

Framework for Transforming Best Practices for Landrace Conservation to Policies

Peter Munyi, Mikkel Grum and Julia Ndungu-Skilton



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Financial support for Bioversity’s research is provided by more than 150 donors, including governments, private foundations and international organizations. This report is a product of a **Bioversity** coordinated project conducted in semi-arid ecosystems in **Benin, Burkina Faso, Ghana, Kenya, Mali, Malawi, Uganda** and **Zimbabwe** with implementation support from the United Nations Environment Programme (UNEP) and co financing from the Global Environment Facility (GEF). For details of Bioversity’s donors and research activities, please see Bioversity’s annual reports, which are available in printed form on request from Bioversity-publications@cgiar.org or may be downloaded from <http://www.bioversityinternational.org/>

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Citation: Munyi P, Grum M and Ndungu-Skilton J. 2008. Framework for Transforming Best Practices for Landrace Conservation to Policies. Bioversity International, Rome, Italy. 28 pp.

ISBN 978-92-9043-770-3

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Preface

Traditional farming systems and conservation of local cultivars and associated indigenous knowledge are under threat and growing pressure resulting in genetic erosion of crop diversity. These systems are an essential component of sustainable crop production, household income and human nutrition for many of the poor farmers found in fragile semi-arid ecosystems of Sub-Saharan Africa (SSA). With the signing of the Convention on Biological Diversity (CBD) in 1992, *in situ* conservation for crops and their related genetic resources has been given prominent mention in global and national policies for biodiversity conservation. *In situ* strategies are an important and complementary component of the overall agrobiodiversity conservation efforts that aim to conserve not only crop genetic resources but also crop evolutionary processes. However, policy support of the science and practice of *in situ* conservation, lag behind CBD commitment in much of SSA

The need for activities on *in situ* conservation of plant genetic resources is emphasized in the CBD and in Agenda 21. Article 2 of the Convention specifically includes reference to domesticated or cultivated species. This is also anticipated in Article 8, which requires signatory nations to “preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity ...” Agenda 21 reflects this commitment to *in situ* conservation as an essential component of sustainable agriculture, and in Chapter 14, notes the need for establishing programmes and policies to strengthen *in situ* conservation. In its second meeting, the Conference of the Parties to the CBD (COP 2) identified implementation of Article 8 of the CBD as a high priority and reaffirmed the importance of regional and international cooperation for the implementation of this Article. It also stressed the importance of the exchange of relevant information and experience among all stakeholders on measures taken for its implementation (Decision II/7 of COP 2).

Many national PGR programmes in SSA are unable to meet their obligations towards *in situ* (more specifically on-farm) conservation as stated in the CBD and the GPA because of ineffective enabling of national policy environments that do not support

traditional farming systems and *in situ* conservation on-farm.

The countries involved in the project were **Benin, Burkina Faso, Ghana, Kenya, Malawi, Mali, Uganda and Zimbabwe**. Through case studies, the project analysed farming systems in semi-arid ecosystems in these countries, focussing on how these systems supported the conservation of landraces of local and global significance. The methodology described in the present publication was designed within this project to draw out ‘best’ practices on how landraces have been incorporated into farming systems and/or national agricultural policies and biodiversity conservation strategies. On one hand, the farmer or resource user determines what makes the practice the ‘best one’, and they base their choices on a survival strategy or utilitarian point of view. On the other hand, the scientists on the project primarily judged how effective the practices are in conserving agrobiodiversity at different levels. The project attempted to reconcile the two views in developing frameworks for the determination of ‘best practice’.

Our hope is that the lessons learnt from project experiences will be used to develop models to begin to integrate and incorporate the approaches into national decision-making strategies on PGR at policy level. This is in accordance with article 6b of the CBD of which the COP of the CBD has requested the GEF to take action thereby advancing global efforts to safeguard the world’s plant genetic resources.

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The project that generated this report benefited enormously from the input of many experienced unnamed individuals especially farmers and communities around Africa who provided much information of value to the project. The authors would like first to thank them and the members of the National project teams in **Benin, Burkina Faso, Ghana, Kenya, Mali, Malawi, Uganda** and **Zimbabwe**, particularly their country focal persons:

Mr Nasser Baco, Dr Didier Balma, Professor Edwin Gyasi, Mr Godfrey Muthamia, Dr Amadou Sidibe, Mr Kingslay Kapila, Mr John Mulumba Wasswa and Mr Claid Mujaju. We are grateful to all the participants—from farmers to development workers, researchers and government officials—who helped to shape the thoughts expressed in this report.

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1. Introduction

It is without a doubt that plant genetic diversity is important for food security and rural livelihoods. Crop genetic diversity in itself is a resource that has local, national and global significance. For a multitude of generations, farmers have drawn on hundreds and hundreds of different plant genetic resources for food and agriculture¹ in order to breed the major crops that today feed the world. The further development of agriculture and the world's continued food security will depend on farmers and breeders continuing to have access to the plant genetic resources necessary to face new environmental and agricultural challenges.

Throughout generations, and prior to the introduction of *ex situ* conservation² methods, farmers used to conserve crop genetic diversity *in situ*³, on-farm⁴, with traditional local cultivars being the initial and principal beneficiaries. Today, traditional local cultivars embody substantial diversity, and continue to provide an essential component of sustainable crop production for many of Africa's poor. This is the case especially in marginal agricultural areas where modern crop varieties and inputs are less available and less effective for resource-poor farmers. Thus the continued use of local cultivars or farmers' varieties contributes to stable food production and income.

It can thus be seen today that traditional local cultivars embody substantial diversity, and continue

to provide an essential component of sustainable crop production for many of Africa's poor. This linkage between diversity and food security provides the rationale for enhancing the availability and use of local crop varieties in the fragile ecosystems of arid and semi-arid regions of sub-Saharan Africa.

Farmers often need diversity for three main reasons: to provide security against unstable ecological and socio-economic conditions; to enhance optimum use of the varied land resources and of the labour and capital available to the farmer; and, to meet different dietary, culinary and other consumer requirements. Farmers face multiple challenges and have different needs and concerns. The use of diversity is seen as a way of farmers solving problems or addressing concerns and meeting needs using their agricultural systems` and diverse crop varieties.

For farming communities to maintain genetic diversity of the traditional varieties on-farm, they engage in certain practices⁵. These practices vary from community to community. If the use of the best of these practices within a community is scaled up throughout other communities, then on-farm genetic diversity of farmers' varieties would not only be maintained or enhanced, but would be scaled up as well. To do this, these best practices would need to be recognized or institutionalized at policy level.

Simply defined, policy means a line of argument rationalizing the course of action of a government, or a plan of action adopted by an individual or a social group. Thus policy is broader than the formal rules and regulations that a government promulgates to the governed; it includes the rationale for promulgation. This further means that policy does not necessarily have to be in written form for it to be effective.

Policy does not only apply to government but extends to individuals and social groups and institutions. Thus individuals can set policies on how to go about chores; organizations can set policies on

1 "Plant genetic resources for food and agriculture" means any genetic material of plant origin of actual or potential value for food and agriculture (ITPGRFA).

2 *Ex situ* conservation is defined by the Convention on Biological Diversity (CBD) as the conservation of components of biological diversity outside their natural habitats.

3 *In situ* conservation is defined by the CBD as the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

4 On-farm conservation is defined as the management and maintenance of landraces and breeds in the traditional ecosystem in which they have developed their present traits (Quarcoo, 2002). It helps to sustain the evolutionary systems that are responsible for generation of genetic diversity where upon variation useful for resistance breeding is generated and host-parasite co-evolution is maintained. (Worede *et al.* 1999).

5 For the purposes of this paper, a practice is defined as a system, organization, process or behavior that, systematically repeated in a given space (from the local levels of resolution through the national and regional through to global) and over time, maintains, enhances or creates crop genetic resources and ensures their availability to and from farmers and other stakeholders for improved livelihoods on a sustainable basis.

how to achieve organizational objectives; and, profit-making organizations can set policies on how to go about doing business and principally, making profit. Thus policies, in this context are plans of action.

The rationale for individuals, groups or governments laying policies, is social order. Without social order, governance would be difficult, if not impossible. For individuals and organizations, without policies, achieving goals, whether profit-oriented or not, would again be difficult.

