, but a formal arrangement of this type was not established. Detailed functions of the Steering Committee, country coordinators, working group members and coordinating secretariat were defined (Table 3). After IBPGR became independent from FAO with the new name of IPGRI, the institute continued to provide the Coordinating Secretariat of ECP/GR, as requested by the Steering Committee.

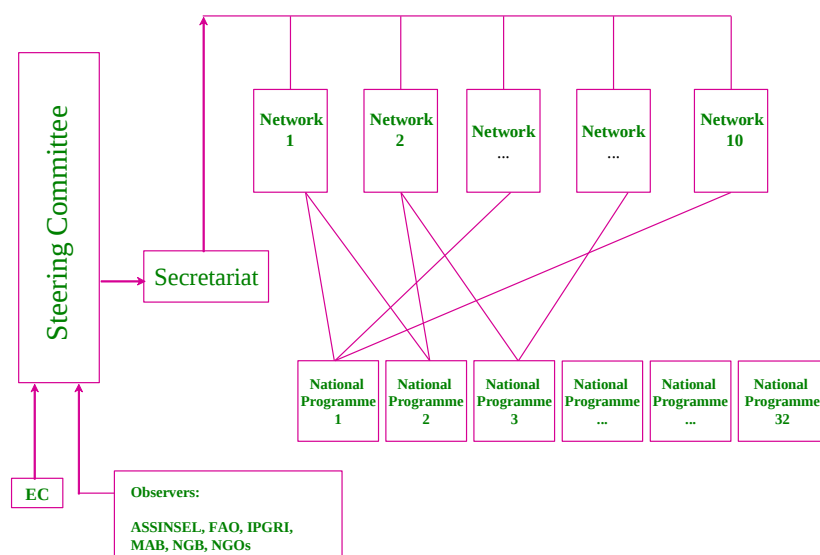


Figure 1. Operational structure of ECP/GR during phase v

Table 3. Functions of the coordinating secretariat, working group members and national coordinators

Steering Committee This committee was composed of member country coordinators with the role to maintain the overall responsibility for the programme, approve its budget, provide technical and political guidance, decide the general scope of the networks and the establishment and termination of the working groups, provide guidelines, approve ad hoc activities and mandate the coordinating secretariat to carry out decisions.
Coordinating Secretariat (provided by IPGRI): • Ensures implementation of the Programme, as mandated by the SC • Coordinates activities carried out in the framework of the programme • Is responsible for the financial management • Provides technical and financial reports to the SC • Initiates ad hoc activities

- Gathers and distributes information
- Assists in the formulation of project proposals for joint activities
- Searches for donors to support particular elements of workplans
- Links with other regions
- Contributes to public awareness

Working group members

- Attending and corresponding members have a representative role for the particular crop and are charged with 'taking home' the recommendations and the workplan agreed upon during the meeting

Country Coordinators

- Represent the ECP/GR to sponsoring Ministries and act as a liaison point between IPGRI, Ministries and participating institutes
- Maintain close contact with working group chairmen or members to monitor progress and identify potential problems with databases and collections
- Obtain the necessary governmental commitment to the programme and ensure that the required support is provided to institutes to allow them to make contributions in kind (maintenance of databases, of collections, collecting, etc.)

Considering the role played by ECP/GR in the previous 15 years, and recognizing its new objectives and operational structure, the International Technical Conference on PGR held in Nitra, Slovakia, in September 1995, recommended that ECP/GR, the basis of which are active national programmes, be used as the platform to facilitate the implementation of the Global Plan of Action (GPA) for the European region as part of the FAO Global System on PGR (IPGRI/FAO 1996).

Phase VI (1999 – 2003)

The European Symposium on the implementation of the GPA in Europe held in Braunschweig, Germany in October 1998, made a number of recommendations for ECP/GR to expand its scope, in order to cover a wide range of the priority activities defined by the GPA. However, it was impossible to secure a proportional increase of the annual country contributions. Nonetheless, during Phase VI the number of working groups expanded to 15 and activities were started in all the thematic groups, coordinated by appropriate task forces. The frequency of meetings of each working group was consequently reduced and an attempt was made to increase coordination at the network level with the establishment of Network Coordinating Groups, composed of working group chairs, vice-chairs and database managers. The structure of ECP/GR at the end of Phase VI, showing all the active networks and working groups is shown in Figure 2.

Table 4 shows how the 5 years budget of Phase VI is broken down in percentage for the different budget items. Although the cost of coordination is significant, it can be argued that this is an essential element to ensure cohesion and functionality to the programme.

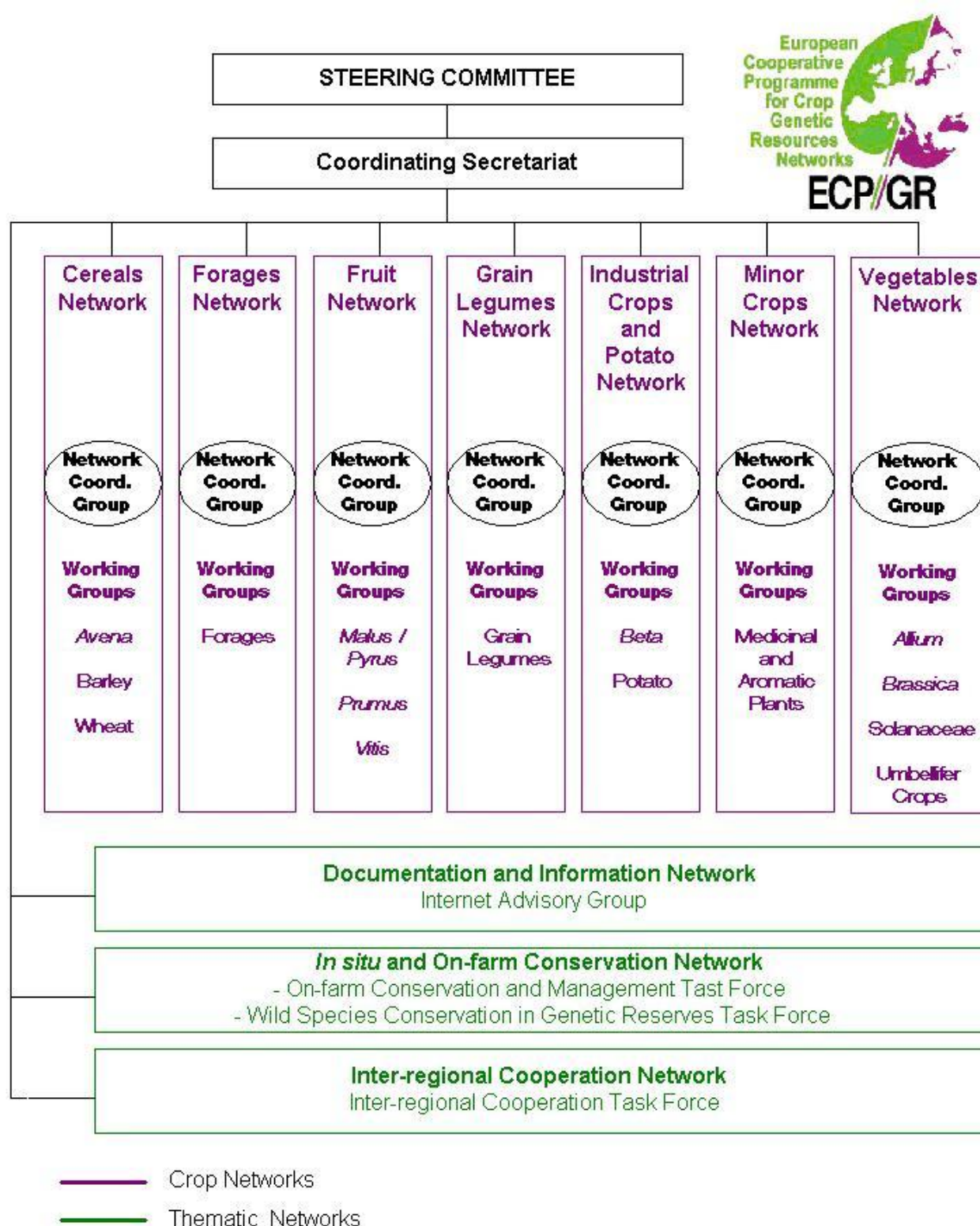


Figure 2. ECP/GR structure at the end of phase vi

Table 4. ECP/GR budget for Phase VI: 350,000 €/year

Budget item	%
Coordinator at IPGRI and secretarial support	36.0%
Staff travel	3.5%
Network operations (meetings, ad hoc actions)	32.0%
Steering Committee meetings	5.0%
Internet platform	2.0%
Publications	6.0%
Newsletter	1.0%
Communications and office consumables	3.0%
Overheads	11.5%

ECP/GR outputs

The success of the ECP/GR programme can be measured against indicators such as: the increasing number of participating countries (35 in 2002); the continuing financial support from the members; the increasing request for the establishment of working groups (15 approved at the end of Phase VI). It is not always possible to clearly attribute to ECP/GR all the achievements resulting from collaborative initiatives on PGR in Europe, although it can be assumed that the programme has been instrumental in establishing a fertile environment for cooperation. On the other hand, a number of outputs exist that can be clearly considered the result of ECP/GR and these are summarily described in the following sections.

Documentation

The ECP/GR networks have established nearly 50 Central Crop Databases (Table 5). These are managed as 'input in kind' to the ECP/GR by a total of 32 institutes from 19 countries. The databases have the dual role of providing users with information on the germplasm maintained in Europe and providing the working groups with a tool allowing them to take informed decisions regarding the management of the collections (rationalization, safety-duplication).

Table 5: ECP/GR Databases

Cereals	Grain Legumes	Vegetables	Fruit	Forages	Industrial crops
Avena Barley Maize Secale Triticale Wheat	Arachis Cicer Glycine Lens Lupinus Phaseolus Pisum Vigna	Allium Brassica Cucurbita Cyphomandra Eggplant Lactuca Physalis Tomato Umbellifers	Malus Prunus Pyrus Ribes/Rubus	Legumes – 7 Grasses - 11	Beta Flax Potato (cultivated) Potato (wild)

Several databases still provide only passport data. These are, however, increasingly standardized, since all the networks have adopted the use of the IPGRI/FAO Multicrop

passport descriptors, following their approval, as a standard format for data exchange, in a meeting of the ECP/GR Documentation and Information Network (Lipman et al. 1997). Many groups agreed to expand the list of descriptors for data exchange and include minimum lists of characterization and evaluation data. Since 1997, the European databases have become more visible on Internet (<http://www.ipgri.cgiar.org/links/selectcrop.asp>). Most of them are now accessible via entry pages based on a common logic. These provide links to on-line searchable or downloadable files and provide descriptions of the database and contact details of the contributors and of the managers. The Web-enabling of the ECP/GR databases was facilitated by a group of experts from the main Documentation Support Centres in Europe, who provided advice and technical support to the European central crop database managers. The high level of collaboration has allowed a number of databases, each managed by a different institution, to be temporarily hosted on the servers of the Nordic Gene Bank or the German Centre for Documentation and Information in Agriculture (ZADI).

The ECP/GR Documentation and Information Network has been instrumental for the preparation of the EU-funded project EPGRIS (European Plant Genetic Resources Information Infra-Structure, <http://www.ecpgr.cgiar.org/EPGRIS/Index.htm>). This project was meant to support the creation of National PGR inventories in all the European countries. These inventories, to be implemented as part of the Clearing House Mechanism of the Convention on Biological diversity, will be the preferential source of data for the creation of the European search catalogue EURISCO. This catalogue, expected to be launched at the end of 2003, is planned to be frequently and automatically updated from the national PGR inventories and easily accessible via the Internet. The aim is to offer a single entry point guiding the user to the plant genetic resources information.

