

7 Creating enabling policy frameworks for supporting informal seed supply

7.1 Seed policies: enabling support to informal seed systems

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Conventional seed policies

The green revolution and the introduction of the formal seed sector in many developing countries created specific roles for government in seed provision. This resulted in the need to develop policies that guide and support such developments and the investments they entail, and underpin the regulatory frameworks required for implementation.

Several countries have developed formal seed policies, most of which are based on the seed system development pathway.¹⁴³ This pathway identifies the consecutive development stages of seed systems from traditional farmer-production of seed to a commercially operating seed sector. During the initial stage of this pathway, the role of the government is to initiate components of the seed chain, and in the final stage it is to create conducive environments, through legislation in particular, for their further development, integration and privatization. Examples include government investments in the creation of public organizations for scientific plant breeding, public seed production and seed certification systems. Key regulatory frameworks to support the seed sector are seed laws, (more recently) intellectual property rights, and various forms of investment regulation.

The basic idea behind such policies is that farmers' use of 'quality seed' or 'improved varieties' is an important aspect of improving national food security and rural development. From this point of view, the term 'quality seed' is implicitly reserved for tested seed produced in the formal sector; 'improved varieties' are only those that result from scientific plant breeding. Most seed policies include goals for the modernization of seed use, such as 'all farmers should use quality seed' or a target replacement rate of four, which means that the formal seed sector should produce 25% of the national seed needs. At some stage, such policies focus on the liberalization of the seed sector, whether by restructuring the public seed company to become profitable (Egypt, Ethiopia), privatization by selling the public company (Malawi), or stimulating investments by local and/or foreign companies in competition with the public sector (Uganda).

Shortcomings of the conventional approach

The focus on the seed sector development pathway has one major shortcoming: it concentrates exclusively on the formal seed sector, and in doing so, it bypasses by far the largest seed supplier – the farmers themselves. This might not be a problem if these policies did not create obstacles to the functioning and development of farmers' seed systems. But they do. Although the informal sector is the major seed supplier there is lack of investments in improving the quality of farmers' seeds.* Worse still, when such policies are translated into seed laws, the obstacles posed by the formal system can be much more severe, depending on the wording of key clauses in these laws.¹⁴⁴

Seed certification rules may ban the production and marketing of farmer-produced seeds; some seed laws formally prohibit the key component of the informal seed system, which is barter of seeds among farmers. Seed laws also create significant bottlenecks for the development of community-based and small seed enterprises that may have to abide by all the complex and expensive regulations. Rules for variety release commonly reduce the number of varieties that are available to farmers, and often select varieties that are not optimally adapted to the conditions of the majority of farmers. Finally, the formal committees that are commonly put in place by such laws do not provide for good representation of the farmers' interests.¹⁴⁵ This means that conventional seed policies not only fail to support the diversity of initiatives that are discussed in this book, but may even hinder them.

Recent pressures on seed policies

Conventional seed policies are basically national in character, even though their development and formulation has often been donor-influenced. Recent developments in international law and bilateral negotiations, however, now affect the policy space within which national governments can operate, in terms of their seed policies. Such international agreements are largely external to the seed sector or even to agriculture. The trade sector developed the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS-1994), which has one article that specifically addresses rights on crop varieties. The environmental sector developed the Convention on Biological Diversity (CBD-1993), which affects seeds as carriers of genetic information.

Intellectual property rights (IPRs) affect seed systems in that plant breeders may have to guard against using proprietary technologies and materials. They must have the institutional capacity to negotiate access to such technologies, and to guard against subsequent 'misuse' in later stages of the breeding and seed production process. Secondly, policies have to be developed for the use of IPRs by public research institutes, particularly to balance the promise of income from their research products – particularly varieties – against the risk of deviating from development objectives as a result of that promise.¹⁴⁶ IPRs can, however, be quite compatible with conventional seed policies. If well designed, these property rights systems can play a role in supporting the latter stages of the formal seed system development pathway.

* Walter de Boef and Zewdie Bishaw provide a more elaborate description of formal and informal seed systems in Section 1.3

The development of plant breeders' rights, specifically designed for the protection of plant varieties, is aimed at reducing problems that may arise from applying the patent system. However, the system which is currently in operation in most industrialized countries (the 1991 UPOV Act) is not geared to supporting the farmers' seed system and various types of integration between the formal and farmers' systems.¹⁴⁷ Even though TRIPS allows for a wide range of interpretation with regard to the protection of crop varieties, many developing countries now face pressure from bilateral trade negotiations with the USA and the EU to adhere to this UPOV system. Calls for development- rather than trade-related approaches to intellectual property rights (dubbed 'DRIPS')¹⁴⁸ relate less often to agricultural IPRs than to those for proprietary drugs (notably for HIV-AIDS).