The process of moving best practices to policies to enhance conservation of genetic diversity of landraces on-farm involves identification of those barriers that hinder the spread of the practices and, examination of policy processes, instruments or mechanisms that exist that can be applied in the transformation process. This paper also provides a process guide or framework that can be applied in testing the process of transforming best practices to policies.



2. Barriers Hindering the Spread of Use of Best Practices in Local Communities

Local communities in arid and semi-arid areas have overtime, developed ways of methods of conserving crop landraces within their diversity. The development of these ways and methods is dictated by various factors. These include but are not limited to the value the communities place on the crops, cultural orientations, land tenure, and climatic conditions.

Some of these practices may be effective in conserving genetic diversity if practiced by other communities. These practices may, thus, be termed as 'best practices'. However, barriers arise that hinder the widespread of these best practices to other communities.

2.1. Levels

The barriers occur at various levels: local, national and regional levels. Further, the barriers may be classified into various categories, these being environmental; cultural; political; and, aesthetic.

2.1.1. Local

Local barriers refer to impediments in the spread of best practices amongst local communities that are as a result of a community's indisposition to a practice. Thus, a community may not be enthusiastic in adopting a practice from another community simply because that community does not prefer doing things the way the other community does. While this could be closely related to cultural orientations and beliefs, it may also be because it is the practice in itself that sets the difference between the communities. For example, the Luo community living on Rusinga Island has a cultural practice known as 'ngweluok'. This is a ritual that requires the head of the homestead to spend a night with his wife prior to him tasting the harvested sorghum crop before the rest of members of his homestead cultivating on the same piece of land are allowed to consume the harvest of the season. Young farmers must therefore wait until their head of the household performs Ngweluok to harvest their own crops. 'Ngweluok' has been found to threaten the diversity of a sorghum landrace variety locally known as 'gopari'⁶.

6 As reported by Evans Mutegi. Report on file with the authors.

Thus a community such as the Luo may be reluctant to adopt another practice that does not threaten the diversity of the sorghum landrace in favour of 'ngweluok'.

2.1.2. National

National barriers refer to impediments that hinder the spread of best practices as a result of a country's indisposition to a practice. A country's indisposition to a practice may be factor of the existing different legal systems between a country of export of the practice and the country of import; colonial lineage; and, system of governance. However, and more importantly, national barriers are also influenced by national legislation systems that exist in a country. The most obvious of these are national seed legislation systems, which in many situations lay out rules on what seed a farmer may use, where to buy it, and whether the farmer may save and exchange the same with other farmers. For example, in Kenya the Seeds and Plant Varieties Act, categorizes seed and requires that a farmer may only plant certified seed, and does not create or address uncertified seed, a common source of seed, particularly with regard to landraces.⁷ Another example is land tenure. As in many countries there are different systems of holding land⁸, these land tenure systems also act as barriers in the sense that a particular system of holding land determines what individuals or communities may use it for. Thus practices only associated with particular land tenure systems may be hard to cross over to other land tenure systems.

2.1.3. Regional/Global

Regional or global barriers refer to those impediments that are a result of regional or global processes, whether political or otherwise. While political processes such as regional integration (for example, the East African Community or the European Union process) may facilitate the spread of best practices amongst practices, others do not.

7 Seed for landraces is often commercially unviable, as the number of farmers who grow landraces are usually not many and often concentrated in arid areas such that commercial seed and plant breeders see no economic advantage in producing or breeding them.

8 Examples herein include, trust lands, leaseholds and freeholds.

Every nation is a party to one international instrument or another. In the context on conservation of genetic diversity generally, there are a number of international instruments or processes that are key in influencing the spread of best practices within communities not only within a country, but also between countries. These instruments are the Convention on Biological Diversity (CBD), the Uruguay Round Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the International Convention for the Protection of New Varieties of Plants (UPOV), and the African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources (the African Model Law).

While the relevance of these instruments as regards conservation of genetic diversity on-farm by local communities is analyzed in Section 4, suffice to say, where a country is a signatory of one and another is not, implications arise as to how they would relate and exchange information. For example, the ITPGRFA establishes a multilateral system of exchange of plant genetic resources for food and agriculture for certain crops (the Annex 1 crops) and thus reduces transaction costs between member countries. Similarly, the TRIPS Agreement obligates WTO member countries to establish a *sui generis* system for protection of plant varieties. These international instruments or processes have implications on national policies and a country that is not a member of say, the CBD may find itself in difficulty while importing a practice to conserve genetic diversity on-farm from a country that is a member.

Regional pacts and instruments such as the Treaty establishing the East African Community (EAC), the African Regional Industrial Property Organization (ARIPO), the African Intellectual Property Organization (OAPI)⁹ and COMESA Protocol may have similar implications as well.

2.2. Categories

The basis for this categorization of the barriers that hinder the spread of practices within farming communities is that results from the studies show that the motivation to conserve is more influenced by the uses for the crop than it is on the storage and ownership of the seed. This list of categories is not exhaustive but rather is a dictate of the results so far received from the field studies.

⁹ OAPI is derived from the French acronym Organisation Africaine de la Propriété Intellectuelle.

2.2.1. Environmental

This refers to those barriers that are an influence of the agro-ecological condition in which a certain crop variety grows, and thus a practice is linked to the soil and ecological conditions of a particular crop. For example, the practices that are associated with cultivation of rice in Mali cannot be used by the banana cultivating communities in Uganda, because rice grows in totally different conditions as does bananas.

2.2.2 Cultural

This refers to cultural practices and beliefs practised by local communities and associated with a particular crop variety. For example, according to a study conducted in Zimbabwe's Tsholotsho District by a local NGO, Community Technology Development Trust and the Zimbabwe National Gene Bank, members of the Tsholotsho community have maintained on-farm, a local variety of maize due to a cultural belief that the crop landrace is effective as a post lightning household protection system.¹⁰ The mechanism of protection is based on a true testimony from a local headman in Tsholotsho District, who was once a victim of a lightning bolt at his homestead, which however had no casualties. A traditional healer immediately cleansed the homestead. Since then, lightning has not struck and Headman Mlevu has not used conventional methods of protection recommended for homesteads such as the earthed antennae.¹¹ What this study shows is that as long as the community believes that the red

¹⁰ Tsholotsho district has low erratic annual rainfall. Crop production is risky and mostly cereals such as sorghum (*Sorghum bicolor*), millet (Pearl millet), maize (*Zea mays*), finger millet (*Eluesine coracana*) and legumes are cultivated. The little rain usually comes with lightning and thunderstorms that instill fear in communal people, as in most cases it causes deaths. Once lightning strikes, a Sangoma (traditional healer) has to be consulted within 24 hours, or else a second fatal attack could be looming. The people believe lightning is made and sent to a specific geographical position with 100% accuracy by community members practicing witchcraft, or resolving traditional squabbles.

¹¹ Only *Zea mays* (maize/corn) landraces that are red in colour are used for the treatment. The maize is ground into mealie meal at the victim's homestead, and then porridge is prepared using the red corn. The porridge is thereafter mixed with small pieces of copper wire (relatively small pieces able to pass through the gut, even of small children). The porridge is also blended with traditional herbs. The whole family feeds on the porridge under the supervision of the traditional healer. Human's ability to remedy lightning confirms the social belief that this is man-made. As reported by Claid Mujaju and Fred Zinanga. Report on file with the authors.

eared maize is a lightning deterrent, the landrace shall survive in farmers' fields. Thus members of the Tsholotsho community have used for several years, local maize landraces for self-protection, based on cultural beliefs and food security.

2.2.3. Political

Political influences refer to situations where the manner in which a government of the day advances its policies, based on the political machinery available does ultimately, influence the spread of practices. For example, the Zimbabwean agricultural system had a recent significant paradigm shift. The government extension service is now emphasizing the restoration of traditional systems, which recognize farmers' varieties (landraces) that had been neglected. Local chiefs are being mobilized to start collecting and conserving various traditional landraces through community seed banks, an idea initially mooted through NGOs.¹² This paradigm shift is based on the fact that about 70% of Zimbabwe's population lives in communal areas. The population is growing at about 1.5 % per year and depends on agriculture as a source of income, food and livelihood. This sector is affected by drought, shortage of inputs and limitations of labour. Drought results in decreased diversity managed by the communities, hence the need to maintain a broader genetic base of preferred crops both on farm and *ex situ*.

Thus by the government using chiefs (a political and government machinery) to spearhead the collection and conservation of landraces, the genetic diversity of these crops is not only being maintained but also enhanced.