Information gathering and distribution

Another visible output of ECP/GR is the production of information on PGR, mainly as a result of the exchange of information catalyzed by the working group meetings. The production of meetings' proceedings, including reports on country collections, as well as technical information and results of research, has characterized the entire ECP/GR cycle. These publications, available in paper copy free of charge from the Secretariat, can increasingly be downloaded from the Internet. The ECP/GR web site is also increasingly becoming a reference for information on the programmes' activities (<http://www.ecpgr.cgiar.org>).

Characterization, evaluation and use of the collections

ECP/GR has only rarely been able to allocate its funds to specific activities, such as documentation, characterization or evaluation of the collections. Working groups have generally had to rely on their own national resources to carry out agreed priority activities. National resources were always scarce and would not allow speedy and uniform implementation of the collaborative workplans. However, the launching in 1994 of the European Council Regulation 1467/94 for genetic resources in agriculture offered a new source of funds that could be used in a complementary way to implement agreed working groups' workplans. Several ECP/GR working groups found themselves in the optimal condition to submit proposals consisting in the range of activities that they had planned to carry out, but without adequate resources. A good number of projects (Allium, Avena, Brassica, Barley, Carrot, Maize, Prunus), developed within the ECP/GR networks, received EU support and were able to rapidly improve the level of characterization and use of the respective European collections. Just to quote one example, the Allium project (1996 – 2000) resulted in the development of core collections for onion, leek and garlic, some sources of

resistance to *Phytophthora* were identified in leek, resistances to *Puccinia*, Thrips and downy mildew were identified in onions. It was interesting to note that other EU-funded projects that were not developed within ECP/GR circles (Beta, Eggplant, Potato, Vitis) decided to apply for the establishment of formal ECP/GR working groups, either in the course of the project period or after its end. This process once more showed the natural complementarity between the aggregative and coordinating potential of ECP/GR and the financial resources of the EC.

A shortcoming of the EU-funded projects was the risk to split the ECP/GR groups, due to ineligibility of the non-EU countries for EU funds. In many cases, ECP/GR ensured the participation of non-EU partners in the meetings of the EU funded projects and occasionally enabled them with small resources to carry out complementary activities.

Conservation and exchange

According to the IPGRI directory of germplasm collections, about 500 genebanks and other institutes in Europe currently maintain *ex situ* a total of approximately two million germplasm accessions. Although difficult to quantify with accuracy, the level of duplication of the collections is thought to be high. On the other hand, there are still gaps in the collections and high priority regions (such as the Mediterranean, the Balkans, Carpathian, the Caucasus, etc.) have been identified for collecting landraces or wild crop relatives threatened by genetic erosion.

In the case of vegetables, there is no European country holding more than 30% of the total number of accessions held in Europe for a given crop. This example shows that a high level of interdependency characterizes this region and finding ways to share responsibilities and resources becomes imperative, also because public funding for maintenance of the collections often remains below a sustainable level.

Centralized collections on a crop-by crop basis, whereby partner institutions maintain a crop collection on behalf of the region have been established. Formal commitment to maintain these on behalf of ECP/GR countries have been made in the case of the seed *Allium* species and cruciferous crops collection in Wellesbourne, UK, the European field collection of long-day *Alliums* at Olomouc, Czech Republic, the European field collection of short-day *Alliums* at Rehovot, Israel, and the wild Brassicas and related wild relatives collection in Madrid, Spain.

Several ECP/GR working groups have also considered the possibility to formalize decentralized European collections, with the responsibility for conservation of relevant accessions being distributed among several countries. Theoretical mechanisms to implement such a system have been formulated by the working groups. The groups have also constantly contributed to improve mutual trust among the partners, by insuring continuing access to all germplasm and related information and promoting the use of high technical standards for storage, conservation, evaluation and documentation. Agreements for safety-duplication of the collections, mutual support for emergency regeneration and reconstruction of lost collections have also been concrete examples of responsibility sharing promoted by ECP/GR. A detailed account of the recent debate within ECP/GR and progress in sharing responsibilities for conservation can be found in Maggioni (2001).

Conclusions

Twenty-two years after its establishment, the ECP/GR network can be said to have offered a successful framework for cooperation in Europe. This has facilitated maintenance of an open and continuous access to germplasm and related information. The most evident result of the network's presence has been improved documentation of germplasm and availability of

data in the European region. Appropriate maintenance of the collections has also been encouraged.

One of the main strengths of ECP/GR has probably been the sense of ownership that it has been able to develop in all the member countries. The frequent occasions to meet that it has created have facilitated continuous renewal of the commitment to work in collaboration and has also made it easier to prepare joint project proposals for submission to funding agencies. An effective coordinated Secretariat is thought to have acted as an essential glue of the network, but this would have not been sufficient without a clear commitment from the partners and their availability to contribute with inputs in kind.

Weaknesses of the programme can be identified in the often-insufficient availability of funds to implement joint activities, leading to the risk that these only remain written on paper. Moreover, success leading to expansion of activities may bring with itself the risk of stretching the programme beyond its possibilities. The enthusiasm and good will originating in the working groups might also bring a sense of frustration whenever implementation of technical decisions is slowed down by the need for governmental approval.

ECP/GR is now getting closer to the definition of its seventh phase of operation. Independently from the actual direction that the member countries will prefer to give to the programme, it is believed that the role of an effective Secretariat will still remain essential. Improvements will be expected if national programmes will be strengthened, since a coordinated approach can draw larger benefits when the basic elements of the system are strong and effective. It will also be important to maintain the focus on priority actions, so that the expected targets remain feasible. It is hoped that these considerations can be useful for any other regional network under development and that a coherent and efficient regional PGR strategy be promoted as a result of a well functioning networking environment.

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SWOT as a method for systematic analysis and planning in national and regional PGR frameworks

Strengthening National and Regional Policy and Institutional Frameworks for the Sustainable Use, Exchange and Conservation of Plant Genetic Resources

Session: Network planning with the SWOT method

Reporter: T. Kirchner

1. Objectives of the session

The objective of this session was to present a participatory analysis and planning method, SWOT, to the participants and to enable them to use this tool in future on their own. By practising the SWOT method, the participants analysed during an intensive communication process in detail the PGR conservation and use in their home countries and developed from the conclusions future priorities and action areas for the EAPGREN Network.

2. The working approach

The starting point of the work was the common recognition that ...“The sustainable use of its plant genetic resources is a complex task for a nation. It requires careful multidisciplinary planning - and re-planning as experiences arrive. Consequently, planning of PGR programmes needs to be a teamwork effort. A group as a whole is more than just the sum of its individuals and discussions in smaller subgroups are proven to be very helpful, not only for an exchange of experiences, but even more for intensified co-operation and communication that opens the way to solve problems more effectively and efficiently.”¹ These considerations formed also the base for the session on network action planning.

Before this session, the situation of conservation and use of PGR in different member countries of ASARECA had been explained by the workshop participants during their presentation of their national reports and it showed the great variety of existing strategies, institutional arrangements, legal frameworks, policies and key activities. The participants were able to exchange their experiences and they acquired deepened insights of the different national stages of development of PGR management issues.

In addition, more information and motivation was provided by different resource persons. One presentation stressed the importance of well co-ordinated and structured national programmes² while others described the national programme development activities in Germany³. Concerning the regional institutional frameworks, the state of development of the Eastern Africa Plant Genetic Resources Network (EAPGREN) and its importance in the conservation and use of PGR was presented⁴. Also the results of several investigations of various networks were discussed, showing their strengths and weaknesses⁵. And another case study, the presentation on the European Co-operative

¹ DSE/IPGRI, 2000: Proceedings of an International Workshop: Towards Sustainable National PGR Programmes. Page 208.

² see the contribution of J. Engels in this report.

³ see the contributions of L. Frese, A. Graner.

⁴ see the contribution of J. Wasswa, D. Kiambi.

⁵ see the contribution of J. Watts.

Programme / Genetic Resources, gave an example how a network could function successfully over a long period⁶.

The participants used their own experiences, as well as the lessons learnt from their colleagues and from the inputs of the resource persons, and conducted an analysis of the national as well as regional situation concerning conservation and sustainable use of PGR. They used the SWOT method in a process of three steps:

- The participants first elaborated the strengths and the weaknesses of their country's PGR system by dividing into two groups according to expertise and countries. They also looked at the opportunities and the threats in the different countries. During the plenary session, these group results were presented to all workshop participants and discussed in detail.
- In a second SWOT session, the groups worked on elaborating the strengths and weaknesses of the EAPGREN Network. The opportunities of this network were noted and ideas on possible threats of the network were collected. The final plenary discussion enriched the network analysis.
- The development of a regional action plan started from pre-formulated proposals which a workshop subgroup made to the plenary, developed from their past group work results⁷. Five outputs were presented to the plenary. The participants were split into the same two groups and then they worked on two respectively on three outputs. Again, the group members looked at the results developed so far, they mentioned the strengths, weaknesses, the opportunities and threats. Based on those, they developed suggestions to improve future performance, gave indications for the time frame, mentioned possible collaborators and responsible persons / institutions.

3. *An introduction to the SWOT Method*

SWOT, a participatory working method

The SWOT method aims to make learning from experiences and mistakes more effective for groups of people. As a participatory method for project appraisals or evaluations it recognises that persons concerned have detailed knowledge of their environment and its utilisation, and that they are responsible for decisions they make - even if they are illiterate and not used to modern planning concepts. The advantages of the SWOT method are:

- SWOT promotes participation in several ways. Firstly, it gives to the persons concerned a forum for regular discussions of existing problems and for solving many of them. Secondly, it encourages all group members to take part in discussions with the aim of solving problems existing there. Thirdly, the discussions focus on action and results. People who can contribute to solving problems are identified and tasks are allocated to them by the group. And fourthly, by solving existing problems the standing of the group (or network members) and its members is improved. The resulting pride in their own achievements can lead to development processes of the group.
- The discussions of problems between the group members leads to increased awareness in the for example network. The SWOT method makes this process more effective by structuring the discussion and by recording it for later self-evaluation.
- SWOT is particularly suited to raise the initiatives of groups or communities to solve their own realised problems. In this respect it differs greatly from other methods

⁶ see the contribution of L. Maggioni.

⁷ As only some of the relevant key persons/decision makers were present and due to the very heterogeneous group and the time constraints, the regional action plan could not, as had been planned, be directly developed from priority setting of identified weaknesses of the working groups.

which concentrate on generating knowledge. SWOT is more of a management tool, particularly suited for only informally organised groups and communities.

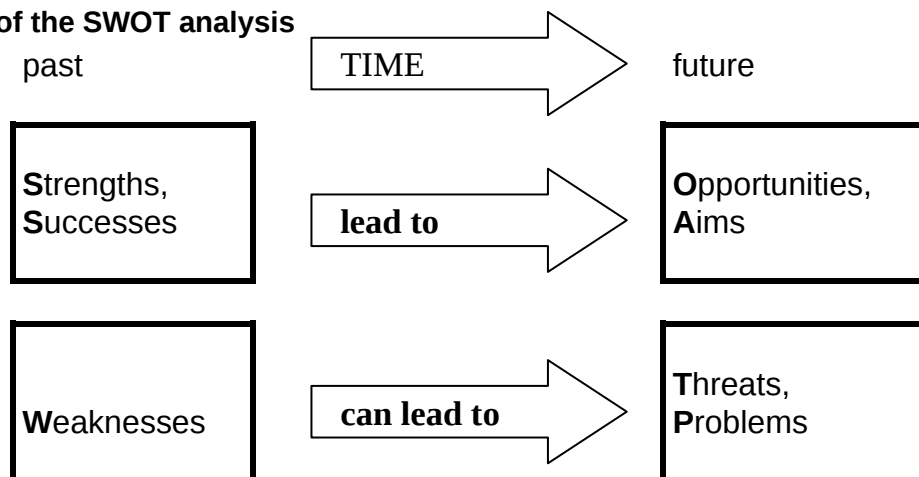
- By concentrating on past mistakes, not to blame but to use them constructively for learning processes, SWOT can help the groups to eliminate their mistakes and deficiencies.
- In contrast to many other PRA methods which are sometimes in their application not very rapid, SWOT is a fast and simple method - and a cheap one. It is designed to concentrate on the perception and the initiatives of the participants and it keeps the role of the outsiders small. It is quickly understood and easily applied, provided its different steps are strictly followed.