Biodiversity policies based on the CBD take into account states' national sovereignty over genetic resources. Countries can provide access to their genetic resources, subject to mutually agreed terms and prior informed consent. Even though they are obliged to conserve biodiversity and promote sustainable use of natural resources in their territory, and in spite of the scope for more liberal approaches, many countries have created complex mechanisms for breeders to access such resources for plant breeding.¹⁴⁷ Such biodiversity policies thus impact the seed chain, particularly in the components dealing with breeding research and actual plant breeding. A more recent development seeks to facilitate access (and the sharing of benefits) through a so-called multilateral system. The 'International Treaty on Plant Genetic Resources for Food and Agriculture' (IT PGRFA – 2001) is likely to reduce the negative impact on seed systems of the implementation of the CBD through restrictive access regimes for a number of important food and fodder crop species, but not for many horticultural and minor cereals, legumes, and root crops.¹⁴⁹

Alternative national policies

An important step for the development of policies that better meet farmers' realities is that policy makers accept and recognize that farmers' or informal seed systems are by far the most important suppliers of seed. When reflecting upon existing policy frameworks, it is also critical that policy makers realize that both farmers' knowledge and their varieties are valuable. International and national attention to biodiversity and genetic resources creates such awareness among policy makers, but it only rarely (or slowly) trickles down to those policy levels that deal with seed regulations.

To do justice to these insights we need to develop policies for 'diversified seed systems',¹⁴⁵ i.e. taking into account the policy needs of both the farmers' or informal, and the formal seed systems and of the kinds of initiative for integrating scientific (formal) and farmers' knowledge and materials that are described in earlier chapters of this book. These policies should address two important issues: (i) ensuring that national laws based on policies directed at the formal sector do not impinge on the operation of the farmers' systems; and (ii) positively supporting the farmers' system and the integration approaches described in this book, such as participatory plant breeding, promoting adaptive seed technology, and small seed business development.

Avoiding negative impacts often requires minor changes to the national seed laws to redefine the words 'seed' and 'market', and to preclude over-regulation of

variety release and seed certification. It also requires minor changes to intellectual property rights laws, and more specifically to the definition of the farmers' privileges. Examples are available in northern seed laws, notably the concept in the USA of minimizing formal seed controls through 'trueness to labelling' instead of a formal certification system. This approach has limitations, however, when dealing with large numbers of illiterate farmers. The EU, which has a very strict seed regulatory framework (on which most of the developing countries' own laws are based) has recently been creating some interesting 'openings' in the seed laws. These openings cater, for example, for seed production of local varieties (called 'conservation varieties' in the EU). Another example is an opening in the patent law that creates a 'farmers' privilege' and in some EU countries a 'breeder's exemption'.

A more positive stance towards diversified seed systems may include a much more diverse set of policies, and not only those that are translated into regulations. One example is to support the development of community-based or small-scale seed enterprises which may require a gradual phasing in of seed quality controls and a supportive rather than a policing role for the seed certification officials. Support to participatory plant breeding commonly requires explicit investment strategies for public research and for civil society groups. It also involves changes in the reward systems for the public plant breeders since their involvement in participatory plant breeding may not lead to officially released varieties. This change may also require support for formally registering new farmers' varieties that may have value for farmers outside the participating communities. Another example is decentralization of seed production: support may focus on the multiplication of locally adapted varieties requiring positive investments in variety testing systems that identify such a broader range of varieties. Supporting farmers in reducing bottlenecks in their seed production practice may include the development of appropriate technologies and clear extension messages on diverse technologies related to such issues as seed-transmitted diseases, seed storage methods, and maintenance selection in varieties.* And finally, positive action may be needed to empower farmers to optimally develop their seed systems, e.g. through village seed banks, community genebanks, seed fairs and the organization of farmer field schools to share, extend and further develop farmers' experiences.†

Both in terms of 'opening up' regulatory frameworks and of positive actions, policy makers must take care not to compromise the legitimate interests of the formal system in those areas where they have some comparative advantages. Creating a too liberal approach may scare away investors in those commercial seed crops that the formal system could contribute to. In the field of IPRs, the World Bank therefore suggests different levels of protection of plant breeders' rights for commercial crops (export and national sectors) and crops that are mainly consumed in the home or are important for national food security and are produced through the informal seed system.¹⁵⁰

* Conny Almekinders and Niels P. Louwaars describe farmers' maintenance and selection of varieties more in detail in Section 2.1.

† Bhuwon Sthapit and colleagues describe various practices supporting community biodiversity management in Section 3.7

Beyond national seed policies

National seed policies are required to explicitly accept the diversity of seed sources that farmers draw on, and incorporate these into investment decisions and regulatory processes. Policy processes can, however, be quite slow in incorporating radical and unconventional ideas. Important steps can therefore also be taken by public organizations themselves, with or without the explicit blessing of their parent ministries.