2.2.4. Aesthetic

Aesthetic herein is taken to mean preferences based on such factors as likes and tastes. It is clear from the foregoing studies in the eight countries that some local communities conserve landraces because of the uses that they have for those landraces. For some, when cooked, they taste better than others or make better bread than others. In this sense, the reason to conserve is driven more by the use, or aesthetical value of the landrace than anything else. For example, for many reasons, the women farmers¹³ of

Gore, a rural area in Ghana's Bawku District, prefer local rice to the improved exotic varieties due to its certain unique qualities.

First, the grain of *Oryza glaberrima* rice type¹⁴ has high gluten content and is pleasantly filling when cooked. This highly diversified rice can still be found with many farmers, especially women in northern Ghana. Secondly, the women farmers also consider several attributes of indigenous rice varieties to be superior to modern varieties, which is another reason for their maintenance. Some rice varieties have short cooking time, others are suitable for traditional dishes, such as *waakye* (cooked rice and beans), rice balls, etc. Other types are suitable as weaning food for babies. Thirdly, many local rice types do not shatter easily when left in the field after the optimum harvest time. This characteristic enables farmers to make the most advantageous use of their labour force and is different from improved rice varieties, which must be harvested at optimum moisture content of the grain for the best results. Furthermore, livestock readily eats local varieties' straw, while the improved rice types usually are short, with little straw available for animal consumption. Finally, indigenous rice varieties are used for parboiling. Parboiling of local rice is an important industry that engages thousands of women in Northern Ghana, providing them with income. Parboiled rice from Upper East Region of Ghana fetches high prices on the market because of its high quality processing¹⁵.

While qualities attributed to uses of landraces are useful in conserving genetic diversity of these crops and may be easier to replicate in scaling the practices to conserve, others are not and in fact, accelerate genetic loss or erosion. For example, in Kenya's Suba District, a sweet-stalked sorghum, 'Nyaniang' has disappeared because children love to chew it like sugar cane. 'Nyaniang', which means "the child of sugar cane" in Luo, has been destroyed on-farm, mostly by children and intruders. In the past, this variety of sorghum was popular for chewing during the period before the millet head was fully formed. Exploiting it at this stage meant poor harvests. With time, many farmers abandoned 'Nyaniang' to avoid famine.¹⁶

means short grain of rice in the local Kusal language, while *Mui-sablic* refers to the dark colour of the husk. Another variety is named '*help me buy dress*'. As reported by G. Kranjac-Berisavljevic and PB Tanzubil. Report on file with the authors.

14 Tropical and sub-tropical Africa is the centre of diversity for a range of crops including the African rice, *Oryza glaberrima*.

15 As reported by G. Kranjac-Berisavljevic and PB Tanzubil. Report on file with the authors.

16 As reported by Evans Mutegi. Report on file with the authors.

12 As reported by Claid Mujaju and Fred Zinanga. Report on file with the authors.

13 Gore women farmers have names for all the indigenous rice varieties they cultivate. For example, *Mariama*, *Peter* and *Mr. Moore* varieties are named after the farmers who first introduced them to the community, while *Agona* refers to a town in the Ashanti region of Ghana. *Agongula*

In conclusion, what emanates from the levels and barriers that hinder the spread of best practices among local communities is that for the best practices to spread, the barriers would need to be overcome. How a country or a community would go about overcoming these barriers is dependent upon the policy choices the policy makers may make. Put

differently, there are a number of policy tools that exist, that policy makers may employ to overcome these barriers. The policy tools of relevance in conservation of landraces on-farm and the principles underlying them are considered in the following section.



3. Policy Tools of Relevance in Conservation of Landraces On-farm and the Underlying Principles

Policy tools are basically, those policy mechanisms or processes that are at the disposal of policy makers that they may employ in the process of instituting positive actions. These actions include conservation of landraces on farm. In this section, the various policy tools that exist are outlined as are the principles that a policy maker must consider while employing the tools. It must be stated that the policy tools are analyzed in their order of flexibility.

This essentially means that the least flexible tool is the constitution while the most flexible tools are budgetary measures. A constitution (particularly a national constitution) is the least flexible tool in the sense that the process of making, amending or repealing a constitution, is lengthy, financially exhausting and involves almost, if not the whole population. Besides, national constitutions as usually written are limited to general principles and rules, rather than details and procedure. As such particular measures that a government would want to take to promote conservation of landraces would not ordinarily be written in the constitution. What one would normally find in a constitution are general principles relating to conservation and sustainable use of natural resources. Needless to say, landraces are natural resources.

Policy tools may be classified into two: 'hard' policies and 'soft' policy tools. 'Hard' policy tools herein refer to those tools which if not observed, obeyed, or obligations not met, legal sanctions are instituted. In this category fall the constitution, legislation, subsidiary legislation and some government administrative actions. In these tools, legal obligations are created and failure to meet these obligations is met with either criminal or civil sanctions. On the other hand 'soft' policy tools refer to those tools which if not observed, criminal sanctions are not meted but civil sanctions or some other form of sanctions may be meted. In this category one finds some government administrative actions, public institutional actions, user/market/enterprise actions and budgetary measures. For example, if a public institution fails to implement a particular policy in one financial year, it may in the following year receive less budgetary allocations from the central government. Criminal or civil sanctions may not be taken against its

employees. However, the same case would not apply if an individual fails to observe the law. He may be prosecuted for criminal or civil action.

3.1. Tools

3.1.1. Constitution

In the broadest sense, a constitution is a body of rules governing the affairs of an organized group. A parliament, a church congregation, a social club, or a trade union may operate under the terms of a formal written document labelled a constitution. This does not mean however, that all of the rules of an organization are in the constitution, for usually there may be other rules such as by-laws and customs. Invariably, by definition, the rules spelled out in the constitution are considered to be basic, in the sense that all other rules must conform, or must be consistent with its provisions. Implicit in the concept of constitution is that of a higher, if not the highest law, that is operative, a law that takes precedence.

Every national state has a constitution, at least in the sense that it operates its important institutions according to some fundamental body of rules. In this sense of the term, the only conceivable alternative to a constitution is a condition of monarchy, or anarchy to the least. Constitutions may be written or unwritten. For example, Malawi, Zimbabwe, Uganda and Kenya all have written constitutions, whereas England has an unwritten constitution. Constitutions may also be simple or complex; they may provide for vastly different patterns of governance.

As a policy tool, a constitution sets out rules that take precedence over all others. Thus a constitution exists as a supreme law and all other rules must not only flow but also be consistent with it. Because a constitution is said to be made by the people it governs (not by the state or institutions such as parliament), its enactment and amendment process is ordinarily lengthy. For example, Kenya has in the past five years been engaged in the process of repealing its constitution. This process is yet to be completed.

3.1.2. Legislation

This refers to laws made under the authority of parliament. In parliament, legislative power is exercisable by bills passed by the national assembly to become law. A bill is described as a draft of a proposed Act of Parliament. In many nations, once a bill is passed by parliament to become law, it must be presented to the President for his assent, or to be decreed as law. The procedure followed in passing bills to become law varies from parliament to parliament. For example, in Kenya a bill must receive three readings in the national assembly, with detailed discussions as to its content taking place at the relevant committee of parliament.

Once a bill is passed as law, it binds everybody in the country otherwise it would be discriminatory, contravening the constitution and thus becoming void. In many jurisdictions, an Act of Parliament applies to a future event and cannot be applied retrospectively.¹⁷

Parliament as sovereign can make, amend or repeal any law subject to the constitution. The enactment of legislation is generally required to keep up with the needs and demands of a developing society.

One advantage that legislation has over a constitution as a policy tool is that the process of enactment is much shorter, especially if there has been a consensus as to the need to enact before a bill is taken to parliament. Thus legislation is able to respond to anticipated situations quicker than a constitution would do, as a policy tool.

3.1.3. Subsidiary Legislation

Subsidiary legislation is also known as delegated legislation. Parliament when enacting legislation has authority to delegate its legislative function to another body or person. Most of the legislation enacted by parliament contains provisions delegating authority to make law especially with regard to procedural functions to another body or person. For example under the Kenya's Seeds and Plant Variety Protection Act, the Minister in charge of implementing the Act has power to make rules of procedure say, with regard to the process of certifying seeds. Local authorities are also enabled by the parent statutes to make by-laws and rules. For example, the City

¹⁷ For example, in Kenya, under the Interpretation of General Provisions Act (cap. 2 Laws of Kenya) it is specifically provided that an Act of Parliament cannot apply retrospectively. The same case applies in England and many Commonwealth jurisdictions.