The principles of the SWOT method:

The SWOT discussion starts just how most people start when they want to find out about a situation unknown to them, for example the situation of a researcher in an institute: By asking what activities are done and what were the advantages (or successes) and the failures (or the weaknesses) in the activities. But unlike many interviews, it does not stop at that but continues by asking who could contribute to eliminate those weaknesses, and how it could be done. SWOT does not only aim at finding information, it also wants to raise awareness about existing problems and promote initiatives, so that the group of researchers may solve those problems. The method is based on the following rationality:

- Life is a succession of activities in the past, present and the future. This applies to individuals as well as to the life of organisations. Successful past activities are likely to be remembered. We call these our successes, although we know that the level of success might not have been 100%, and that different individuals may judge successes differently.
- When we are able to repeat successes we can reach our aims in life, as is shown by the arrow of the diagram:

Diagram of the SWOT analysis



- But other activities in the past proved to be errors, mistakes, failures etc.. Here we will call these our weaknesses.
- Weaknesses may not harm us too much if we learn from them and avoid them in future. But if we repeat weaknesses often, we will get problems. We may say that many of our today's problems result from repeating weaknesses of the past. These weaknesses consumed time and money, in the past and until now. The question arises whether there are possibilities to overcome our weaknesses. In addition, we have to know the frame conditions, the threats which influence our institution.

This can often be achieved by simply getting aware of the weaknesses and then eliminating them. This way we save time, money and other resources. But saving them is only one advantage. We can utilise them to even more benefit by investing them in new activities with more chances of success.

Application of the SWOT method:

The simple basic concept of SWOT can be employed in participatory situation and problem analysis leading to appraisals for projects and in evaluations of community based projects (and especially self-evaluations) in the following manner:

Phase 1: Preparation

- The moderators, single or in pairs, make an informal visit and hold discussions with different persons concerned in their places of work. The discussions may take up to a day. They give a first impression of the situation in the organisation.
- A workshop is arranged with a relevant section of the target group, for example employees of co-operating departments. A moderator (who must be an outsider, capable of structuring a meeting, and a good understanding of the method's various steps) is appointed.

Phase 2: Determining main successes/strengths and weaknesses

- The persons concerned, for example researchers of several departments, are asked to describe and discuss their successful activities within the subjects of discussion. These are listed on green cards which are pinned to a board. When the relevant strengths/successes have been named, they are again read by the moderator for confirmation or altering.
- The weaknesses contained in successful and other relevant activities are listed similarly, but on red cards. At the end they are also read aloud by the moderator for confirmation or altering.
- The weaknesses are then divided into those which are largely due to external factors (which are important as background information but cannot be influenced by the participants) and those which can be influenced.

Phase 3: Promoting initiatives and eliminating weaknesses

- Each of the weaknesses which are within the influence of the participants is read aloud again. The participants must reach agreement if they do not want to alleviate it. Some weaknesses are considered unimportant, they do not lead to problems and they have become accepted as part of life. The most important weaknesses are chosen.
- The causes for the weaknesses and their effects can be discussed. The persons who may be able to eliminate each of the important weaknesses are identified. The discussed and agreed solutions and their time frame are written on the back of the weakness cards or on boards. When all are finished, they are read aloud. This may be considered as the first planning step for alleviating the recognised weaknesses. This point will usually be the end of the first intensive group meeting.
- If necessary, the persons who are considered able to alleviate the weaknesses draw a plan how to overcome them in the near future, together with some of the participants.
- Alleviation of the weaknesses proceeds. Follow-up meetings are necessary to confirm that the weaknesses have been eliminated and to plan further action. Finally, the participants use the SWOT method to assess and evaluate the experiences they made while solving the problems and weaknesses.

SWOT can be used for different situations, like planning or evaluation, and it has certain flexibility. It is possible to evaluate the internal situation of an organisation as well as its external linkages. Opportunities and threats can be analysed in detail, it will then be close to a situation analysis. The above described 8 points are leading to action faster, when the participants are persons with strong interest in the discussed subjects, if they are given deciding powers and are eager to take responsibilities.

Experience has shown that precondition for a successful SWOT meeting are: A good moderator who is an outsider of the organisation; a fairly homogenous group able and willing to become active; selection of an appropriate topic for discussion; participation of the stakeholders concerned; and supportive political frame conditions.

4. The results of the working groups

This chapter describes the subjects of the 3 working groups and how they are connected to each other. The working group results can be found in detail as copies in the annex of the report. Here the most important elements the groups have elaborated will be commented on.

Identification of strengths and weaknesses in national programmes; setting priorities and discussing opportunities and threats.

First SWOT working session, working group 1:

The group was composed of 7 participants:

Dr. Wilson Marandu, Dr. Hussein Mongi, and Mr. Herman Akonaay from Tanzania; Mr. Melchior Nahimana and Mr. Juvent Baramburiye from Burundi; Mr. Canasius Mugunga from Rwanda; and Mr. Getachew Mengistie from Ethiopia.

As resource person and facilitator the group was supported by Dr. Dan Kiambi and Dr. Theda Kirchner.

After brainstorming exercises and discussions in small groups and in plenary, the participants identified the following main sub-groups to which all collected ideas could be clustered to:

- Financial Resources allocated for the conservation and sustainable use of PGR,
- Infrastructure like technical facilities or committees,
- Human Resources, meaning the different kind of trained staff,
- Activities from the different stakeholders in order to conserve, exchange or use PGR,
- Policies and Laws setting the frame conditions for work and
- Diversity/genetic Material in the country.

Related to the existing strengths, it can be summarised that in all the above mentioned countries

- Financial support is given, especially strong in Ethiopia and fairly good in Tanzania (mainly by donor support). In Burundi and Rwanda the financial support for PGR is still very "limited".
- Concerning the infrastructure, it was stated by the group members that basic facilities are in all countries available, but the number and technical standards are very different and of course related to the financial inputs. Not surprisingly, in Ethiopia the ex situ as well as in situ facilities are strong in their performance, and also farmers' conservation associations are existing. NGOs are involved in the conservation and use of PGR.
- The situation of human resources is considered "relatively good technically with qualified man power" in Ethiopia and "fairly adequate" in Tanzania. Also in Burundi and Rwanda there is PGR experienced staff available in the fields of characterisation and evaluation, in networking and in the general work of in situ and ex situ activities.

- In all countries, but especially in Tanzania, various kinds of in situ conservation is existing, like national parks or nature reserves. Besides, different research activities are going on in order to increase the use. For example the seed producers in Burundi use the genebank material for their work and in Rwanda tissue culture is used for multiplication and conservation activities.
- Concerning “policies and laws”, it can be summarised that all governments have realised the importance of PGR, and they signed international agreements like CBD, IT, WTO. The “good will”, the commitment of governments to conserve PGR, is visible.
- In all countries important genetic diversity is available.
The mentioned weaknesses were:
- Funding is given by the governments and donors, but in relation to the importance of PGR it is in all countries still inadequate, as noted by the group members,.
- The basic infrastructure exists, but the technical facilities, the equipment and capacity of genebanks are insufficient. Besides, all countries have weak co-ordination of the different programmes and/or between the different stakeholders. Another weakness, seen by the colleague from Ethiopia, is the “weak private sector involvement” and “limited involvement of local communities and NGOs”. That “no national committee is established” and that the PGR issue is not yet included in university curricula is seen as a weakness in Burundi.
- All participants noted that the number of trained staff is insufficient. From Tanzania’s side it was explained that also the “high turn-over of human resources” is a weak point in PGR work. Often, the staff’s knowledge is not sufficient, especially in the field of policy and legal issues. And there is only “limited training of farmers”.
- Even where there are already a number of activities in the field of conservation, exchange and use of PGR, many activities receive too little support for the enormous tasks which need to be performed, for example: all countries mentioned “limited awareness at all levels”; others had specific problems such as “lack of germplasm of under-utilised crops in ex situ conservation”. Inadequate linkage between breeders and genebanks, absence of impact assessment, lack of detailed action plans and insufficient inventory and documentation are more examples mentioned as weaknesses.
- In the huge sector of policies and laws, a great number of missing elements was uncovered: for example “some international agreements not yet signed”, legislative gaps, lacking PGR policy strategy and/or poorly defined responsibilities and overlapping of mandates.

When the group members discussed the opportunities they looked at their institutional possibilities, but also outside their organisations and their countries. They concentrated on the possibilities they see for the future:

- Concerning the financial resources, all participants were aware that international and national donors show the will to support PGR conservation and use.
- The existing infrastructures offer different “insurance mechanisms against loss of PGR”. The different existing networks involved in PGR, like the East Africa Subregional Development Centre (EASRDC) or the Great Lakes Initiatives of Collaboration (EASRDC) offer great potential.
- As for the necessary human resources, experienced centres for learning exist, the interest of some universities in PGR is known and some partners in the region offer training already.
- The chances in the field of activities are sharing of technical information and of critical germplasm among peoples and countries and the technology transfer from the North. Ethiopia and Tanzania focused in addition on a PGR duplication strategy for safety reasons.

- To “improve the awareness on PGR activities” and to “increase the value of germplasm” are further aims.
- “Policies and laws have to be refined” is a general statement of the group members. For Burundi there is the wish that the private seed industry will be promoted. The presence of international organisations for partnership is seen as an opportunity. The threats for the future are seen as follows:
- Though certain funds exist and possibilities for more financial resources are seen, the participants describe the dependence on external funding and the uncertain support as a threat.
- A good use of the infrastructure is in all countries only possible if there is national co-ordination of PGR partners in place and no institutional rivalry exists. The sustainability of the network is also a crucial factor.
- An important frame condition for successful work is the availability of qualified staff and their mobility.
- “Over-riding globalisation actions e.g. WTO, TRIPS” and “unpreparedness for disasters” can become a threat to all other activities.
- In the field of policies and laws the political instability and mistrust among partners are threatening the PGR programmes. Also the rapid population growth has to be taken into consideration.
- Critical for all countries is the genetic erosion due to human and natural causes.

Summarising remarks:

- All four countries are facing threats to PGR from the need to feed fast growing populations.
- Three of the four countries, Ethiopia, Rwanda and Burundi, have suffered long periods of civil strife and war action. However, Ethiopia seems to have the best functioning PGR system of the four, while Rwanda and Burundi have the least developed ones.
- Tanzania is probably leading with utilisation of its in situ conservation: its large area of national parks and other conservation areas also present a substantial part of the country’s foreign exchange earnings.
- On all levels of the agricultural sector low awareness on PGR issues are a major obstacle to future improvements.

First SWOT working session, working group 2:

This working group was composed of 8 participants:

Mr. Haribenja Andriantsoavina and Mr. Jean Jaques Rakotomalala from Madagascar;

Ms. Fiona Bayiga and Mr. John Mulumba Wasswa from Uganda;

Dr. Esther Kimani, Mr. Zachary Muthamia Kithinji and Mr. Muchiri Bernand from Kenya; and Mr. Tesfaslassie G’Hebremariam from Eritrea.