The introduction of participatory approaches in plant breeding is an interesting example. Scientists have ventured into novel forms of cooperation with farmer groups without the consent of their national variety release committee, which initially opposed the ‘release’ of prospective new varieties for testing in farmers’ fields. The formal system may have problems accommodating truly participatory breeding, with new farmers’ varieties¹⁵¹ or varieties resulting from farmer-led participatory plant breeding;* these breeding approaches may not always lead to the uniformity required by the formal system. It is the institutional policies of the public research institutes that open up opportunities that go beyond the conventional seed chain approach.

Seed certification agencies also have a lot to offer in opening up the system with a more informal or experimental approach. In most countries, they are the best-equipped organizations with regard to seed quality. These organizations often focus exclusively on checking the formal seed systems and controlling the quality by taking sub-standard seed off the market. However, some of them have reinterpreted their mandate as not just to keep poor seed out of the market, but to help sustain the quality of the seed used by farmers. For example, the seed certification agency of Zambia actively offers its knowledge and expertise to civil society groups that help farmers to produce better seed (unsupported by the national seed law). Similar organizations in Sri Lanka, Thailand and other countries support seed villages that re-use certified seed in maintaining acceptable quality levels.

Finally, genebanks, which originally focused on the conservation, characterization and storage of genetic resources, and distribute them to ‘bona fide’ users in their formal mandate, have also been expanding their mandate in actively participating in the reintroduction of local varieties after disasters (e.g. Rwanda). Some are supporting farmers’ seed systems using a diverse set of varieties even where the national seed law prohibits the distribution of non-tested seed of unreleased varieties.†

All these examples show public institutions that are ahead in their views (and actions) with regard to diverse seed systems. Some of these actions are not strictly legal, and they may create risks for their managers. In most cases these actions are followed by changes in the formal policy and in adaptations of the rules or their interpretation where necessary.

* Farmer-led participatory plant breeding is explained and examples are given by Hans Smolders, Arma Bertuso and Bert Visser in Section 4.6.

† In Ethiopia, the Biodiversity Conservation Institute is involved in such activities as reported by Girma Balcha and Tesema Tanto in Section 3.4.

Towards conducive seed policies

Seed policies are there to guide the development of seed systems. When translated into investment decisions and regulatory frameworks, they can create conducive environments for securing the availability of good seed to farmers. However, the linear paradigm for the development of seed systems expresses the basic assumptions behind conventional seed policies, which are not in line with the farmers' reality. This has been identified by the African Union in 2008 as a major limitation in its call for integrated approaches to seed system development. The much more complex reality and the wide range of opportunities it offers require policy makers to undertake a wide range of actions to 'open up' the existing regulatory framework and to stimulate positive actions by organizations within the formal system to support farmers', or informal, seed systems.

7.2 Seed policies and regulations and informal seed supply in Ethiopia

Belay Simane

Introduction

This section outlines current Ethiopian seed policies and regulations and their influence on the informal seed supply system, and suggests opportunities for change. The section addresses the state of the art of federal and regional regulations relating to seed supply and bottlenecks within the current policy and regulatory framework for supporting farmer-based seed production and marketing. It identifies opportunities for policy development and readjustment, and for decentralization of seed sector activities, i.e. moving responsibilities from the federal to the regional governments.

The formal seed system: an historical overview and structure

Improved seed production and distribution in Ethiopia began in the 1940s with the establishment of the agricultural colleges. Until the late 1970s, the Ethiopian seed programme was very ad hoc and seed multiplication was uncoordinated. In 1976, the National Crop Improvement Committee (NCIC) set up the National Seed Council (NSC) to formulate recommendations for seed production and the supply of varieties released from the national research programs. In 1979, the Ethiopian Seed Corporation (later renamed the Ethiopian Seed Enterprise, ESE) was established to institutionalize seed production, processing, distribution and quality control of improved varieties. The NCIC initially handled variety release. In 1982 the National Variety Release Committee (NVRC) took over this task; the NVRC expanded its activities to evaluation of verification plots, and registration of varieties. In 1966, with some assistance from UNDP and FAO, the government established the IAR (now Ethiopian Institute of Agricultural Research, EIAR). During the last ten years, with some federal government and foreign assistance, the regional governments established the Regional Agricultural Research Institutes (RARIs). The regulatory institution, the

National Seed Industry Agency was established by the government in 1993, and strengthened through funds obtained from IDA and IFAD under the Seed System Development Project (1996-2001). As a successor to the NSIA, the National Agricultural Input Authority (NAIA) was established in 2003 by merging the NSIA and the National Fertilizer Industry Agency (NFIA). During the restructuring of 2004, federal institutions conducting activities directly related to the agricultural sector were brought under the Ministry of Agriculture and Rural Development (MoARD). Accordingly, the Agricultural Input Quality Control and Inspection Department and the Agricultural Input Market Department are institutionalized under the MoARD. However as mentioned in Section 1.1,* MoARD is being reorganized where the main responsibilities and activities will be retained, but will be realigned within new coordination offices or organizational units of the Ministry. The ESE is the major player in seed production in the formal system. ESE coordinates the Farmer-Based Seed Production and Marketing Scheme (FBSPMS);† there is some ambiguity as to whether this scheme should be considered as formal or informal seed production.