Council of Nairobi has power to make City Council By Laws and this power is derived from the Local Government Act.¹⁸ The rationale behind parliament delegating its powers to make law to other bodies or persons is that it saves parliamentary time.

Like legislation, subsidiary legislation must be consistent with the constitution and the parent statute. Besides consistency, process of enacting subsidiary legislation must conform to the procedure laid down in the parent statute otherwise the subsidiary legislation is *ultra vires*¹⁹.

Subsidiary legislation as a policy tool responds to national needs faster than legislation, and by far, than the constitution. Another advantage of subsidiary legislation is that it is more flexible (as it can be made and revoked more quickly) and allows experts to be involved in making rules and regulations on different issues. However, too much delegated authority, and thus subsidiary legislation creates legal uncertainty as it is invariably difficult if not impossible to keep up with speed of enactment.

3.1.4. Government Administrative Actions

Government administrative actions refer to those actions carried out by the executive arm of the government in providing public services or governance to the populace. As policy is not limited to legislation or pronouncements, at times, government departments do adopt plans of actions for public good. These may range from simple actions as limiting movement of goods and services or laying emphasis say, in promoting or encouraging cultivation of certain crops in agro ecological areas that suit them. For, example a ministry of agriculture may order its agriculture extension officers to encourage communities in arid and semi-arid areas to cultivate landraces, or a gene bank may on its own volition multiply seedlings for endangered crops.

A case in point is that of 'phara'²⁰, a traditional leafy vegetable cultivated by two villages in the Limpopo Province of South Africa. In 2002 ARC-Roodeplaat genebank and local extension officers were studying the use and conservation of traditional

¹⁸ Cap. 176, Laws of Kenya.

¹⁹ http://en.wikipedia.org/wiki/Ultra_vires *Ultra vires* is a latin phrase that literally means "beyond the power."

²⁰ 'Phara' was identified by the National Botanical Institute as a local variant of *Cucumis melo*. It is a wild relative of muskmelons, and is also used in other communities in northern Southern Africa as either a leafy vegetable or, for its fruits which are known as wild cucumbers.

leafy vegetables (mogoro/imifino). In the course of interviewing the farmers (mostly women), it occurred to one of the interviewees that only one farmer in the two villages had a few seeds left of the 'phara' vegetable. A decision was taken that the farmers would start collecting seeds of this vegetable variety the following season.

Currently, 'Phara' seed is conserved in the National Plant Genetic Resources Centre (NPGRC) Genebank and ARC-Roodeplaat Genebank. A base collection is stored at the NPGRC Genebank and the working collection is stored at ARC-Roodeplaat for research purposes. Seed is multiplied at ARC-Roodeplaat Genebank with a view to supply the communities with more seed and to have sufficient seed for conserving in the genebank.²¹

An advantage that government administrative actions have over other policy tools that emanate from government is that they can speedily be put in place without being bogged down by legislative procedures. Thus it is discernable from this that government administrative actions can be influential tools in policy formulation and especially in cases where wide use of best practices needs to be encouraged.

3.1.5. Public Institutional Actions

For the purposes of this discussion, public institutions refer to statutory corporations (parastatals); non-governmental organizations; and, international organizations. These are institutions, which are non-profit making; mostly produce public goods, and are indirectly or minimally controlled by government.

Public institutions in their own action plans do have policies that may dictate outcomes within communities and thus steer communities towards certain directions that may impact on decision-making, and ways of life in general. For example, a non-governmental organization may initiate within a community, a programme in promoting an environmentally sustainable farming method. For example, the International Centre of Insect Physiology and Ecology (ICIPE) an intergovernmental organization has promoted a farming system where maize is intercropped with napier grass to control the maize stem borer.²²

21 As reported by Ineke Vorster and Jansen Van Rensburg. Report on file with the authors.

22 This method is called 'push-pull' and research has shown that napier grass attracts the maize stem borer, away from the maize crop. www.push-pull.net. Last visited on 9th January 2005.

Another model is that adopted by the Southern and East African Network on Underutilized Crops (SEANUC) in promoting and commercialising underutilised crops with a view to alleviate food insecurity in Southern Africa.²³ Since 1992, SEANUC has had a global programme "Fruits for the Future" funded by United Kingdom Department for International Development (DFID). It is implemented by the stakeholders in collaboration with ICRAF, Bioversity International, FAO, ITDG, UTFANET, BAIF (India), IRAD (Cameroon). The objectives of the programme are to identify research gaps through gathering information on production systems, processing, marketing and utilization of 14 tropical fruit tree species, and to disseminate this information to policy makers, traders, researchers NGOs, and CBOs via monographs, fact sheets, posters, extension and training materials. These publications are directly aimed at improving the livelihoods of poor people.

SEANUC countries and two NGOs in the region have been working during the past years on underutilized species and their achievements include *inter alia*, the successful re-introduction of plectranthus which was not longer found in the South Africa communities through in-vitro multiplication. Interest is in development of new crops for income generation, improved nutrition, job creation and cultivation of marginal land. Priority species have been identified (herbs, industrial plants, medicinal plants, fruits, beverages, floriculture) and germplasm collection, development of propagation methods, and adaptation trials are under way. Different institutions are researching on new crop development and indigenous plants.²⁴

3.1.6. User/Market/Enterprise Action

This refers to actions by individuals or enterprise institutions, so long as they are within the law. As a policy tool, these actions may include an individual's resolve to say, consume certain plant varieties, or for an enterprise to market products based on landraces.

For example, in Uganda, the presence and importance of bananas make them a major source of local wine and beer. Bananas are one of Uganda's

23 SEANUC is a network established through the efforts of the International Centre for Underutilized Crops (ICUC). ICUC was established in 1997 by 10 countries (Tanzania, South Africa, Zambia, Kenya, Mozambique, Namibia, Uganda, Malawi, Zimbabwe and Namibia).

24 As reported by Imgard Hoeschle-Zeledon. Report on file with the authors.

most important crops.²⁵ Specific varieties of the East African Highland banana are used in the production of beer in Uganda. In Mbirizi, a community in Masaka District, their use in brewing beer has been one of the main factors ensuring the conservation of nine banana landraces. Banana brew is in high demand for social functions, boosting the incomes of both the farmers who grow the bananas and the brewers who brew the beer. The local beer is called *omwenge*, which can be further distilled to produce a commercial spirit called *waragi*.

In these rural communities, beer is important for other socio-economic reasons. Currency is often limited, so locally brewed beer is used as a liquid currency. It is often used as payment for community-based labour, such as the construction of feeder roads to connect fields and farms with markets and villages. Local beer also plays a major role in gatherings such as funerals and festivals. On these occasions, people contribute either beer or bunch of bananas to be prepared and eaten during the event. In many parts of Uganda, a man must contribute banana beer to his future in-laws before a dowry is accepted. Commercially manufactured banana beer is also making inroads into the urban market in Tanzania and Kenya.²⁶

Thus in these communities, individuals and institutions may opt to grow certain varieties of banana as they are a source of income and livelihood.

3.1.7. Budgetary Measures

Budgets are important policy tools as they set the basis upon which resources are allocated and shared, and utilized. There are three kinds of budgets: household budgets; firm budgets; and, government budgets.

First, a household budget is a household's planned income and expenditure for a given period and depends upon disposable income that a household has.²⁷ Household budgets as policy tools dictate the amount of capital that an individual spends and

saves. Thus in the context of local communities, the amount of disposable income that the communities have dictate the amount of resources that is be spent on farming and other activities. For example, in Uganda, where beer brewing from certain varieties of bananas is an income generating activity, the amount of resources that a farmer invests in the activity largely affects the income that the farmer earns.

Secondly, a firm's budget is a firm's planned revenues and expenditures for a given future period.²⁸ Annual or monthly sales, production, cost and capital expenditure budgets provide a means for the firm to plan its future activities, and by collecting actual data about sales and product cost, to compare with budget the firm can control these activities more effectively.²⁹ Budgets play important roles in execution of public institutional and user/market/enterprise actions, as expenditures in execution of policies are planned for in advance. This case is more discernable in situations involving public institutions that do not generate their own incomes such as non-governmental organizations and intergovernmental organizations. For these institutions' projects and other core activities are donor or government funded, and thus propagation of policies by these institutions is subject to the purpose for which funds are disbursed by the donor.