As resource person and facilitator the group was supported by Mr. John Mulumba Wasswa, and Dr. Issiaka Zoungrana.

The working steps and the way of grouping the collected ideas was done nearly in the same way as in group 1 (see page 6).

Strengths in the field of conservation and use of PGR in the above mentioned countries are:

- The PGR diversity present in all countries, especially the existence of many wild relatives and endemic PGRFA in Madagascar.
- In all the countries there are policies and laws on biodiversity and on environment in general. The participants from Madagascar noted as strengths that there is a biodiversity strategy and an action plan.

- In all the represented countries there are quarantine institutions in place. The basic facilities are available, and for Uganda and Eritrea strong linkages between environmental and agricultural institutions were reported.
- Conservation activities are on-going in all the above mentioned countries, mainly on cereals, legumes and cash crops, and all the countries work with priority crops. Kenya has a genebank, the others concentrate on field gene banks.

The weaknesses observed by the participants were:

- There are inadequate financial resources for PGR conservation.
- Under policies and laws the group stated that there is “lack of mechanisms to enforce laws”. In all the countries there is “lack of public awareness” and “lack of PGR teaching at the school”.
- All learning institutions do not include PGR conservation in curricula. Just as in group 1, the weak collaboration between institutions (some exceptions see under strengths) and the overlap in mandate are seen as weaknesses.
- A large number of activities was described as weak by the participants of group 2. All agreed that collecting, characterisation and evaluation is weak and that information and documentation systems are poor. The group noted difficulties due to no use of participatory PGR management approaches, as well as the breeding gap or the missing awareness on the possible benefits of use.
- Looking at human resources, the same answers like group 1 were written down: the number and/or quality of trained staff is insufficient and there is a “high staff turn-over”.

The participants from group 2 noted the following opportunities:

- Concerning the financial resources, international and national donors are supporting PGR activities (same as group one).
- Important opportunities in the field of policy and laws are the existence of environmental plans (in the case of Madagascar) and sectoral plans for rural development. The regional integration and the favourable international legal regime was noted from Uganda and for Kenya it was stated that international agreements are ratified and a laws’ review on PGR issues is going on.
- While for the other group safety and networking were the important key words under institution / infrastructure, this working unit stressed the possibilities of having NGOs present and that there are farmers’ organisations existing. Positive was also the presence of several regional initiatives on PGR.
- The participant from Eritrea noted among other ideas as opportunity to exchange PGR (give and take) and the existence of capacity building programmes.

The most important threats discussed by group 2:

- The dependence on donor funds poses a threat, according to all group members. And for the work with PGR it can be a threat, again ideas raised by all participants, when there are “political interference in PGR conservation”, “change in international policies”, “genetic erosion due to biotic & abiotic stress”, “GMOs”, “climatic changes” and “institutional rivalry”.
- Other factors mentioned were: “change of culture and eating habits” and population increase.
- An important policy and legal aspect are the land tenure issues, the rural/urban migration and the increased rural poverty as noted down from Madagascar’s side.
- “Theft of PGR material” and “undocumented indigenous knowledge” are threats seen by the Eritrea colleague.

Summarising remarks:

- Common strengths of the participants' home countries are the rich PGR diversity, the basic working facilities which have been provided, the different conservation activities done and the existing basic policy and legal framework.
- As was also perceived by group 1, the countries do have rapid population growth, there is lack of awareness on the importance of PGR and an inadequate funding.
- In addition, group 2 stressed the ineffective information systems and the weak information exchange.

Identification of strengths, weaknesses, opportunities and threats in regional PGR networks: the EAPGREN case study.

During this second SWOT session the young EAPGREN network was analysed by the group. Not all participants were so far actively involved in this network, but due to the given presentations and distributed handouts, constitution, logical framework for EAPGREN etc., all invited guests had a common background knowledge.

All participants recorded in a brainstorming exercise the successes reached so far by the network, the strengths and positive preconditions. A substantial number of ideas appeared, as summarised in the following:

- Governance: The elaboration of a "working constitution", the institutionalisation and the regional steering committee with representation by members is a strong point of the network.
- Research programme: Its clear project documents such as the logical framework matrix are a valuable point for "attracting donor funding". The network provides a regional PGR forum. The identification of needs of partner countries was also noted as success.
- PGR endowment: There is a "great diversity of endemic PGR material" and "similarities in the ecology of the member countries".
- Regional support: The linkage with ASARECA, the co-operation with them, sharing their experiences and getting "legal status available through ASARECA" is a strong aspect of EAPGREN. In addition, other interregional and sub-regional institution exists like IRAZ, EAC. There is a good co-operation with IPGRI Regional Office and there are the "experiences from similar networks on PGR in the SADC region"
- External support: Getting support from external donors like SIDA is seen as a important success. Positive is also the technical backstopping from IPGRI and NORDIC genebank.
- Membership support: The different members of EAPGREN network get support by funding, human resource support (competent / well trained scientists) and the infrastructure possibilities: more institutions, greater capacity, participation of some strong national centres and complementarity of countries involved. The willingness of the network members, the commitment is another strength of this network.

The weaknesses of the network experienced and seen by the participants so far were:

- Membership support: Concerning the national issues it was experienced that not all potential members are catered for; a special lesson from Tanzania is Zanzibar. Limited public awareness and "weak co-ordination mechanisms at national level as network building blocks" were observed as well. With regard to the infrastructure it was stated that governmental policies and priorities are disparate. "Lack of clarity on the commitment of members", such as their financial contributions is a weakness for the network.
- Communication: The lack of information exchange within and between countries was documented.
- Research programmes: It is a weakness that there is a development of interest groups and the "identification of collaborators is not exhausted". The "interests of NGOs, community based organisations and the private sector is weakly accommodated". There

is a failure to value PGR and the links between genebanks and breeding programmes are too weak.

- Co-ordination: It was judged as weakness that co-ordination within EAPGREN has been only interim so far. There is a “heavily dependency on national co-ordinators” on the other side. The network development process was too long, the secretariat is not yet established and the “regional steering committee does not widen the representation of the key stakeholders”.
- Regional support: The ASARECA support can, besides the positives effects, lead to dependence. Negative is also that there is neither a clear strategy and nor policy at regional level from EAPGREN’s side. It is feared that there will be competition with other networks for funds. The political context is a negative frame condition, the mistrust between the countries is a great weakness.
- External support: The funding insecurity, the rivalry among donors and that there is only a single major source of external funding are crucial weaknesses.
- Governance: The legal basis of the network is not clear enough.

As the participants discussed the opportunities, they looked at the network’s possibilities, but also outside their organisation, having in mind the objectives they want to reach in future:

- Membership support: The possibilities of having young scientists in the network and the PGR training inputs from ASARECA country members are future chances. Concerning the PGR resources, the participants noted that sustainable use of PGR gives the opportunity to address development problems. The access to PGR resources will be increased, germplasm exchange and utilisation are opportunities, as well as safety duplication of PGR. For the members the available infrastructure can be used more efficient and effective, overall costs can be reduced, more institutions will be involved and the communication can be improved. In respect to policy matters it is a chance that there is an “improved political environment”, the “regional political climate is favourable”. There is “collective action on common problems” and there are many functional regional and subregional political and socio-economic organisations.
- External support: As a network the chances to “attract mega-donors” can be improved, there can be a “collective bargaining at project level”. Also the co-operation with international organisations such as IPGRI and other CGIAR centres is a notable opportunity. In addition, some of the network member countries are hosting international centres.
- Other networks and research bodies’ support: To use the experiences, the lessons learnt and the potentials from other regional networks, in the same region or elsewhere, is an opportunity to be used more, as mentioned by many participants.

The threats for the network’s future are seen as follows:

- Financial: From the member country’s side the uncertainty or even failure of financial commitment by all members is a negative frame condition. The lack of incentives for scientists hinders the network activity implementation. Also from external donors the financial support is uncertain, not available in time, or insufficient. Besides, the “donor support will undermine ownership and sustainability”.
- Equity amongst members: Domination of strong countries and unequal distribution of resources are threats for the network.
- Stakeholders: The “loss of farmers’ indigenous knowledge”, the insufficient support and co-operation by farmers due to poorly defined farmers’ rights and the “insufficient participation of farmers in EAPGREN” were noted as threats.

- Political context: On one side the political circumstances were described as improved and favourable, however, the threat of political instability and “lack of trust between member countries” are also recognised.
- Policy and laws: “Political divergence on PGR issues, for example GMOs and different or unclear PGR policies and strategies, are threatening the networks’ function.
- Loss of PGRs: The loss of genetic material by erosion or illegal means were seen as negative frame conditions, although all participants should be involved in working against it. This contradiction was partly resolved by stating that only the great dimension of this process has to be looked at as a threat. Also the question whether the agricultural development is a threat to PGR was perceived very different in the group (indicated by a flash on the board).
- Governance, co-ordination: “Unclear legal structures” and “lack of continuity of experts and officials in partner countries” are noted as a threat.
- ASARECA support: The negative side of ASARECA’s support is the bureaucracy, the political tie to a young institution and the lack of technical understanding by CD.

The development of a regional action plan for PGR conservation and utilisation: the EAPGREN case study.

The results achieved so far during the group work sessions and during the discussions were used as basis for the development of a regional action plan. This will enable EAPGREN to discuss the results further, to work on the ideas presented and to start implementation of some activities.

In order to use the limited time as efficient as possible, a subgroup formulated the following five outputs developed from past group work results:

- An effective PGR networking mechanism is developed in the region.
- Capacity to manage PGR in the region is strengthened.
- Enhanced availability of PGR management methodologies and technologies within the region.
- Awareness of PGR issues is raised at public and policy level in the region.
- More germplasm is accessed by local communities/farmers and utilised in crop improvement and enhancement programmes.

The participants were split into the same two groups to work on two respectively on three of these outputs. And for each given output the following tasks were discussed by the groups:

- Identify two main priority activities that can be used to achieve the output.
- Relate the strengths, opportunities, weaknesses and threats to the activities.
- Discuss and suggest how the weaknesses can be addressed using identified strengths and opportunities.
- Define key tasks for the identified activities and time frame.
- Suggest collaborators for each identified activity.

Group 1 worked on outputs 1, 2 and 4; Group 2 worked on outputs 3 and 5.

Output 1: An effective PGR networking mechanism is developed in the region

The two selected main activities to contribute to the achievement of the output were:

- Setting up the legal framework, and
- Setting up a co-ordination mechanism.

The working document of the legal framework exists already and ASARECA’s legal status is defined. However, the dependence on ASARECA may restrict the autonomy of the network and ASARECA’s legal framework is described as weak. The increasing sub-regional and regional integration is an opportunity and the regional political climate is seen

as favourable. In contrast, the uncertainty of political stability and the political divergence on various issues are threats for achieving the expected output.

The suggestions of the participants are to improve EAPGREN's constitution and to have it approved. This should be done in collaboration with ASARECA and IPGRI within the next three years. The group proposed the steering committee and the secretariat of EAPGREN as leader.

The group views the existence of a steering committee and the institutional framework of ASARECA as a positive basis for setting up a co-ordination mechanism. For the development of a sustainable mechanism for the network the weak co-ordination at national levels as network building blocks have to be considered. In addition, the operational mechanism are not fully refined. The existing networks can give lessons, however, the competition of the different ASARECA networks can become a threat, as well as the lack of awareness of the PGR value.

To use the lessons learnt and to review and refine the operation mechanism is suggested. This should be realised during one and a half year with the same collaborators as above.

Output 2: Capacity to manage PGR in the region is strengthened

The group selected two priority activities which would ensure providing the required strengths to management:

- Institutional development, and
- Human resource development.