Seed policy and regulatory environment and bottlenecks for the informal system

In November 2001, the Ethiopian government issued Rural Development Policies and Strategies, i.e. the apex policy for the economic and social development sectors. All other policies, including those issued before this date have to be put in line with this policy. The seed system is guided by the National Seed Industry Policy (NSIP) and regulated by Plant Protection Decree No. 56/1971, Plant Quarantine Regulation No. 4/1992, Seed Proclamation No. 206/2000 and guidelines based on this proclamation, and Plant Breeders' Rights Proclamation No. 481/2006. Seed standards, field and laboratory manuals, and variety evaluation and release guidelines are also vital tools for the regulation of the seed industry.

The National Seed Industry Policy and Strategy

The National Seed Industry Policy and Strategy was formulated in 1992 with the aim of facilitating and regulating the production and marketing of quality seeds. Under Article 7, the policy promotes the active participation of farmers in the seed industry and the sustainable use of local cultivars. The seed proclamations, guidelines and seed standards issued are in line with the NSIP and Strategy and should support the development of a sustainable seed system.

Seed Proclamation No. 206/2000

Seed Proclamation No. 206/2000 defines the institutional framework with the basic tasks and responsibilities of authorities for seed industry development. The major issues addressed in the proclamation are: (i) streamlining the evaluation, release,

* In Section 1.1 Zewdie Bishaw, Yonas Sahlu and Belay Simane describe the status of the Ethiopian seed sector.

† In Section 1.2 Yonas Sahlu, Belay Simane and Zewdie Bishaw describe the farmer-based seed production and marketing scheme.

registration and maintenance of varieties developed by national research systems; (ii) developing effective seed production and supply systems through the participation of the public and private sectors; (iii) creating functional and institutional linkages among key players in the seed industry; and (iv) regulating quality, import-export trade, quarantine and other seed-related issues.

The seed proclamation recognizes the participation of farmers in seed production as contract seed farmers to registered seed companies. However, there is no legal provision for farmer-based seed production within the informal system. Article 14 of the seed proclamation, on seed production, processing and marketing, states that “any seed produced and processed locally or imported, or to be exported or to be sold and distributed in the country shall be from a variety registered by the Agency and shall conform to the requirements and seed standards of Ethiopia”. This does not give legal status to farmers in producing and marketing their own seed.

Plant Breeders’ Rights Proclamation No. 481/2006

Plant breeders’ rights, promulgated under proclamation No 481/2006 were established in February 2006, but are not operational yet. These rights aim to provide recognition and economic rewards for those who contribute to the development of high quality improved varieties. Article 27 of the proclamation recognizes the rights of farmers to save, use, exchange and sell both farm-saved seed of local cultivars and protected varieties; this is not in line with the UPOV guidelines. The proclamation explains the following issues in detail: (i) scope, exemption, restrictions, and duration of plant breeders’ rights, and persons entitled to them; (ii) transfer and provocation of plant breeders’ rights; (iii) infringement of plant breeders’ rights; and (iv) farmers’ rights to use both local cultivars and protected varieties.

Standards and guidelines

The available seed standards, field and laboratory manuals, and variety evaluation and release guidelines are vital for the regulation of the seed industry. However, these regulatory tools do not have any special provision for addressing the informal seed system. There are 74 seed standards that are currently in use. Compared to those of neighbouring countries, these standards are too high even for the formal sector, let alone for the informal sector. There is no provision for the release of varieties resulting from participatory plant breeding. Variety release and evaluation mechanisms are not very strict. The standing National Variety release Committee (NVRC) and various ad-hoc technical committees drawn from different institutions, have enormous problems in the coordination and implementation of the planned activities.

Opportunities for policy improvement

The long-term vision for Ethiopia is to ensure farmers easy and cost-effective access to improved seed, through well-functioning seed systems. Through policy assessment and dialogue, the following issues should be addressed to reinforce farmer-based seed multiplication and marketing in Ethiopia.

- Some of the sections and articles in the NSIP need to be revisited to encourage small-scale farmers' and cooperatives' involvement in seed production and marketing. The seed policy needs to accept farmer-based seed production and marketing as an integral part of the wider seed system for ensuring seed availability and seed choice to farmers.
- A new law or an amendment to the existing Seed Proclamation No. 206/2000 has to be formulated to address the institutional framework with the basic tasks, responsibilities and responsible authorities for the development of the informal system.
- The seed standards that are currently in use are too high even for the formal sector; it is therefore necessary to set achievable and fair seed standards for the farmer-based seed multiplication system.
- For farmer-based seed production, a system for 'quality declared seed' should be established; such a system will help farmers to obtain quality seed on time and at cost-effective prices.