Finally, a government budget is a government's financial statement of the government's planned revenues and expenditures for the fiscal year.³⁰ The main sources of a government's revenue are taxation, principally income and expenditure taxes, fees and fines, domestic and external borrowings and grants. On the other hand, the main outgoings of a government's expenditure are the provision of public goods and services (principally wage payments to health, education, security and other public service employees), transfer payments (old-age pensions, interest payments on the national debt, etc.) and social security benefits.

A government budget has two main uses: it forms the basis of the government's longer term financial planning of its own economic and social commitments; and it is an instrument of fiscal policy in regulating the level and composition of aggregate demand in the economy. Ordinarily, a government does not make expenditure on items that are not budgeted for. Thus in executing its policies, resources for expenditure must be provided for in the budget. For, example, in Kenya, when a bill is published for

25 According to an FAO report, Uganda produced in excess of 10 million tons of bananas in 2001; this was more than 38% of Africa's total banana production and second only to India. Bananas are so important Uganda, and throughout East Africa, that the word "matooke" means both "banana" and "food".

26 As reported by Beatrice Male Kayiwa, John Mulumba Wasswa and Deborah Karamura. Report on file with the authors.

27 Collins Dictionary of Economics, 3rd edition (2000), Harper Collins Publications, London. P. 46.

28 Id., p. 44.

29 Id., p. 45.

30 Id.

presentation to parliament for enactment as law, the Attorney General (or the Minister moving the bill) is required in the memorandum to the bill, to indicate whether implementation of the bill (once it becomes law) will occasion additional expenditure of public funds, and if so, whether a provision of this expenditure will be provided for in the Finance Bill or in the estimates.³¹

Thus given that the constitution, legislation, subsidiary legislation, and government administrative actions are the main policy tools that a government wields in executing its policies, a government budget is a vital tool in policy implementation.

3.2. Underlying Principles

3.2.1. Legitimacy

The policy tool should be legitimate, either in law or other form of recognized basis. A policy must be justifiable and evidence presented that the policy seeks to address a present problem.

3.2.2. Relevance

The policy tool should be relevant, either in relation to existing policies or to international instruments (treaties, conventions) already ratified or to be ratified in fulfilment of international obligations.

3.2.3. Harmony

Because policies, or proclamations do not exist in isolation, the policy tool should as much as possible be in harmony with other policies. At the least, there should be a balance between the proposed policy

and other existing policies.

3.2.4. Co-ordination

None of the policy tools in section 4 operates in isolation. Therefore the lead institution must as much as possible consult the other stakeholder institutions.

3.2.5. Efficiency

It important for the right policy tool to be sought so that maximum efficiency in decision-making and implementation is achieved.

3.2.6. Flexibility

Policies are not cast in stone. They should be made such that if required to be changed due to changing circumstances, the change should be cost-effective and least time-consuming.

In conclusion, making policy choices or choosing what tools to employ involves quite a number of processes and is dependent on what policy level the intervention is sought. Also, a policy tool that one would ordinarily employ to influence policy is one that falls within his sphere of influence. Employing a policy tool within one's sphere of influence does not only ensure flexibility, but also relevance (the sphere of influence *vis-à-vis* mandate and level of authority) but also efficiency.

³¹ For example, see the memorandum to The HIV and AIDS Prevention and Control Bill, 2002.

4. Some International Instruments of Relevance to Local Communities in Conservation of Landraces

International processes have a bearing on the extent local communities can and are involved in the conservation of landraces on-farm. Among the outcomes of international processes are conventions and international agreements, some which are of direct relevance to on-farm conservation of landraces in arid and semi-arid areas. These instruments include, but are not limited to the Convention on Biological Diversity (CBD), the Uruguay Round Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), the International Treaty on Plant Genetic Resources for Food and Agriculture, the International Convention for the Protection of New Varieties of Plants (UPOV), and the African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and For the Regulation of Access to Biological Resources (the African Model Law).

4.1. CBD

The Convention on Biological Diversity (CBD) is an ambitious attempt to integrate previously distinct policy goals. It recognizes the importance and distribution of biodiversity and requires protection of all biodiversity in all types of ecosystems and habitats. The CBD has three main objectives: the conservation of biological diversity; the sustainable use of its components; and, the fair and equitable sharing of the benefits arising from such use.³²

The CBD is largely a framework treaty that sets out the general parameters of the obligations and rights of member states but leaves the actual implementation of much if its components to decisions of the Conference of Parties (COP) and to the parties.

Significantly, the Convention's provisions, including the access and benefit sharing stipulations, do not apply to genetic resources collected prior to the convention's entry into force. Thus, seed banks and *ex situ* collections in existence before it came into force do not require the equitable sharing of benefits that was envisaged under the convention.

In so far as conservation of genetic diversity of landraces generally is concerned, a number of Articles

are important. First, Article 8 provides for *in situ* conservation obligating countries to as far as possible take measures and establish systems to ensure conservation of biological diversity. These measures include promotion of the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings³³. It can be argued that landraces are "viable populations of species in natural surroundings" as if they are not, local communities would not have value in maintaining them. Article 8 (j) is more explicit. It calls for (subject to national legislation) respect, preservation and maintenance of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promotion of their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices. This essentially means that not only are the traditional practices and lifestyles of local communities in maintaining crop genetic diversity recognised, but also calls for their scaling up. The role of indigenous local communities, often found in arid and semi-arid areas is also recognised. Another Article, 8 (k), calls for parties to the CBD to, as much as possible, develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations. This has direct policy relevance, as essentially, it calls for governments to put in place policy processes to protect threatened species and populations, noting that these would ordinarily include landraces in arid and semi-arid areas.

Secondly, Article 10 (c) calls for each contracting party to, as far as possible, protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements. Undeniably, practices developed overtime by local communities in arid and semi-arid areas in conserving genetic diversity of landraces on-farm fall within the rubric of "traditional cultural practices"³⁴. The express reference to "encourage customary use...."

³² Article 1, Convention on Biological Diversity.

³³ Article 8 (d), CBD.

³⁴ Ngweluok is such an example. See footnote 6.

in the Article again, infers that there is legitimacy engaging in efforts to scale up community best practices that enhance the conservation of genetic diversity of landraces.

Finally, Article 11 provides for incentive measures³⁵. Essentially, these incentive measures are often contained in the policy instruments that the governments and governmental institutions put in place to ensure conservation and sustainable use of components of biological diversity.

4.2. TRIPS

The TRIPS Agreement includes three items related to agriculture: geographical indications (Articles. 22-24); patent protection of agricultural chemical products (Articles. 70.8 and 70.9); and plant variety protection (Article 27.3(b)). Article 27. 3 (b) is the most relevant to the debate on conservation of genetic diversity.

Art 27.3(b) states that plants and animals as well as biological processes may be excluded from patentability. However, it imposes an explicit obligation on WTO member states to provide protection for plant varieties “by patents or by an effective *sui generis*³⁶ system or any combination thereof”.

Therefore member states are given considerable flexibility in providing protection to plant varieties. They can develop *sui generis* forms of protection, which are consistent with their interests (provided that it is “effective”). For instance, systems can be created that explicitly deal with the issue relating to the conservation and sustainable use of plant biodiversity, or that contribute to a nation’s ability to address food and livelihood security for its citizens.

Despite the flexibility to frame a regime for the protection of plant varieties and to determine the scope, level and form of protection to be conferred, such a regime would have to comply with the minimum standards established by the TRIPS Agreement. First, the regime would need to recognize the National Treatment principle whereby like products are treated the same regardless of their origin. Second, it would also have to respect the Most Favored Nation standard, which requires

35 This Article provides that “each Contracting Party shall, as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity”.

36 *Sui generis* means ‘of its own kind’ or unique in its own way.

that any advantage accorded to nationals of a WTO member country has to be extended to any other member country. Third, the regime would also have to confer “effective” protection. This qualification - contained in the body of Art 27.3(b) - is ambiguous since the Agreement provides no criteria to judge the “effectiveness”, nor does it define what a *sui generis* system is. It could be argued that the qualification goes not to the level of protection but to the availability of legal mechanisms to enforce them. This ambiguity provides some flexibility in the sense that countries are left free to determine what is ‘effective’ for them. Finally, in the absence of an exception, the protection should also be granted to varieties of all genera and species.