For the institutional development it is important that policy and legal instruments are established. Also developed decision making tools, national co-ordination and a developed conservation infrastructure are needed. Some facilities and programmes are available and the existing capacity can be shared. However, national co-ordination too weak and the legal framework is inadequate. The governments support PGR institutional development, nevertheless, there is political instability and institutional rivalry.

The group suggested to strengthen national co-ordination mechanisms and to define the institutional role. These tasks have to be performed continuously, collaborators are the national focal points, led by the EAPGREN secretariat.

Human resource development was selected as activity two for the necessary capacity improvement. It includes the development of human resources through training programmes and the promotion of PGR curricula in education systems. Some well trained scientists are available and PGR curricula exists, though this aspect was seen differently by several participants. On the other side, all group members agreed when the weaknesses, the high turn-over and the inadequate number of trained manpower was presented. The existence of training institutions and of PGR training consortium is an opportunity. The threats for achieving the output are the lack of motivation and the fear of no sustainability in funding, especially when outputs are below plans.

The group's suggestions were to take advantage of the government's positive attitude, to develop policies and to motivate staff. A great number of collaborators were listed such as universities and institutions in the region and outside like DSE, IPGRI, Nordic genebank, Sida, FAO, Future Harvest Centres.

Output 3: Enhanced availability of PGR management methodologies and technologies within the region

The group selected as main activities:

- Research on PGR conservation, and

- Research on characterisation and evaluation.⁸

The network should focus on the development of guidelines on PGR conservation and effective seed conservation and regeneration procedures. Plant breeders and a regional organisation should collaborate. These activities should start immediately. Other tasks described by the group members are to adopt protocols of cryopreservation methods and of good in vitro conservation methods, activities which can be done with collaboration of IITA and IPGRI. The limited number of trained staff is a weakness, however, there are some basic tissue culture facilities available. Field genebank procedure development is a task which should be started immediately. Group 2 proposed to implement a monitoring system for on-farm conservation in co-operation with NGOs and INIBAP and to realise it also immediately. Further suggestions were: To conduct genetic erosion studies, to have an inventory of in situ resources and to work on germplasm duplication procedures are tasks that should be started this year.

For the research on characterisation and evaluation good evaluation procedures for priority crops have to be established. Studies in characterisation and evaluation methods are needed and can be conducted immediately together with breeders and other crop networks. The use of molecular markers for characterisation and genetic diversity studies were planned as well.

This seems an ambitious programme and it was not clear who will do the work. The question came up how far routine work should be addressed.

Output 4: Awareness of PGR issues is raised at public and policy level in the region

The two chosen priority activities to raise awareness on both levels were:

- Development of public awareness mechanisms⁹ and
- Tools development.

By organising workshops, seminars, and conferences for different target groups and by the development of a PGR sensitisation campaign programme public awareness will increase. Proposed also regional PGR documentation and information services. Policy and legal instruments exist already, however, there is only limited information exchange within the region and different languages have to be considered. Opportunities are that information is available and many kinds of communication channels exist. Not harmonised policies are a threat.

The group members suggested to train staff in public awareness and public relation and to facilitate a harmonisation of policies. EAPGREN secretariat should guide the different collaborators, the national focal points, NGOs, local governments and mass media.

The second priority activity was summarised tool development: the development of awareness creation tools and strategies, public relation tools for dissemination of information. The availability of databases and information systems and the existing communication technologies are strengths for the network, but facing insufficient public awareness materials and limited PR trained personnel. A chance is the access of PA material of other networks, the access to a dynamic ICT and favourable political environment.

During the next one to two years activities should start together with Future Harvest Centres and universities.

Output 5: More germplasm is accessed by local communities/farmers and utilised in crop improvement and enhancement programmes

The participants selected the following activities:

⁸ It should be noted that the group concentrated on technologies only and left out management methodologies.

⁹ This phrase requires specification to be of use in PGR.

- Documentation and information, and
- Collaboration.

Most important for the first chosen activity is the production of crop catalogues, secondly the establishment of databases and thirdly to publish information on potential germplasm. For all the tasks the network can build on existing institutions, however, information exchange is difficult and there are no policies at regional level to manage databases. As opportunity the group noted on one side the germplasm diversity and on the other the diverse collaboration possibilities. Communication links are available. The high turn-over of experts and the inadequate participation by stakeholders are threats. Also the loss of farmer's indigenous knowledge and unclear legal regulations have negative effects. The collaboration is planned with Future Harvest Institutes and regional genebanks.

Collaboration should focus on seeking co-operation in promotion of neglected crops and on strengthening the participation and linkages with the users of PGR. Strengths are in this context the existing sub-regional bodies, e.g. IRAZ, association with development partners and partnership with strong national programmes. As stated often already, the weaknesses are the disparity in government policies and priorities, lack of information exchange, weak link between breeders and genebanks and missing links to markets. The increased global PGRFA awareness, the regional and international donor support and interest are chances. But there are the well known threats, such as undefined farmers' rights and agricultural development contra PGR. The group suggested to collaborate with NGOs, extension services, development agencies and the private sector.

Summarising remarks:

- Decision-making powers were not enough represented amongst the participants. This is indicated by the rather superficial action plan.
- As per output only two activities were discussed by the participants, the necessary described and proposed tasks are not at all complete.

International frameworks for conservation of PGR

The International Treaty, the Global Plan of Action and the State of the World's PGRFA Report

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Introduction

The theme of this workshop, the strengthening of national plant genetic resources programmes, is closely related to, and to a certain extent determined by, the various elements of the FAO Global System for Conservation and Utilization of Plant Genetic Resources. The most important elements, i.e. the International Treaty on Plant Genetic Resources for Food and Agriculture (IT), the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (GPA), and the State of the World's Plant Genetic Resources for Food and Agriculture report (SOW) will be dealt with in this paper to provide a general framework for discussion, especially in the context of networking conservation and utilization activities and how these elements can contribute to a strengthening of regional networks. These elements are important to all countries and they will provide a guide for developing and implementing national plant genetic resources (PGR) plans and programmes, and for the indispensable national, regional and international cooperation.

In November 2001 the re-negotiation process of the International Undertaking, the legally non-binding international instrument of the FAO, established in 1983 to provide a legal framework for plant genetic resources, was finalized after a seven year long negotiation process among members of the Commission on Genetic Resources. The result is the International Treaty on Plant Genetic Resources for Food and Agriculture that will enter into force 90 days after 40 countries have ratified this legally binding instrument and that is in harmony with the Convention on Biological Diversity. As this International Treaty differs rather significantly from the Undertaking and since it still has to be ratified by almost 30 countries it was thought pertinent to provide a general overview of its key features, especially since it provides the "umbrella" to all the other plant genetic resources for food and agriculture (PGRFA) related instruments. In this paper special attention will be given to cross-cutting aspects with regard to the GPA and the SOW report.

The GPA was adopted during the 4th International Technical Conference for Plant Genetic Resources of the FAO in Leipzig by representatives of 150 states. It provides a coherent framework for activities in the field of in situ and ex situ conservation, in sustainable utilization of PGR and in institution- and capacity building. Its recommendations and activities have logically developed from the State of the World Report. It is envisaged that the Plan be periodically updated and, thus, will enable the Commission to recommend priorities and to promote the rationalization and coordination of efforts. It was further agreed that national governments and other members of the FAO will monitor and guide through the Commission the overall progress in the implementation of the GPA and of related follow up processes and establish criteria and indicators to assess this progress.

The first Report on the State of the World's Plant Genetic Resources has been developed through a participatory, country-driven process. This process resulted in the preparation and submission of 151 country reports by governments and these formed the information basis for the SOW report.

During the recent 9th Regular Session of the Commission the process of updating the SOW report, the monitoring of the GPA implementation and the establishment of a facilitating mechanism to implement the GPA were discussed and recommendations made. The salient features of the outcome of these discussions regarding the SOW report and the monitoring of the GPA will be presented in this paper and in the chapter that deals with monitoring of GPA implementation.

International Treaty on Plant Genetic Resources for Food and Agriculture

As already mentioned in the introduction the IT was adopted during the 8th Regular Session of the Commission and is currently in the process of ratification. For the full text of the agreement the reader is encouraged to visit the FAO website <http://www.fao.org/ag/cgrfa/docs9.htm> or to consult the FAO publication of the integral text (FAO, 2002). In addition, several articles have been published with interpretations of the Treaty (Cooper, 2002). In the paragraphs below a brief summary is given of the IT with a special focus on the provisions that relate to access and benefit sharing.

The Treaty's objectives are "the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security". Its scope is all plant genetic resources for food and agriculture. An article on Farmers' Rights recognises "the enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centres of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world". The responsibility for realising these rights lies with national governments, which should, as appropriate, and subject to national legislation, take measures to protect and promote Farmers' Rights, including the protection of relevant traditional knowledge, the right to participate equitably in sharing benefits, and the right to participate in relevant decision-making, at national level. This is the first time that such rights have ever been recognised in a binding treaty. Clearly, they are not intellectual property rights, but the basis for the recognition of the collective innovation on which agriculture is based.

The Treaty also establishes a Multilateral System of Access and Benefit-sharing, applied to a list of crops established on the criteria of food security and inter-dependence, implemented through a standard material transfer agreement, to be adopted at the first meeting of the Treaty's Governing Body. The list of crops covers about 80% of the world's food calorie intake from plants. Parties to the Treaty will bring into the Multilateral System all such resources that are under their management and control and in the public domain. They will encourage natural and legal persons within their jurisdiction to include the resources they hold in the Multilateral System. The PGRFA held by the International Agricultural Research Centres of the CGIAR will also be brought in, by agreements which they are invited to sign with the Treaty's Governing Body.

The Treaty lays out the conditions of access by legal and natural persons under the jurisdiction of Contracting Parties. Access shall be "for the purpose of utilization and conservation in research, breeding and training for food and agriculture, provided that such purpose does not include chemical, pharmaceutical and/or other non-food/feed industrial uses". Access shall be accorded expeditiously, without the need to track individual accessions and free of charge, or at minimal cost.

The Treaty provides that "Recipients shall not claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System". This text was the subject of intense negotiation and compromise.

Access to plant genetic resources for food and agriculture under development, including material being developed by farmers, shall be at the discretion of the developer, during the period of their development. Access to plant genetic resources for food and agriculture protected by intellectual and other property rights shall be consistent with relevant international agreements, and with relevant national laws. Resources accessed under the System, and conserved, shall continue to be made available by the recipients. These provisions, and those regarding benefit-sharing, will be contained in a standard Material Transfer Agreement to be agreed by the governing body. Its conditions shall apply to the transfer of the resources to subsequent persons.

The Treaty recognises that access is in itself a major benefit. The Parties agree that benefits shall be shared fairly and equitably, including through the exchange of information, access to and transfer of technology, and capacity-building. They agree to take measures to achieve commercial benefit-sharing, through partnerships and collaboration. They agree “that a recipient who commercializes a product that is a plant genetic resource for food and agriculture and that incorporates material accessed from the Multilateral System, shall pay [...] an equitable share of the benefits arising from the commercialization of that product, except whenever such a product is available without restriction to others for further research and breeding, in which case the recipient who commercializes shall be encouraged to make such payment”. Provision is made for the Governing Body, at its first meeting, to determine the level, form and manner of the payment, in line with commercial practice. It may decide to establish different levels of payment for various categories of recipients.