Opportunities for decentralization

Considering the current Ethiopian political and the agro-ecological situation, there are quite firm grounds for decentralizing seed production and marketing activities.

Political grounds

The Ethiopian constitution is built upon the decentralization of administration. Decentralization, first to the regional, and now to the *woreda* and *kebele* levels, is a centrepiece of Ethiopia's strategy for ending poverty, both to improve responsiveness and flexibility in services delivery, and to increase local participation and the democratization of decision-making. The objective of decentralization is to transform Ethiopia from a highly centralized unitary state into a federal government based on substantial devolution to the lowest level of planning unit. This provides a foundation on which to build the decentralization of the seed system.

Agro-ecological grounds

Ethiopia is a country of great geographical diversity with altitudes ranging from 110 meters below sea level to 4620 meters above sea level. There are 18 major agricultural zones and 62 sub-zones with their own physical and biological potentials and constraints. Crop requirements are specific in terms of soil types, amount of moisture, temperature and other climatic factors. Hence, crops perform well when their specific requirements are met. The requirements for seed production are even more precise than those for grain production. Hence, seed production of crops should be targeted at the agro-ecology where the best performance in terms of yield and quality can be expected. In view of this, and the limited agro-ecological coverage of the ESE farms, there are good grounds for the decentralization of seed production.

Administrative grounds

The ESE is involved in both formal sector seed supply and the farmer-based seed production and marketing scheme, with competing interests, particularly as a profit

making public seed enterprise. The latter involves a large number of farmers, with a huge task in administration and coordination. In view of the regions' good experience of handling and administering the farmer-based seed production and marketing scheme, there is scope for decentralizing the scheme.

Policy grounds

Article 22 and 30 of the national seed law requires the establishment of seed testing centres and appointment of seed analysts. Seed analysts should be appointed in a decentralized regulatory regime to perform seed testing in accordance with the prescribed terms and conditions.

Conclusions

In Ethiopia 80 to 90% of the national seed requirement is covered by the informal seed sector. The current seed policies, laws, regulations and institutional framework need to be revisited and modified so that they support and encourage the development of the informal seed system and designate the basic tasks, responsibilities and responsible authorities involved.

Considering the existing political, agro-ecological, institutional and policy frameworks of the country, there are strong grounds for decentralizing the current farmer-based seed production and marketing activities as coordinated by the ESE, and establishing a sustainable seed system in the country. Quality control should be enforced for 'quality declared seed' with proper labelling and pricing. The regulatory capacity of public sector agencies should be strengthened to enforce quality control standards at the point of sale. Infrastructure development and training farmers to produce and sell their seeds effectively should be the bottom line of the informal seed system.

7.3 International dimensions of plant variety protection and informal seed supply in Ethiopia*

Robert J. Lewis-Lettington

Why an interest in plant variety protection in Africa?

African interest in the implementation of plant variety protection (PVP) regimes is negligible, with only one or two exceptions, namely South Africa (UPOV member since 1977) and, to a lesser extent, Kenya (statute entered into force in 1972 but necessary implementing regulations not completed until 1994). PVP is a relatively recent phenomenon in Africa and seems to be driven by two principal factors. The first factor is legal and relates to the obligation to implement some form of PVP

* The views and opinions expressed are those of the author and do not reflect the official positions of Bioversity International in any way. The author also accepts responsibility, and apologizes, for any errors of fact.

regime that almost all African states have accepted under paragraph 27.3(b) of the World Trade Organization-related Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs). The second factor is primarily practical and is that some form of PVP is often seen as a prerequisite for an export-oriented horticulture sector, particularly where ornamentals are concerned but also, to a slightly lesser degree, for vegetables. In most instances, the factor of export orientation is driven by, or at least geared to, the European Union; which happened to be where the dominant international iteration of PVP, the International Convention for the Protection of New Varieties of Plants (UPOV Convention), was developed.

Although legal obligations and the desire to support horticulture are the principal motives for adopting PVP in Africa, a third factor appears to be exerting an increasing influence over policy discourses. This is the way in which public sector research institutions are beginning to perceive PVP as a means to offset declining research budgets and as a mechanism to engage with the private sector. This objective has developed as liberalization and privatization policies have begun to diversify the seed distribution sector in many countries during the 1990s and 2000s. It is based on the private sector tendency to prefer the exclusive rights that intellectual property rights, such as PVP, can provide, even in the presence of the near monopolies already available through most seed laws. These institutional objectives of public sector research are frequently actively supported by the individuals that it employs, as breeders see PVP as a means of enhancing their personal incomes. The Kenya Agricultural Research Institute (KARI) provides perhaps the clearest case of all of these factors to date. Its active adoption of PVP was, at least partially, pursued on the basis of a consultant's recommendation that it could provide up to 8% of operating costs and has been rapidly followed by demands by researchers for a direct share in any royalty income.¹⁵²

Legal obligations for PVP under TRIPs paragraph 27.3(b)