The granting of a patent on a plant variety implies that parties seeking to use the plant or plant variety for any purpose in that jurisdiction must obtain permission from the owner of the patent, which may introduce both administrative and procedural hurdles that can interfere with the flow of genetic resources.

Furthermore, the obligation imposed by Article 27.3(b) to establish a legal regime that grants proprietary rights over plant varieties, whether through patents or a *sui generis* system means that TRIPS not only affects recognition of biodiversity-related local technologies, innovations, and practices, but it also in a sense, precludes collective ownership of these resources by local communities for the common social good.

Nonetheless, there is general agreement that Article 27.3(b) gives members some leeway in fashioning national laws that are consistent with their interests and contribute to their ability to address food and livelihood security for its citizens. Indeed, many countries have taken advantage of the *sui generis* option for the protection of plant varieties.

4.3. ITPGRFA

The FAO adopted the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) in November 2001 at its Thirty-first session. The Treaty entered into force on 29 June 2004, ninety days after it received its fortieth ratification, and now supersedes the International Undertaking on Plant Genetic Resources for Food and Agriculture.

The principal objectives of the Treaty are spelt out in Article 1.1: “the conservation and sustainable use

of plant genetic resources for food and agriculture (PGRFA) and the fair and equitable sharing of benefits derived from their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security". It aims at ensuring that the inherited capital that PGRFA represent is conserved, and continues to supply the flow of services on which food security and development depend. Access to plant genetic resources and equitable benefit sharing therefore lies at the heart of the Treaty. This is ensured through a Multilateral System³⁷ of Access and Benefit Sharing in which the sovereign rights of states over their own genetic resources are recognized.

While the Multilateral system covers only certain listed plant genetic resources, the Treaty sets a framework for the conservation and sustainable use of all PGRFA and establishes the institutional machinery to oversee the implementation of its provisions. This obviously includes, landraces.³⁸

It is essential to note that, from the outset, the ITPGRFA expressly states that it is compatible with the CBD³⁹. It provides, in harmony with the CBD, for the special needs of plant genetic resources for food and agriculture (hereafter referred to as "PGRFA"). In particular it allows for the conservation and continued flow across national boundaries of the plant genetic resources most important to sustain food security and on which all countries are interdependent.

Several Articles of the Treaty are of direct relevance to the maintenance of genetic diversity on-farm, by local communities. First, Article 5.1 (c) calls for each Contracting party to, subject to national legislation, and in cooperation with other Contracting Parties where appropriate, promote an integrated approach to the exploration, conservation and sustainable use of plant genetic resources for food and agriculture and shall in particular, as appropriate "promote or support, as appropriate, farmers and local communities' efforts to manage and conserve on-farm their plant genetic resources for food and agriculture".

Paragraph (c) calls for promotion or support of farmers and local communities efforts to manage and conserve their PGRFA on-farm. Where such

efforts are lacking, then the Contracting Parties should strive to promote them. Where they do exist, the Contracting Parties should support those efforts, presumably through technical and financial support. The extent to which this support is provided, and the means by which it is provided, is left to the individual Contracting Parties to determine. An example of how this kind of support can be provided is the activities of the UNDP/GEF project in Ethiopia to promote "A Dynamic Farmer-based Approach to the Conservation of Plant Genetic Resources".⁴⁰ After constructing 12 community gene banks, the project is now working to link these to locally used seed storage systems in order to strengthen the seed supply and enhance its viability. This helps to preserve the traditional storage system and link it to national research stations, universities and ministries.

Secondly, Article 5.1 (d) calls for contracting Parties to, subject to national legislation and where appropriate, promote *in situ* conservation of wild crop relatives and wild plants for food production, including in protected areas, by supporting, *inter alia*, the efforts of indigenous and local communities. The focus of this paragraph is the "*in situ* conservation of wild crop relatives and wild plants for food production". The wild relatives of crop plants, which include the progenitors of crops, as well as species more or less closely related to them, constitute an increasingly important resource for improving agricultural production and for maintaining sustainable agro-ecosystems. While most farmers and plant breeders normally prefer to work with existing cultivars or advanced breeding materials, as they are more productive and relatively easier to interbreed, they sometimes need to search further a field to find specific traits when faced with new or evolved pests and diseases or other ecological challenges. Wild relatives of crops are generally more difficult to work with, in that undesirable traits already present may be difficult to separate from the desirable trait. But where they are used, they can have quite dramatic results. Historically, they have contributed many useful genes to crop plants, and modern varieties of most crops now contain genes from their wild relatives. In modern varieties of potatoes, wheat, barley, rice, maize and oat, among other crops, traits from wild relatives have improved productivity as well as tolerance to pests, disease and difficult growing conditions. The paragraph specifically acknowledges the efforts of indigenous and local communities. At the same time, there is a clear statement that supporting the efforts of local communities is only one of many ways in which *in situ* conservation can be promoted.

37 The Multilateral System includes the PGRFA listed under Annex 1 of the Treaty, which are chosen on the basis of their importance for food security and the degree to which countries are interdependent on them. The list currently covers 35 food crops, and 29 forage genera, representing more than 80% of the world's calorie intake.

38 Article 2 defines PGRFA as "any genetic material of plant origin of actual or potential value for food and agriculture".

39 See the preamble to the Treaty.

40 See www.Gefweb.org/COUNCIL/GEF_C15/GEF_C15_Inf.21.doc

Finally, Article 9 provides for farmers' rights⁴¹. In Article 9.1, the enormous past, present and future contributions of farmers in conserving and developing plant genetic resources, particularly in centres of origin and crop diversity, and their fundamental importance to modern food and agriculture production is acknowledged. Article 9.2 makes it clear that under the Treaty the realization of Farmers' Rights is a matter for national governments. Under Article 9.2, each Contracting Party is encouraged, "in accordance with their needs and priorities...as appropriate, and subject to its national legislation", to take measures to protect and promote Farmers' Rights. The various limiting epithets are central to the meaning of the provision. Decisions regarding the measures, if any, to be taken to protect and promote Farmers' Rights are decisions that each government is to take as appropriate in the context of its own needs and priorities and in accordance with its own national legislation.

The "core" content of Farmers' Rights at the national level is identified in paragraphs (a) to (c) of Article 9.2, as the protection of traditional knowledge, the right to participate in benefit sharing, and the right to participate in making decisions at the national level regarding PGRFA. It is important to note, however, that paragraphs (a) to (c) are only illustrative of the various components of Farmers' Rights, and do not exhaust the modalities by which Farmers' Rights may be realized.

41 Article 9 provides as follows: "9.1. The Contracting parties recognize 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. 9.2. The Contracting Parties agree that the responsibility for realizing Farmers' Rights, as they relate to plant genetic resources for food and agriculture, rests with national governments. In accordance with their needs and priorities, each Contracting Party should, as appropriate, and subject to national legislation, take measures to protect and promote Farmer's Rights, including: (a) protection of traditional knowledge relevant to plant genetic resources for food and agriculture; (b) the right to equitably participate in sharing of benefits arising from utilization of plant genetic resources for food and agriculture; and (c) the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture. 9.3 Nothing in this article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate."

4.4. UPOV

The UPOV system of plant variety protection⁴² came into being with the adoption of the International Convention for the Protection of New Varieties of Plants by a Diplomatic Conference in Paris in 1961⁴³. This was the point at which there was recognition of the intellectual property rights of plant breeders in their varieties on an international basis. The UPOV exists to provide and promote an effective system of plant variety protection, in order to encourage the development of new plant varieties. The rationale for protecting new plant varieties is that breeding new varieties of plants requires a substantial investment in terms of skills, labour, material resources, and money, and may take many years. A new variety, once released in the market can in many cases be readily reproduced by others so as to deprive its breeder of the opportunity to profit adequately from his investment. The granting to a breeder of a new variety the exclusive right to exploit his variety both encourages him to invest in plant breeding and contributes to the development of agriculture, horticulture and forestry.

The UPOV Convention has five main functions. First, it sets the standard rules for the grant of protection (novelty, distinctive, uniformity, stability and appropriate denomination). Secondly, it sets the minimum scope for protection. Thirdly, the Convention provides the minimum period for protection of plant varieties (20 years for plants and 25 years for trees and vines). Fourthly, it provides for the minimum number of plant genera and species whose varieties must be protected. Finally, the convention provides for rules for national treatment and priority, which regulate relations between member States.