Important features of the IT that should be noted and that elaborate some of the points above are the following:

- The recognition of the special nature of PGRFA, in particular, aspects such as the interdependency of states, its importance for food security, its (indirect) economic significance, the way these resources are being used, etc.
- In view of the above, the members of the Conference of Parties of the CBD had requested FAO to bring the International Undertaking into harmony with the CBD, a request that finally has resulted in the IT.
- One of the most fundamental notions of the CBD, the sovereign right of a state over the biological resources within its borders, is duly reflected in the Treaty. Directly related to this notion is the obligation that users of these resources equitably share the benefits that derive from this use.
- The recognition that an integrated approach to conservation and use is essential for a sustainable agricultural development effort.
- The recognition that farmers all over the world have significantly contributed to the creation and maintenance of PGRFA is reflected in the article on farmers’ rights.

In consideration of the above mentioned features and specific needs of countries to conserve and sustainably utilize PGRFA, the following major points of the IT should be noted:

- The establishment of a multilateral system, including 35 selected crop and 29 largely temperate forage genepools, is possibly the most significant aspect. For these species detailed procedures have been established regarding their access and benefit sharing;
- The IT covers explicitly ex situ germplasm collections maintained by the CGIAR centres, including those that have been designated as part of the International Network of Ex Situ Collections of the FAO as well as those maintained by other international institutions;
- The IT specifically notes that the Global Plan of Action provides an internationally agreed framework for conservation, exploration, collecting, characterization, evaluation and documentation activities;

- It recognizes the importance of international PGR networks in the conservation and utilization of PGR and encourages their strengthening and/or development;
- The establishment and strengthening of a global information system to facilitate the exchange of information is identified as an important activity and it is noted that such a system should be based on existing information systems, on scientific, technical and environmental matters and, among others, should provide for an early warning about hazards that threaten the efficient maintenance of PGRFA;
- Contracting parties to the IT agree to cooperate with the Commission in its periodic assessment of the state of the world's PGRFA in order to facilitate the updating of the rolling GPA.

From the actual text of the IT and from the above it can be concluded that the new Treaty provides for a legal framework on the difficult questions of access and benefit sharing, that will enter into force 90 days after the 40th country has ratified the Treaty. This framework is well developed for the selected crops and species that are included in the multilateral system and, especially when the foreseen material transfer agreement will be concluded, it will greatly assist both, the suppliers of the germplasm accessions and recipients (i.e. the users) on how to correctly proceed with the exchange and utilization of PGRFA. Furthermore, it can be concluded that the Treaty encourages networks to assume more responsibility for the conservation and utilization of germplasm and, consequently, it is left to the network to also consider giving the same or a similar access and benefit treatment to other species that are currently not included in the multilateral system. In view of the foregoing it can be concluded that the Eastern Africa region will benefit from an active and strong regional PGR network, i.e. EAPGREN.

Facilitating Mechanism for the Implementation of the Global Plan of Action

As already mentioned in the introduction, the GPA was adopted during the Fourth International Technical Conference on PGR in Leipzig in 1996 through the active involvement of governments, non-governmental organizations, the private sector, researchers and farmers' groups. The 150 countries present in Leipzig committed themselves to take the necessary steps to implement the GPA in accordance with their national capacities. For details of the GPA the reader is referred to the full text of the Plan (FAO, 1996). In this paper special attention will be paid to the Facilitating Mechanism for the Implementation of the GPA as proposed to the Ninth Regular Session of the Commission (see also Commission paper number CGRFA-9/02/9 "A Facilitating Mechanism for the Implementation of the GPA"). Details on the monitoring process of the GPA implementation can be found in another chapter of this publication.

The proposal made to the Ninth Session of the Commission on the Facilitating Mechanism establishes the fact that significant progress has been made with the implementation of the GPA, but that there is a need for renewed concerted action as much needs to be done at the local, national and international levels. In particular, the priority areas of the GPA on In Situ Conservation and Development as well as Institutions and Capacity Building are being singled out as in need of additional work. Furthermore, the proposal mentions the need for more (international) financial resources to be made available. It further states that coordinated implementation and associated financing of the GPA has not been realized and an effective implementation of the Plan through the FAO Global System for the Conservation and Sustainable Utilization of PGRFA is required.

The above points with regard to the somewhat disappointing progress made with the implementation of the GPA can be partly explained by the absence of an effective international arrangement to facilitate the implementation of the GPA. The aforementioned proposal states that a coordinated and strategic approach must be employed while building on the knowledge and experience that already exists with the implementation of the GPA.

Consequently, the proposal provides a rationale for the establishment of a Facilitating Mechanism and describes the primary functions of such a Facilitating Mechanism. The overall objective is to enhance progress in the implementation of the GPA at national, regional and international levels, and thereby contribute to food security, sustainable agricultural development and the attainment of sustainable livelihoods. The Mechanism will operate wholly within the policy framework of the IT and will contribute to the implementation of the Funding Strategy established under the Treaty. Priority will be given to the implementation of agreed plans and programmes for farmers in developing countries and in countries with economies in transition.

The main functions of the Facilitating Mechanism include the facilitation of work with developing countries, and countries with economies in transition, to identify urgent needs in the context of the GPA, express these in bankable projects, programmes and activities and to facilitate the identification of and negotiations with donors. Furthermore, the Mechanism will work with donors to facilitate reporting, establish criteria for funding GPA activities and enhance partnership arrangements among organizations that have diverse interests in agriculture biodiversity, food security and rural development. Another function will be to monitor technical assistance and prepare progress reports.

A number of specific activities of a normative and operational nature are required to achieve the above:

- Arranging technical assistance or developing and assisting in the implementation of projects for the GPA implementation, including pilot projects to strengthen national programmes for PGR.
- Developing and testing innovative approaches to GPA implementation, including the development of effective partnerships; linking PGRFA management, plant breeding and seed activities in both the formal and informal sector; assisting in increasing contributions of PGRFA management to sustainable agricultural development, food security and the attainment of sustainable livelihoods.
- Maintaining and enhancing communication between different FAO projects and programmes that contributes to the GPA implementation.
- Ensuring integration and cost effective delivery of services and development/transfer of technologies and methodologies related to the conservation and sustainable use of PGRFA that benefit farmers.
- Facilitating networking among all stakeholders to enhance participation in and coordination among all those engaged in the implementation of the GPA.
- Attracting new collaborators in the implementation of the GPA, including the development of better linkages between conservation, plant breeding and seed production/distribution activities.
- Establishing an improved partnership for the implementation of the GPA between FAO, IPGRI, IFAD, UNF and others.
- Facilitating communication among countries and donors to enhance awareness of opportunities and needs to mobilize necessary resources.
- Convening meetings of stakeholders and donors to facilitate the identification of potential donors and the mobilization of resources. Contributing to better awareness among donors and development organizations on roles and values of PGRFA and to determine opportunities to integrate/incorporate PGR conservation and sustainable use elements into broader conservation and sustainable development strategies and action plans.
- Investigating ways to increase the participation of the private sector in the financing and implementation of projects for the GPA.

Details of the organizational structure of the Facilitating Mechanism, its governance and the financing of its operation as well as the establishment of strategic partnerships are aspects that still need to be discussed and developed further, with the involvement of stakeholders wherever possible. These developments have to be guided by the Commission and its Inter-governmental Technical Working Group on PGRFA.

Although no details of the Facilitating Mechanism currently exist it seems justifiable to conclude that the implementation of the GPA will be greatly facilitated through active networks. A network such as EAPGREN can play a similar role as the above-described Facilitating Mechanism at the regional level and, thus, ensure that the participating countries actually benefit themselves more from genetic resources they collectively harbour through targeted utilization and long-term conservation. Through a strategic and efficient coordination of the activities at the regional level the network will also contribute to an increased attraction of funds from donors and, most likely also from better targeted development projects that are based on the sustainable and equitable management of PGRFA.

Preparation of the Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.

The first report on the State of the World's PGRFA (FAO, 1998) was produced as part of a country-driven preparatory process for the Fourth International Technical Conference, held in 1996 in Leipzig, Germany. This report was the first comprehensive world-wide assessment of the state of PGRFA and provided a solid basis for the preparation of the GPA. It has been decided by the Commission, and is also required by the Treaty, to periodically assess the state of the PGRFA world-wide in order to facilitate the analysis of changing needs and gaps and to contribute to the rolling GPA. Subsequently, it has been decided by the Commission to work towards a second report of the State of the World's PGRFA by 2006.

The SOW-1 report contained the following chapters and appendices:

- 1: The state of diversity
- 2: In situ management
- 3: Ex situ conservation
- 4: Use of PGRFA
- 5: National programmes, training needs and legislation
- 6: Regional and international collaboration
- 7: Access and benefit sharing
- Annex 1: The state of the art:
 - Assessing genetic diversity, vulnerability
 - Methods for conservation
 - Methods for use through breeding
 - Legal and economic methods
- Annex 2: The state of diversity of major and minor crops
- Appendix 1: Status by country of legislation and programmes
- Appendix 2: Germplasm accessions by crop.

The SOW-1 report used the 151 submitted Country Reports as its primary source of information. For the preparation of these Country Reports the FAO had provided governments with Guidelines and it was left to individual governments to determine the content and scope of the Country Report. The Guidelines have not been designed to solicit comprehensive quantitative data. As part of the preparation process most of the countries organized national workshops and sub-regional meetings were organized during which common problems and opportunities were discussed, information and other inputs for the

SOW report were given and recommendations made regarding the GPA. In total more than 100 countries were visited by the Secretariat and its consultants (i.e. predominantly IPGRI staff). In addition to the Country Reports also the World Information and Early Warning System (WIEWS) database provided important information for the SOW and, subsequently, WIEWS was updated with information from the Country Reports. Finally, a number of scientific workshops were held that provided inputs into WIEWS as well as to the preparatory process of the Fourth International Technical Conference.

The Commission endorsed during its Ninth Session the preparation of the second report of the State of the World's PGRFA (SOW-II). It stressed the importance of a country-driven process, a review of the Guidelines prior to their finalization and the fact that there should be a full integration of this preparation process with that of the monitoring the implementation of the GPA. It also endorsed the proposal that the scope and structure will be similar to the SOW-I report, with the following understanding:

- To include a comparison of the status of the PGRFA conservation and use as well as its related knowledge with that of the SOW-I, and to allow for trends to be identified;
- To address the role of PGRFA in progress toward sustainable development;
- To take the context of the framework provided by the IT into account;
- To include more information on topics such as the capacities of countries in plant breeding and seed sector development as well as the impact of agricultural policies on PGRFA and their management.

The following indicative outline for SOW-2 was agreed with the understanding that each chapter would include an update of the information from the corresponding chapter of SOW-I; new and emerging issues; highlights of progress in the implementation of the GPA activities; an analysis of trends; challenges and new opportunities; as well as a summary and conclusions.

Content of sow-ii similar to sow-1, with some new identified issues and elements as well as an additional chapter on the contribution of PGRFA management to food security and sustainable development.

The following Thematic Studies have been agreed upon:

- A: PGR of forages, pastures and rangelands
- B: Wild crop relatives
- C: Indicators of genetic diversity, erosion and vulnerability
- D: Methods and capacities for crop improvement
- E: Management of PGR in seed systems
- F: PGR, health and dietary diversity
- G: PGR in the agro-ecosystem
- H: PGR – Animal Genetic Resources interactions
- I: Impact of agricultural policies
- J: Biosafety and biosecurity issues.

During the discussions on the preparation of the SOW-II report several challenges as well as areas for special attention were mentioned that could be of interest in the context of the current workshop to be mentioned.

- The importance of the active involvement of stakeholders;
- To use the preparatory process (as well as the process for monitoring the implementation of the GPA) to build capacity at the national and regional level;
- To pay special attention to information management at the national level, to assist in the development or strengthening of a national information management system, and to use the existing or improved viewers database;
- To integrate information on plant breeding and seed sector; and

- To strengthen the use of indicators in the preparatory process and for the identification of trends.