The legal obligations to implement plant variety protection that countries have assumed under TRIPs are sometimes misunderstood and it is useful to review what is actually required, to ensure that the available flexibilities are fully understood. The first basic requirement is that countries must provide for the protection of plant varieties. Without going into too much detail, it is important to note that neither the concept of protection nor the nature of a plant variety are defined or clarified in any way under TRIPs. Protection is a very subjective concept, according to one's interests and objectives, while the exact definition of a plant variety can be manipulated to serve innovation-related or other socio-economic goals. The mechanism for protection to be used is left even more open, with the options of using patents, effective *sui generis* systems, or combinations of the two all being acceptable. Considering that *sui generis* simply means 'of its own kind', the reference to a combined approach would seem somewhat redundant, as a *sui generis* system in this context could reasonably be argued to be just about anything that wasn't a pure patent system. The additional requirement that a *sui generis* system be 'effective' does not restrict options much, if it all, because 'effective' is no less subjective a concept than 'protection'.

In general terms, all of the key elements of paragraph 27.3(b) are left undefined by the TRIPs Agreement and remain to be interpreted at the national level. This provides enormous scope for countries to develop PVP systems that comply with TRIPs but that are also tailored to their particular circumstances and objectives. PVP may well link with global trade patterns, particularly in the horticultural sector. However, this situation does not alter the fact that countries are very diverse in their socio-economic and technological conditions and, therefore, will presumably need variations on the basic mechanism of PVP to achieve optimum implementation.

Perceived practical benefits of PVP

As in the case of the nature of legal obligations to implement PVP, there is often some confusion as to the practical benefits that the implementation of a PVP regime may provide. This is particularly so because of the fact that almost no developing countries have enough experience of implementing PVP regimes to accurately assess their impacts and because there have been some relatively heated debates regarding cause and effect relationships where impacts have been observed. However, several core potential benefits have been posited as those that PVP regimes will promote and, regardless of the state of debate and individual positions, it is reasonable to put these forward as measures by which the implementation of a PVP regime may be assessed.

First, PVP regimes are believed to increase the range of varieties to which farmers have access. This effect is based on two related influences. One is that the existence of a PVP regime provides greater incentives for investment in plant breeding and the other is that the regime provides greater security for those who have developed varieties, whether locally or imported. A second core potential benefit relates to the fact that the key horticultural markets, particularly the European Union markets to which Africa is so closely linked, all have their own PVP regimes based on the UPOV Convention. While these regimes allow them to control the import of protected varieties, even where these originate in countries without PVP, compatibility between producer and market regimes may enhance export options by increasing confidence and generally lowering transaction costs. The third, and final, core potential benefit to be discussed here is that a PVP regime should promote the privatization of research at a time when Africa's traditional public sector research institutions are under constant financial pressure. This restructuring of national research sectors should lessen the burden on government budgets and may, as some argue, lead to greater efficiency and diversity in research.

Ethiopian Plant Breeders' Right Proclamation No. 481/2006

Ethiopia's implementation of a PVP regime is provided for in the Plant Breeders' Right Proclamation, No. 481/2006. While Ethiopia is not currently a member of the World Trade Organization, it has applied and is, therefore, seeking to bring its legal system into compliance with the Organization's requirements, including those of TRIPs. Ethiopia also aims to expand its horticultural trade with the European Union and is seeking to promote plant breeding and the seed industry internally. This latter point is clearly highlighted in the Preamble to the Proclamation. The aim here is not to provide a comprehensive analysis of Proclamation No. 481/2006 but, rather, to

highlight the relationship between it and efforts to promote the informal seed supply system in Ethiopia.

Proclamation No. 481/2006 is, in many respects, a relatively orthodox interpretation of PVP that follows the basic structure and detail of the UPOV Convention. Recognizing that the UPOV Convention is primarily focused on the development of new varieties within the context of formal, relatively capital intensive, breeding programmes, the Proclamation seeks to introduce balancing elements focused on promoting the less capital-intensive activities of farming and pastoral communities, as highlighted in the Preamble to the Proclamation. These elements are primarily provided for in Sections 6 and 28. Section 6 provides for broad exemptions for the traditional activities of communities, particularly use and exchange, and the main limitations on these are that 'commerce' and 'commercial scale' remain prohibited. However, there are no definitions of 'commerce' and 'commercial scale' and, therefore, until these might be clarified in regulations, some ambiguity remains. Section 28 is similar to Section 6, in that it also provides for farmer-oriented exemptions from compliance with plant breeders' rights. However, it differs in that it focuses on more individually oriented exemptions and, in effect, creates a situation where almost the only prohibited activity for an individual farmer is misrepresentation of their seed as a protected variety.

The fundamental point to note in the context of sections 6 and 28 is that they imply a view of the seed system that emphasizes a perceived dichotomy between two discrete sectors: the 'informal' and 'formal'. However, this tends to exclude the possibility of viewing the seed system as a continuum and, as such, to allow for activities that may exist between the two poles.