The UPOV Convention is silent on the subject of traditional knowledge of local communities and genetic resources. However, the Convention does not forbid the granting or creation of rights in respect of traditional knowledge, or categories of plant material which are not plant varieties protected under the UPOV Convention. UPOV member States are free to establish a special system for the purpose of the protection of traditional knowledge so long as it does not conflict with the UPOV Convention.

The plant variety protection system under the UPOV Convention has several special features relevant to

42 Plant variety protection, also referred to as 'plant breeder's right' is an exclusive right granted to the breeder of a new plant variety to exploit that variety.

43 The 1961 UPOV Convention came into force in 1968 and was revised in 1972, 1978 and 1991.

the protection of the interests of farmers and local communities. The first feature lies in one of the conditions set for granting protection: distinctiveness. A plant variety in order to be protected must among others be distinct. Article 7 of the 1991 Act to the UPOV Convention provides that "The variety shall be deemed to be distinct if it is clearly distinguishable from any other variety whose existence is a matter of common knowledge at the time of the filling of the application..." Variety" is defined in Article 1(vi) of the 1991 Act in such a way that plant groupings which do not satisfy the requirements for protection, e.g. some landraces, may still be varieties which are a matter of common knowledge for distinctness purpose.⁴⁴ This means that new varieties that are candidates for protection should be distinct from all other known varieties including those landraces and traditional varieties, as well as commercialized or protected varieties, which meet the definition of Article 1(vi) and have a reasonably fixed identity when reproduced. The UPOV system is designed to ensure that breeders cannot legally seek protection for existing landraces or local varieties as such or for varieties that are not clearly distinguishable from such landraces or local varieties.

Secondly, in order to grant and enforce plant variety protection, the physical identity of the variety must be fixed in such a way that material of the variety can be identified as such, for example, in the field or in the seed cleaning plant. If necessary, as a last resort, it must be possible to convince a judge in a court of law that particular plant material is material of a particular protected plant variety. The UPOV Convention analyzes the question of varietal identity into the components of distinctness, sufficient uniformity and stability (Articles 7 to 9 of the 1991 Act). A variety must be distinct from other known varieties in order to be protected. Establishing the distinctness of a variety requires that it be sufficiently uniform in its relevant characteristics to enable a description to be prepared which will distinguish the variety from other varieties of the same species. It seems obvious that once this description is established, the variety must, when reproduced, continue to exhibit these characteristics, that is to say, it must be stable. If its physical characteristics change whenever it is reproduced, it will have no fixed identity to which a

44 Article 1 (vi) of the 1991 Act of the UPOV Convention provides that 'variety' means a plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a plant breeder's right are fully met, can be defined by the expression of characteristics resulting from a given genotype or combination of genotypes; distinguished from any other plant grouping by the expression of at least one of the said characteristics; and, considered as a unit with regard to its stability for being propagated unchanged.

legal right can be attached. Uniformity and stability are not, as such, objectives of the UPOV Convention; they are criteria, which are essential to identify the subject matter of protection and to enable its effective enforcement. Some have proposed alternative criteria to distinctness, relative uniformity and stability, such as "identifiability" for the protection of plant varieties, especially for categories of plant material other than new varieties protected under the UPOV system. However, such suggestions fail to consider in any detail how varieties are distinguished from each other in practice. Consideration should be given as to whether such alternative approaches can, in practice, effectively fix the identity of the protected material and enable its effective protection.⁴⁵

Thirdly, breeder's exemption. In order to ensure the continuity and further development of plant improvement, under the UPOV Convention, a protected variety must be available without restriction, for use by others (other breeders, farmers, local communities etc) as starting material for the development of other new varieties.⁴⁶ The breeder of the resulting new plant variety must also be free, with one narrow exception⁴⁷, to market his new variety without payment to the breeder of the protected variety used as the germplasm source. The UPOV concept is that, if the breeder of a variety uses the variety of another breeder as a germplasm source, his own variety should in its turn be freely available. Without this concept, the overall progress in plant breeding and therefore benefits for society will be greatly inhibited. It can be suggested that this needs to be carefully considered for any system of protecting traditional varieties or knowledge. The UPOV system is often contrasted with the patent system in which protected plant material may not be available for use by others as a germplasm source. The UPOV system takes into account the nature of plant breeding and endeavors to balance the interests of breeders/contributors to the improvement of genetic material throughout different generations. This principle of free access to protected varieties can be considered as a form of benefit sharing from

45 Greengrass, B., 'Plant Variety Protection and the Protection of Traditional Knowledge'. Paper presented during the UNCTAD Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices. Geneva, 30th October- 1st November, 2000. Paper on file with the authors.

46 Article 15 of the 1991 Act to the UPOV Convention.

47 The exception is the case of essentially derived varieties. The 1991 Act extends the breeder's right to varieties that are essentially derived from the breeder's variety. The new principle is designed to protect the breeder in circumstances where others make a discrete change in his variety (e.g., the addition of a single gene by genetic engineering) and seek to exploit the changed variety.

the utilization of genetic material, which is already available.

Fourthly, article 15 (2) of the 1991 Act to the UPOV Convention provides that each Contracting Party may, within reasonable limits and subject to the safeguarding legitimate interests of the breeder restrict the breeder's right in relation to any variety in order to permit farmers to use for propagation purposes, on their own holdings, the protected variety. This article allows member states to, in light of national circumstance, exclude from the breeder's right the saving of part of the harvest of a holding for re-use as seed on the same holding. In this respect member states are free to establish appropriate provisions to balance the interests of both farmers and breeders in light of common practices in the country and national circumstances.

Finally, The 1991 Act of the UPOV Convention contains a provision in Article 15(1) which requires States which accede to the 1991 Acts to shelter from the effect of the protection right all acts carried out for private and non-commercial purposes. As a result of this provision all acts with a protected variety of indigenous and local communities for subsistence purposes clearly fall outside the breeder's right. Equally it would seem possible for States, if they so wish, to exclude informal non-commercial seed exchanges between farmers from the effects of the breeder's right under this provision.

4.5. African Model Law

The establishment of the African Model Legislation for the Protection of The Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources ("The African Model Law" (AML)) was an initiative of the Organization of African Unity (OAU), currently known as the African Union. Developed as a *sui generis* system, its main aim is to provide members of the African Union with a legal framework for the formulation of a legal instrument relevant to their national interest while providing for the protection of new plant varieties as required by the TRIPS Agreement. The principal objective of the Model Law is to "ensure the conservation, evaluation and sustainable use of biological resources, including agricultural genetic resources as well as associated traditional knowledge in order to improve their diversity as a means of sustaining the life support systems." The AML recognizes "the rights of local communities over their biological resources, knowledge and technologies that represent the very nature of their livelihood systems and that have evolved over generations of human history, are of a collective nature and, therefore, are a

priori rights which take precedence over rights based on private interests".⁴⁸

As far as conservation of genetic diversity of landraces on farm by local communities is concerned, the AML contains the following relevant provisions: first, in article 16, the States recognize the rights of communities over, *inter alia* their biological resources; the right to collectively benefit from the use of their biological resources⁴⁹; their innovations, practices, knowledge and technologies acquired through generations; and, the right to use their innovations, practices, knowledge and technologies in the conservation and sustainable use of biological diversity.

Secondly, Article 17 provides for the protection of these community rights. This is important because for every right granted in law, protection must be offered⁵⁰.

Thirdly, Article 21 provides that local communities shall exercise their inalienable right to access, use, exchange or share their biological resources in sustaining their livelihood systems as regulated by their customary practices and laws, and that no legal barriers shall be placed on the traditional exchange system of the local communities in the exercise of their rights and in other rights that may be provided by the customary practices and laws of the concerned local communities. The right for communities to particularly exchange or share their biological resources is at the heart of conservation and maintenance of plant genetic diversity.

Fourth, community intellectual rights are recognized and protected.⁵¹ By recognizing community intellectual rights, the AML implies that traditional knowledge and practices associated with say, maintenance of genetic diversity is inalienable and thus grants the communities control in dictating how such knowledge is shared and utilised.

48 Preamble.

49 This right to collectively benefit does not relate to benefit sharing but rather, to reap such benefits as ensuring food security.

50 Article 17 specifically provides that "the State recognizes and protects the community rights that are specified in Article 16 as they are enshrined and protected under the norms, practices and customary law found in, and recognized by, the concerned local and indigenous communities, whether such law is written or not".