The Commission agreed on the following Indicative Timeline:

- 2003: updating of country reports and preparation of thematic studies; implementation of pilot programmes on national PGR information systems; regional meetings to review country reports and selected thematic studies;
- 2004: analysis and compilation of sow-ii report; preparation of extended outline and report on main findings emerging from preparatory process; finalization of first draft sow-ii report;
- 2005: technical and governmental review of draft report; preparation of recommendations for GPA refinement;
- 2006: finalisation of the report and proposed GPA refinements; endorsement of sow-ii report and the refinement of the rolling GPA during the 11th session of the commission.

Conclusion

The above-described elements of the Global System for the Conservation and Utilization of PGRFA provide a comprehensive technical (in particular the GPA) and a legal and policy (in particular the IT) framework for the development and strengthening of conservation and use activities at the national and regional levels. The preparatory processes for the second State of the World's PGRFA report and for the monitoring of the implementation of the GPA provide opportunities (and obligations) to countries to establish long-lasting processes, procedures and mechanisms to assess the current status of PGRFA, to monitor the status of the GPA implementation through participatory processes that involve key stakeholders as well as to jointly develop a national PGRFA information management system. In view of these advantages it is recommended that the governments of the Eastern African countries that are members of EAPGREN are encouraged to ratify the IT and to actively participate in the various processes and activities described above.

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“Managing Agrobiodiversity in Rural Areas”

GTZ sector project carried out on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ)

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The following paper was presented at a workshop of the East African Plant Genetic Resources Network (EAPGREN) held at the International Training Centre in Zschortau from 01-10 of October, 2002. The purpose of the presentation was to acquaint workshop participants with German Technical Cooperation initiatives in their countries – particularly with activities related to the conservation and utilization of plant genetic resources. The presentation consists of three major parts: In the first introductory section, a brief overview is given of the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), its mandate in development cooperation and the priority areas of GTZ’s bilateral support in EAPGREN member countries. In the second section which constitutes the major part of this paper a more detailed insight is provided into the objectives, approach and activities of the GTZ Sectoral Project “Managing Agrobiodiversity in Rural Areas”. Ultimately, some entry points for cooperation with GTZ are outlined – both for bilateral technical cooperation, as well as specific opportunities for cooperation with the Agrobiodiversity project.

German Technical Cooperation¹¹

The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) is a service enterprise for Development Cooperation which is owned by the Federal German Government. GTZ operates as a private-sector enterprise, but on a public-benefit basis, channelling any surpluses back into its own development cooperation projects. GTZ’s main client is the Federal German Ministry for Economic Cooperation and Development (BMZ); however, services are also provided for other German ministries, partner country governments, international organisations and institutions, such as the European Union, the United Nations and the World Bank. GTZ’s mandate is to provide ‘Technical Cooperation’ which is only one form of Development Cooperation. The Federal German Government also supports Financial Cooperation, Personnel Cooperation, multi-lateral cooperation with international organisations, as well as work by churches, political foundations and independent executing agencies. Technical Cooperation does not refer purely to cooperation in the field of technologies. Rather it is understood as a means of transferring and generating the technical, economic and organisational skills and know-how for people and organisations to improve their living conditions through their own efforts. The many activity areas on which the GTZ offers consultancy range from economic and employment promotion through health and basic education to environmental protection, natural resource conservation and regional rural development. In recent years, governmental advisory services have taken on an ever greater role, in order to support changes in the political, economic and social framework conditions.

Development Cooperation is governed by political criteria: Partner countries, for example, have to respect human rights and allow its citizens to take part in the political decision-making process. There must be rule of law and, also, social market economy that

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¹¹ see brochure “GTZ – Partner for the Future”, GTZ, 2002.

promotes private initiatives. In order to make more visible contributions in key areas, but also due to shrinking funds, German Development Cooperation initiated a concentration process in 2000. This resulted in the selection of 72 partner countries (and amongst these 40 priority countries), and the definition of priority areas of support. In priority partner countries, the full range of development cooperation measures may be applied, although limited to three pre-selected priority sectors of support. In partner countries, interventions should preferably be limited to one priority sector only. The priority sectors of support are defined in agreement with the respective partner country. This concentration of the bilateral cooperation on priority areas did not imply that on-going projects outside these areas terminated abruptly. Today, there are only 45 countries where activities within the green sector (agriculture, environment) were defined as priority areas of support. Table 1 provides an overview of the priority and partner countries in different regions. More than one third of all partner countries is from Africa South Sahara (25/72), and the SSA region makes up 40% of the priority countries (16/40). Table 2 presents the priority areas of GTZ's bilateral support in member countries of the East African Plant Genetic Resources Network (EAPGREN).

Table 1: BMZ Priority and partner countries

Region	Priority Countries (3 Sectors)	Partner Countries (1 Sector)
Europe, Central Asian Countries	Albania, Bosnia-Herzegovina Mazedonia, Georgia	Armenia, Azerbaijan, Central Asia
Near and Middle East, Mediterranean	Egypt, Yemen, Morocco, Palestinian Territories, Turkey	Algeria, Jordan, Mauretanie, Syria, Tunisia
SSA	Ethiopia, Benin, Burkina Faso, Ghana, Cameroon, Kenya, Malawi, Mali, Mozambique, Namibia, Rwanda, Zambia, Senegal, South Africa, Tanzania, Uganda	Côte d'Ivoire, Eritrea, Guinea, Lesotho, Madagascar, Burundi, Nigeria, Niger, Chad
ASIA	Afghanistan, Bangladesh, China, India, Indonesia, Cambodia, Nepal, Pakistan, Philippines, Vietnam	Laos, Mongolia, Sri Lanka, Thailand, East-Timor
Latin America	Bolivia, El Salvador, Honduras, Nicaragua, Peru	Brazil, Costa Rica, Chile, Dom. Republic, Ecuador, Guatemala, Colombia, Cuba, Mexico, Paraguay

Table 2: Priority areas of support in EAPGREN Countries

Country, GTZ Office	Priority/Partner Countries	Priority Areas
Burundi, Bujumbura	Partner Country	Democratisation, AIDS prevention, drinking water supply
DR Congo, Kinshasa	Potential Priority Country ¹²	No sectors defined: TC in public health, natural resource conservation, economic development and employment promotion, governmental reform and civil society, emergency aid
Eritrea, --	Partner Country	Actually there is no technical cooperation; previously: focus on water supply
Ethiopia, Addis Ababa	Priority Country	Sustainable use of natural resources Primary and vocational education Capacity building in governance
Kenya, Nairobi	Priority Country	Agriculture and rural development Water-supply and waste-water disposal Reproductive health sector
Madagascar, Antananarivo	Partner Country	Environmental politics; sustainable management / protection of natural resources
Rwanda, Kigali	Priority Country	Health care Good governance, democratisation Economic development
Uganda, Kampala	Priority Country	Finance sector development Vocational training system Urban water supply

2 The GTZ Sectoral Project “Managing Agrobiodiversity in Rural Areas”¹²

Background

Agricultural biodiversity is the basis for global food security: It helps secure people's livelihoods and habitats, for instance by yielding building materials, fuels, clothing, medicines and means of transport, and by sustaining multifunctional agro-ecosystems. Moreover, plant and animal genetic resources are the primary source material for the further development of crop varieties and animal breeds by farmers and breeders. Biological diversity in agriculture safeguards the potential for natural adaptation to changes in the environment and ecosystems, and for adaptation to shifts in human nutritional requirements. The small farmers of Africa, Asia and Latin America - and above all the women, who are responsible for the greater part of food production in these countries - are particularly dependent upon genetic resources. A rich diversity of native plant varieties and locally adapted animal breeds secures these farmers' survival in the face of difficult climatic conditions and marginal soils.

FAO data on the erosion of genetic diversity and the associated loss of knowledge give cause for concern. Even so, in many countries, plant and animal genetic erosion is

¹² <http://www.gtz.de/agrobiodiv/>

continuing unabated. This loss is due largely to the expansion of modern commercial agriculture, with its high-yielding varieties and high-performance breeds. National laws and policies, in some cases driven by international commitments, often promote modern commercial farming systems one-sidedly. Civil strife, wars and the resulting mass migration are further causes of the loss of genetic resources and associated knowledge. The outcome is that in developing countries, too, less and less genetic material is available to present and future generations for adaptation through breeding. It is not possible to assess the associated risks. Against this backdrop, the loss of native plant varieties and animal breeds is undermining food security, particularly for people in marginal areas.

Poverty reduction and food security are key concerns of the German Federal Government's Program of Action 2015. Therefore, the GTZ was commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) to implement the Project "Managing Agrobiodiversity in Rural Areas". The sectoral project supports efforts undertaken in partner countries to implement: the Agenda 21, Convention on Biological Diversity (CBD), International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR), FAO Global Plan of Action (GPA) for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture, and the Global Strategy for the Management of Farm Animal Genetic Resources.

Objectives and expected results

The project aims to enhance the long-term conservation and utilization of plant and animal genetic resources in support of agricultural production, and to establish this topic as an important issue in German development cooperation.

In this endeavour, the project focuses on developing, testing and refining concepts and strategies to reduce agrobiodiversity loss. It provides services for the implementation of these concepts and strategies to bilateral technical cooperation projects and to other partners. At the same time, the project aims to contribute to raising public awareness on the importance of the diversity of animal breeds and plant varieties for self-reliant food security and thus for poverty reduction. As part of the awareness-raising and strategy-development efforts, the project supplies decision-makers in developing countries with the information and tools needed for political debate and policy formulation.

Approach and Partners

On issues relating to agrobiodiversity, the sectoral project provides consultancy services for GTZ projects and for political decision-makers in the partner countries. The services offered include the following:

- Identification of top-priority challenges/problematic areas in the implementation of international conventions and treaties;
- Networking with international knowledge resources;
- Disseminating know-how and establishing contacts among partners;
- Implementation of workshops to raise awareness at the various levels of actors;
- Support in elaborating implementation plans and strategies;
- Support in implementing pilot measures;
- Support in the development of GEF project proposals in the area of agrobiodiversity, etc.

The project, with its supra-regional and cross-sectoral design, promotes collaboration, exchange and networking among various institutions involved in agrobiodiversity management – in the policy arena, among the research community and in the field. Cooperation partners include:

- At the international level: Food and Agriculture Organization (FAO); International Plant Genetic Resources Institute (IPGRI); International Livestock Research Institute (ILRI); International Development Research Centre (IDRC); Global Environment Facility (GEF); UNESCO's Programme on Man and the Biosphere, etc.
- Supraregional networks and NGOs: The World Conservation Union (IUCN); SADC Plant Genetic Resources Centre (SPGRC); Local Initiatives for Biodiversity, Research and Development (Li-Bird)
- In Germany and Europe: German Federal Ministry for Economic Cooperation and Development (BMZ); German Federal Ministry for Nature Conservation and Environment (BMU); German Federal Ministry for Consumer Protection, Food and Agriculture (BMVEL); Information Centre for Genetic Resources (ZADI/IGR); German Federal Agency for Nature Conservation (BFN); Forum für Umwelt und Entwicklung; European Cooperative Programme for Crop Genetic Resources Networks (ECP/GR); Overseas Development Institute (ODI); Centre for Genetic Resources, The Netherlands (CGN); League for Pastoral Peoples
- Country projects and other GTZ sectoral projects: Convention projects "Implementing the Biodiversity Convention" and "Combating Desertification"; Sectoral project "Protected area management and peripheral zone development" (ABS/LISTRA), etc.

In addition, the project can rely on a strategic advisory group composed of representatives from FAO, ZADI, IPGRI, BMZ, GTZ and the NGO "Forum für Umwelt und Entwicklung".