Ethiopian Proclamation No. 481/2006 and the semi-formal seed industry

Although the exact situation might vary slightly according to the nature of proposed activities, it is unlikely that Proclamation 481/2006 creates sufficient exemptions from the plant variety protection framework to accommodate a semi-formal seed industry. Even a relatively modest semi-formal seed industry has, by its nature, some form of commercial aspect and thus cannot be exempted under Section 6. It might be possible to establish some form of cooperative under Section 28, but this is also unlikely on the basis that it is hard to argue that it falls within reasonable understandings of traditional activities.

However, there is a question as to whether one would really care whether a semi-formal seed industry would fall within the exemptions of sections 6 and 28 or not? These are only relevant in situations where that semi-formal industry would seek to make use of, or depend on, varieties protected under the Proclamation. For all farmers' varieties and other unprotected varieties, the question of plant variety protection, and exemptions from it, is essentially irrelevant and provides no barrier to activities, commercial or otherwise. The limitations of plant variety protection, and scope of exemptions from it, are only of concern if you want to access and make use of protected varieties. However, it is also possible that a semi-formal seed industry might develop varieties that it wishes to protect. In this instance, it is important to consider two factors, one specific and one more general. At a specific level, it is

essential to determine whether the varieties that might be protected provide enough added value, and are thereby likely to generate enough demand to be able to justify a high enough seed/grain price ratio to cover necessary costs and generate minimum profit levels. If the additional costs accrued and time lost in the process of protection are likely to outweigh any benefits, or limit demand in a target market, then protection might be counter-productive. At a more general level, one must consider the objectives and purpose of promoting a semi-formal seed industry. If the aim involves smallholders as a target market for expanded access to seed, whether also as variety providers or not, one must consider that this market is extremely price sensitive. Establishing a semi-formal seed industry based on monopolistic protection mechanisms might lead to its imitating the existing large-scale commercial seed sector and failing in its seed access expansion mandate.

Key concerns

While earlier discussion has raised a number of possible positives and negatives in the relationship between plant variety protection and the promotion of a semi-formal seed industry in Ethiopia, the next two sections highlight a series of further issues that one should consider in the development of a semi-formal seed industry within the framework of existing plant variety protection law. Three main concerns are commonly cited. First, the likelihood that the use of plant variety protection within a seed system will tend to promote genetic uniformity, primarily due to the 'distinct, uniform and stable' criteria of plant variety protection mechanisms, including Ethiopia's. While there is some debate about this issue, at a minimum, it does seem to be a genuine concern in the commercial farming sector and, as such, raises a number of questions that the promoters of a semi-formal seed industry should address.

A second commonly cited concern is that plant variety protection, in common with other intellectual property rights, is based on a monopoly mechanism. Monopoly mechanisms function because of their ability to exclude; i.e. the value of information is increased by the ability to exclude people from using it. In a resource-poor setting, it can be argued that this, in effect, operates as a tax with disproportionate impact on the poor because of the ability of wealthier farmers to offset, and indeed profit from, these costs through additional investments in inputs and access to better quality land.

The final commonly cited concern about plant variety protection to be discussed here is its relationship to investment in plant breeding and the seed industry generally. As discussed above, this is one of the main incentives for implementing plant variety protection regimes. However, the relevant authorities need to monitor any investment patterns associated with plant variety protection quite closely. On the one hand, plant variety protection can provide a mechanism for transfer pricing, where international companies limit tax liabilities (and thus benefits to developing economies) by manipulating the transactions between parent and subsidiary companies. On the other hand, anecdotal evidence from several countries suggests that competition around plant variety protection rights is relatively low and, therefore, there is a risk of very high royalty rights that limit the options for expansion among developing country actors and generally create high barriers to entry in fields such as horticulture. Of course, it should be noted that these financial concerns are not unique

to the context of plant variety protection and may be found in most trans-national investment scenarios.

Key positives

The most frequently cited positives from the introduction of plant variety protection into a seed system are, in some respects, mirrors of concerns and, as such, highlight the ongoing debate and the limits to conclusive empirical evidence around such legal regimes. First, despite concerns that plant variety protection promotes genetic uniformity, it is also often argued that it can serve to actually promote diversity. This is primarily the result of the regime acting as an incentive for the commercialization of new varieties that might not otherwise have been developed. As with so many things, it is possible that both points of view might be correct. This is possible because the answer may well depend upon the initial context: plant variety protection might well increase diversity in relatively uniform contexts and yet decrease it in relatively diverse ones. However, this is mere speculation and there is a clear need for longer term empirical research.

The second key positive aspect of plant variety protection is that it provides a mechanism for farmers to improve their incomes, as the overall gains from protected varieties will outweigh the additional costs associated with that protection. This becomes particularly significant where government research budgets are low and sometimes poorly directed, because it creates a mechanism whereby the private sector can fill the gap. The effectiveness of this impact is likely to be dependant upon a series of variables but, at a minimum, seems probable in market-oriented sectors.