51 Article 23.1: "The Community Intellectual Rights of the local communities, including traditional professional groups, particularly traditional practitioners, shall at all times remain inalienable, and shall be further protected under the mechanism established by this legislation".

Finally, the AML contains provisions on farmers' rights⁵². Farmers' rights are first recognized as stemming from the enormous contributions that local farming communities, especially their women members, of all regions of the world, particularly those in the centres of origin or diversity of crops and other agro-biodiversity, have made in the conservation, development and sustainable use of plant and animal genetic resources that constitute the basis of breeding for food and agriculture production. Thereafter these rights are protected in accordance

⁵² See Article 24. According to Article 26, these rights include but are not limited to: the right to the protection of their traditional knowledge relevant to plant and animal genetic resources; obtain an equitable share of benefits arising from the use of plant and animal genetic resources; participate in making decisions, including at the national level, on matters related to the conservation and sustainable use of plant and animal genetic resources; save, use, exchange and sell farm-saved seed/propagating material of farmers' varieties; use a new breeders' variety protected under this law to develop farmers' varieties, including material obtained from genebanks or plant genetic resource centres; and, collectively save, use, multiply and process farm-saved seed of protected varieties.

with rules of practice as found in, and recognized by, the customary practices and laws of the concerned local farming communities, whether such laws are written or not.

The AML is soft in nature, meaning that it is intended to provide a model which Africa countries drafting legislation on matters covered by its scope can rely on. Several African countries have relied on the AML in drafting legislation and regulation, particularly that relating to access to genetic resources. An example is Uganda and Ethiopia.

5. A Process Guide for Identifying Policy Instruments Required to Sustain or Scale-Up Best Practices and Developing Mechanisms for their Implementation

The rationale for this process guide is to aid countries in linking up best practices to policies with a view to conserve diversity of landraces, at different community levels. It is based on the assumption that once a community in a country, identifies a best practice and the barrier hindering its widespread amongst other communities, then, the next logical step is to take measures to ensure that the best practice is scaled up. This in return will scale up the conservation of genetic diversity of landraces on-farm.

Another assumption made is that the group of persons (or participants) employing this guide do understand what policy is, and are in a position to somehow, influence the policy making process in the community or country otherwise the exercise would be rendered futile. Finally, an assumption is made that during the plenary sufficient awareness is created on the current policies in the country and how they affect conservation. This aids in facilitating debate, especially in phase II step 2 hereinbelow (where participants consider the impact each policy instrument will have in conservation of genetic diversity of landraces on-farm within communities).

Essentially, the process of testing this thematic guide is through an exercise, and in phases. The participants in this exercise should include farmers, or at least farmer representatives, as farmers are the ultimate beneficiaries of the formulated policy processes. Annex II provides a list of stationery and other material that is used in the forum where this guide is used, essentially a workshop.

Phase I: Group Work

- Pose the following question in a plenary discussion: what policy areas require intervention? That is, what best practices face barriers such that their widespread amongst communities are hindered? The process of answering this question entails each participant of the entire group listing each area that requires intervention in a card. The cards are thereafter collected and pinned onto boards.
- Once all the participants have listed the areas, the next step involves the participants, engaging in a

brainstorming session, and with the guidance of a facilitator, clustering the areas written by each participant, into a number of groups⁵³. While clustering the areas written by the participants, participants should not criticize what each or the other has written. An approach that what each participant has written is correct should be taken so as to bring out, as wide as possible, those areas that require policy intervention.

- Following the above, the facilitator divides the participants into a number of smaller groups, each group having not more than 6-7 participants⁵⁴.

Phase II: Individual Groups Discussions

- Each group, having been assigned or chosen a cluster area to deliberate, retires for discussions. Prior to commencing individual group discussions, each group must immediately appoint a chair to lead the discussions. The chair also is responsible for reporting the proceedings and the outcome of the discussions at the plenary after the conclusion of the discussions.
- Each group is required to approach discussions with regard to the cluster areas that require intervention by taking the following steps:
 1. Identify the policy instruments that are required in instituting policy in the areas that require intervention. The rationale for this process is for participants to think as broadly as possible, and NOT limit themselves to legislation as the only tool that may be used for intervention. For each area in the cluster that requires intervention, members of the group are required to tabulate their answers following the format given in Annex 1.

⁵³ The clustering of the areas is dependent upon the number of groups the participants can form with each group having not more than 6-7 persons to as to ensure maximum participation amongst members of each group.

⁵⁴ While forming the groups, the facilitator should bear in mind that each group should be composed of persons from as diverse professional and experience backgrounds as possible, so that as diverse as possible experiences are brought out in the discussions.

2. The next step involves the participants considering the impact each policy instrument will have in conservation of genetic diversity of landraces on-farm within communities.
3. The group thereafter considers what windows of opportunity currently, or in the near future, will exist within the country's policy making process that they may be able to influence or take advantage of. It should be borne in mind during this step, that while more windows of opportunity exist during the policy formulation process, they may also exist during policy implementation.
4. Who could provide the intervention? This requires the participants in the group to identify those individuals, institutions or organizations that are in charge of the policy making process, the windows of opportunity having been identified.
5. The participants thereafter consider how the individuals, institutions or organizations in-charge may be influenced in the policy making process so that the areas that require intervention are captured in the policy being formulated.
6. The next consideration that the participants make is the time frame that is available, or would be required to effect the policy. The policy instrument or processes to be employed dictate time frames. For example, if say, a bill in parliament is identified as a window of opportunity, then the participants could establish how relevant amendments would be made before the bill becomes law. This would

ordinarily take a longer time than say, if the window of opportunity that exists is a public institution that is initiating a project in the relevant area.

7. Finally, the participants identify the next immediate steps that they will take either individually or collectively, with a view to achieve the desired goal in putting the policy into effect.

Phase III: Reporting and Plenary Discussions

- Each group chair presents the results of the group discussions to the plenary in a flip chart. At the end of each presentation, members of each group are asked by the plenary facilitator to make comments on the presentation made by the group chair.
- After all the group chairs have made their presentations, the facilitator requests all the participants to deliberate on the priority areas that they would like to follow up from the results listed on "next steps". The rationale for prioritizing the next steps is based on the acknowledgement that resources are always limited and the idea here is for participants to come up with realistic steps from which tangible goals will be achieved.
- Once the participants agree on the next steps, the facilitator thereafter closes the session.

6. Conclusions

There is without doubt, a pressing need to strengthen best practices that motivate farmers to conserve crop genetic diversity and landraces in particular. One way of strengthening these practices is by linking them to national policies. The practices outlined in this paper have been obtained using research based evidence. The better use of research-based evidence in development policy and practice, it has been stated⁵⁵, can help save lives, reduce poverty, increase food security and improve lives.

In this regard, for research to be effective in influencing policy, researchers need to develop a detailed understanding of the policy making process, the nature of the evidence they have, or hope to get, and all the stakeholders involved in the policy arena.⁵⁶ By giving a step by step process guide for identifying policy instruments required to sustain or scale-up best practices and developing mechanisms for their implementation, this study is a tool which researchers can use to influence policy.

55 Odi Briefing Paper, No. 1, October 2004.

56 *Id.*

The importance of conserving crop genetic diversity cannot be understated. With nations continuing to recognize the value multilateral systems have in improving food security (for example, the ITPRGFA), and debates of linkages between farmers' knowledge, food security and improved livelihoods continuing, research-based evidence cannot do any better than provide the rationale for conservation.

Finally, as this study has shown, research is a very influential tool in policymaking process. Thus a consideration should be made on whether all research conducted ought to have a linking-research-to-policy component. If this was promoted, the perception that researchers and policy makers live in parallel universes would cease, and policy makers would stop bemoaning the inability of many researches being inaccessible and digestible in time for policy decisions.⁵⁷

57 *Id.*

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Annex I

- What policy instruments (are) required to sustain the practice or scale-up?

- What is the likely impact on conservation?

- What are the current openings/ windows of opportunities?

- Who could provide the intervention?

- How?

- When? (Time frame for implementation)

- Next steps

Annex II

List of Stationery and other Material necessary in Employing the Guide

- Felt Pens
- Manila cards (half size A4)
- Flip Charts
- Flip Chart Boards
- Thumb Tacks
- Soft Cardboards (to pin the manila cards)

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ISBN 978-92-0041-7



9 789789 290437