Key themes

Activities are already in progress together with partners throughout the world – particularly in the Southern African region and Meso-America. The work currently focuses on three key thematic areas:

- Political framework conditions that determine the conservation and use of genetic resources, including identification and evaluation of incentive mechanisms, regulations governing access and benefit-sharing, political framework conditions for animal genetic resources.
- Promoting under-utilized cultivars and breeds: What interesting under-utilized cultivars and domestic animal breeds are to be found in developing countries? How are they currently utilized and what potential do they offer? What are the barriers to their utilization? How can the private sector be drawn in?
- Managing agrobiodiversity at the community level: In the past, GTZ has already provided support to developing countries in implementing conservation programmes, at that time mainly in gene banks. In the meantime, conservation and use in natural environments and farmers' fields is the prime focus. What experience in managing agrobiodiversity at the community level can we draw on? What is the national or regional policy relevance of this experience? Which political framework conditions are essential in order to transfer approaches successfully?

Outputs and ongoing/planned activities

The Agrobiodiversity Project which was launched in July 1999 and planned to run over a period of 7.5 years of consecutive phases, will be entering into a new 3-years phase in 2003. Important outputs to date are a range of studies/publications (e.g. studies on incentive measures for agrobiodiversity conservation, the informal seed sector, community biodiversity management, promising under-utilized crops and species, agrobiodiversity management in crisis situations, etc.) as well as several workshops. Publications and reports

are available on the projects' website:

<http://www.gtz.de/agrobiodiv/english/pub/pub.htm>

Activities envisaged for 2003 include:

- Support to the 'Genetic Resources Policy Initiative' (GRPI) which will be managed as a joint IPGRI and IDRC initiative. The programme aims to strengthen the capacity of policy makers in developing countries to generate appropriate policy and legal frameworks.
- Workshop on certification/labelling in Mesoamerica (Nicaragua)
- Follow-up workshops in Southern Africa: (a) on community-based management of animal genetic resources, and (b) on incentive measures for agrobiodiversity management.
- Workshop in the SADC region (organized together with ILRI, FAO, IPGRI, CTA) on legal aspects relevant to animal genetic resources.
- Case studies will be conducted on under-utilized crops and breeds (e.g. Nguni leather, incense etc.)

Further examples of the Agrobiodiversity Project's support in the area of PGR management will be given below:

Example I: GTZ provides support to, and is co-funding, a project launched by IPGRI (from 10/2002-06/2004). The project aims at developing a decision-making tool to guide national decision-makers in the generation of national policies and laws that facilitate access to, and exchange of plant genetic resources for food and agriculture, and equitable benefit-sharing. Outputs envisaged are: (a) A review of existing national policies and legislation with respect to ABS, and a legal assessment of options to implement the ITPGR provisions in coherence with the CBD; (b) the development of options for a policy framework in regional stakeholder workshops held in Latin America, Africa and Asia; (c) the creation of a 'decision making tool'; (d) the publication of results and experiences, and dissemination in the partner countries.

Example II: Economic, socio-cultural and policy incentives are needed to stimulate initiatives related to the sustainable use and conservation of agrobiodiversity. Specific areas for incentives identified in a workshop held in Lusaka, Zambia, from 11-14-September 2001 are, for instance:

- Increasing the added value of genetic resources, e.g. through the development of new products, or certification and labelling (geographic designations of origin, quality standards etc.);
- Raising awareness in farming communities, e.g. about the potential to increase income through improved products, the importance of the diversity of varieties and breeds, and the documentation of traditional knowledge;
- Marketing (identification of niche markets and support of tapping these, cooperation with the private sector, etc.).

Example III: In co-operation with GTZ's "Boorana Lowland Pastoral Development Programme", the Agrobiodiversity Project is planning a study to assess the potential of gums, incense and myrrh in the Boorana lowlands of southern Ethiopia. Black and (the rarely produced white) incense and myrrh from *Boswellia* and *Commiphora* species are presently used to a limited extent, but might have a potential to provide an additional income – especially for poor pastoral households. To date the product is unsystematically picked from the trees or the soil, and tapping has not yet been practised nor tested. There is little knowledge about proper incense sorting/grading and packing for transport. The quantitative and qualitative potential for the production of incense and other valuable resins will be assessed in close cooperation with collectors, traders, local authorities and representatives of local exporters. Recommendations will be given,

in particular about the increase of gum, incense and myrrh production, improved quality, appropriate tapping methods, possibilities of propagating and planting trees, improvement of sorting/grading, transportation and marketing channels, and the organisation of collectors and traders.

How to approach GTZ with regard to Technical Cooperation?

There are several entry points to approach GTZ with regard to (bilateral) technical co-operation: (a) for bilateral/regional projects or programmes, the respective GTZ offices may be addressed to find out about sectoral priorities, and projects in the 'pipeline'. (b) Sectoral projects – such as the Agrobiodiversity Project - are usually based at the GTZ head-office, and can be approached directly to seek support in innovative pilot activities, conceptual and strategic questions, workshops, studies and measures for awareness raising. (c) Finally, another entry point would be through co-operation with partners who are already collaborating with GTZ.

(a) Bilateral Technical Co-operation: The path from an idea to a project

The Federal German Government regularly engages in dialogue with the government of a partner country to determine the objectives and key areas of cooperation. The results are recorded in a framework agreement on Technical Cooperation. The next step is for the partner country to submit a written application for a project to the German government. Then BMZ examines it from a political angle. If the objectives and focus are in line with German development policy, BMZ commissions GTZ to draft a proposal for further action. To this end, the GTZ reviews the proposal for feasibility and contracts the services of experts to clarify how the task can be tackled and how much money will be needed to do so. The GTZ then submits an offer for project promotion to the BMZ. If BMZ approves the project, an official project agreement is drawn up with the partner country. Then, the BMZ instructs the GTZ to provide the agreed inputs and to implement the cooperation project either with its own staff or subcontracting the work of a consulting company.

(b) Opportunities for cooperation with the Sectoral Project "Agrobiodiversity"

Co-operation with the Sectoral Project "Managing Agrobiodiversity in Rural Areas" may be sought particularly in innovative pilot activities, conceptual and strategic questions and measures for awareness rising. Opportunities for co-operation may be for instance, the participation in, and co-organization of workshops; the realization of studies to assess the potential of rare plant varieties and animal breeds; co-operation in implementing the ITPGR, or the development of proposals to the Global Environmental Facility (GEF) in the area of agrobiodiversity.

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APPENDIX II. Acronyms

ABS/LISTRA

ACT

ACT CAP

AFRENA-ECA

Agroforestry Research Network for East and Central Africa

ANAE

Implementing Agencies of Environment Program

ANGAP

Agencies of Environment Program

ASARECA

Association for Strengthening Agricultural Research in Eastern Africa

ASIA

ASSINSEL

International Association of Plant Breeders

BAZ

Federal Centre for Breeding Research

BFN

German Federal Agency for Nature Conservation

BIG

BMU

German Federal Ministry for Nature Conservation and Environment

BMVEL

German Federal Ministry for Consumer Protection, Food and Agriculture

BMZ

German Federal Ministry for Economic Cooperation and Development

BSAP

Biodiversity Strategy and Action Plan

BSC

CAP

CBD

Convention on Biological Diversity.

CBD

Conservation of Biodiversity

CBO

Community Based Organizations.

CD

CEFDHAC

CG

Consultative Group

CGIAR

Consultative Group on International Agricultural Research

CGN

Centre for Genetic Resources

CGRFA

CIAT

CIMMYT

Centro Internacional de Mejoramiento de Maíz y Trigo

CITES

Convention for International Trade of Endangered species

CMEA

Council for Mutual Economic Assistance

CNRE

National Research Centre upon Environment

COMESA

Common Market for East and Southern Africa

CTA

Technical Centre for Agricultural and Rural Cooperation

DANIDA

DR

Democratic Republic

DSE

Deutsche Stiftung für internationale Entwicklung

EAC

EAPGREN	East African Network on Plant Genetic Resources
EARO	Ethiopia Agricultural Research Organization
EASDC	East African Sub Regional Development Centre
EASRDC	East Africa Subregional Development Centre
EC	
ECABREN	Eastern Africa Bean Research Network
ECAPAPA	Eastern and Central African Programme for Agricultural Policy Analysis
ECO	
ECP/GR	European Cooperative Programme for Crop Genetic Resources Networks
EPGRIS	European Plant Genetic Resources Information Infra-Structure
EUCARPIA	
EURISCO	
Euro-MAB	European - Man and Biosphere
EVA	
FAO	Food and Agricultural Organization
FIFAMANOR	
FOFIFA	National Research Centre for the Rural Development
GATT	
GEF	Global Environment Facility
GIS	Geographic Information System
GMOs	
GPA	Global Plan of Action.
GRPI	Genetic Resources Policy Initiative'
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
IBCR	Institute of Biodiversity Conservation and Research
IBPGR	International Board for Plant Genetic Resources
ICT	
IDRC	International Development Research Centre
IFAD	International Fund for Agricultural Development
IGR	Information Centre for Genetic Resources
IITA	International Institute of Tropical Agriculture
ILRI	International Livestock Research Institute
IPGRI	International Plant Genetic Resources Institute
IPK	Institute of Plant Genetics and Crop Plant Research
IPPC	
IRAZ	Institut de Recherche Agronomique et Zootechnique"
ISABU	Institut des Sciences Agronomiques du Burundi
ISF	International Seed Federation
ISTA	International Seed Testing Association
ITC	International Technical Conference on Plant Genetic Resources.
IUCN	The World Conservation Union
KARI	Kenya Agricultural Research Institute

KEPHIS	Kenya Plant Health Inspectorate Services
KFRI	Kenya Forestry Research Institute
KWS	Forestry department and Kenya Wildlife services
Li-Bird	Local Initiatives for Biodiversity, Research and Development
MAFS	Ministry of Agriculture and Food Security
MINECOFIN	
MoU	Memorandum of Understanding
MSC	
NARO	National Agricultural Research Organisation
NARS	National Agricultural Research Systems
NBC	National Biosafety Committee
NBSAP	National Biodiversity strategy and Action Plan
NEMA	National Environmental Management Authority
NES	National Environment Secretariat
NGB	National Genebank
NGO	Non Governmental Organization
NMK	National Museums of Kenya
NORDIC	
NPGRCom	National Plant Genetic Resources Committee
NTSC	National Tree Seed Center
ODI	Overseas Development Institute
OECD	Organisation for Economic Cooperation and Development
ONE	National Office of Environment/
PGR	Plant Genetic Resources
PGRFA	Plant Genetic Resources for Food and Agriculture
PHD	
RSC	Regional Steering Committee
SADC	
SAGE	
SAGE MinEnv	
Sida	Swedish International Development Agency
SOW	State of the World's Plant Genetic Resources for Food and Agriculture report
SPGRC	SADC Plant Genetic Resources Centre
SSA	Sub-Saharan Africa
SWOT	Strength, Weakness, Opportunity and Threat
SWOT	Strengths, Weaknesses, Opportunities, Threats
TATSA	Tanzania Seed Trade Association
ToR	Terms of Reference
TOSCA	Tanzania Official Seed Certification Agency
TRIPs	International Treaty on Plant Genetic Resources for Food and Agriculture
UN	United Nations
UNCED	The United Nations Conference on the Environment and Development

UNCST	Uganda National Council for Science and Technology
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNF	
UPOV	
USAID	
WIEWS	World Information and Early Warning System
WTO	World Trade Organization
ZADI	German Centre for Documentation and Information in Agriculture.
ZEL	Centre for Food, Rural Development and the Environment