The final two positives to be discussed here are actually more means by which plant variety protection regimes limit or prevent some of the negative impacts that they are often thought to cause. The first of these is that plant variety protection regimes are unlikely to create a significant barrier to participatory plant breeding and other forms of farmer-based or smallholder-oriented seed development. There are two reasons for this: one is that these activities rarely, if ever, make use of protected varieties; the second is that plant variety protection laws usually provide for broad exemptions for breeding using protected varieties. This is certainly the case with Ethiopian Proclamation 481/2006 but, in other countries, one must be careful that the concept of essentially derived varieties, introduced into the 1991 text of the UPOV Convention, is not manipulated or abused in a manner that negates this feature of plant variety protection.

Finally, there is the question of the relationship between plant variety protection and farmers' rights to save and re-use seed. There may be problems where farmers are only planting protected varieties in one season and then seeking to save and re-use seed in the following season. However, among smallholder farming communities where the saving of seed is a major feature of the seed system, farmers tend, if they use protected varieties at all, to blend these with other seed, so that any seed saved is not purely of a protected variety. The abuse of the concept of essentially derived varieties is again a major concern here but, with that caveat, it is hard to see how plant variety protection might directly impact farmer seed saving practices.

Seed laws and the semi-formal seed industry

While most of this section has considered the relationship between plant variety protection regimes and the promotion of a semi-formal seed industry, it is also important to consider the role of a third element: seed laws. At the time of writing, there is, throughout Africa, significant pressure and momentum towards sub-regional and regional harmonization of seed laws. This is largely based on a typical globalization argument, where harmonized rules will facilitate cross-border trade in seed, allowing for greater economies of scale and wider access to technology. It does seem highly likely that harmonization will promote the activities of large seed companies and benefit high input farming, where the local specificity of seed is less important than in the smallholder sector. However, the current harmonization efforts are based on the wider replication and linking of seed laws following a relatively rigid structure that focuses on the commercial agriculture sector, in the same way that plant variety protection regimes tend to do. The fact that many seed laws also contain a distinct, uniform and stable monopoly mechanism at their heart is a vivid illustration of this link.

Seed laws and rules are mechanisms that are intended to improve efficiency by collectively confirming information that farmers need to be able to verify to be confident in their seed choices. Instead of each farmer seeking to individually confirm information provided by each seed supplier, a central authority confirms the seed supplier's information once and for all through seed certification. However, this mechanism is dependent upon the ability of the central authority to accurately assess the nature of information that a farmer will seek to confirm. Seed laws generally target information, and impose financial and time transaction costs that are relevant to high input agriculture: the sector that is best able to bear the costs of the mechanism and benefit from it. The degree to which this mechanism might also benefit seed production and distribution that targets local markets is unclear. Given such a lack of empirical evidence regarding the likely impacts of seed law harmonization on the actual seed sectors existing in most African countries, further research would appear necessary. This is particularly true when one considers that harmonized laws and rules have a tendency to become monolithic in the sense that they adopt a one size fits all approach and are relatively difficult to adjust once established. At a minimum, any harmonized system must include consideration of options for flexibility at the national and local levels and, preferably, should be based on an overall review of seed systems that envisions them as a spectrum running from the informal to the formal. This will allow for specific mechanisms designed to address the needs of semi-formal and farmer-based seed initiatives to be established alongside those designed for the commercial sector. The Ethiopian Proclamation 481/2006 on Plant Breeders' Rights begins to approach this path by its recognition of a diverse seed system and, hopefully, in its regulatory structures, it will go further to recognize the full diversity of this system and include consideration of initiatives such as the promotion of a semi-formal seed industry. In turn, these national experiences from Ethiopia should, as they are developed, be fed into the sub-regional and regional processes to ensure an appropriate balance between the interests of the commercial agricultural sector and the other diverse elements of the seed system that exist alongside it.

7.4 Biodiversity and genetic resource access laws and informal seed supply with specific reference to Ethiopia^{*}

Robert J. Lewis-Lettington

Basic legal framework

The international legal framework for access to genetic resources currently consists of two closely related instruments: the Convention on Biological Diversity (CBD, 1992) and the International Treaty on Plant Genetic Resources for Food and Agriculture (IT, 2001). The possibility of a third instrument, an agreement on farm animal genetic resources, is being widely mooted and a potentially more detailed interpretation of the CBD's access provisions is under consideration in the context of discussions for an international regime for access and benefit sharing. As the dates and names might suggest, the CBD provides the foundational provisions of contemporary understandings of access and benefit sharing, while the IT provides a sector-specific interpretation of these foundational provisions for crop-based agriculture.

Two key pillars of the CBD are the sustainable use of biodiversity, including genetic resources, and the fair and equitable sharing of benefits from that use. The underlying assumption in this approach is that a realization of the commercial value of genetic resources will increase awareness of the potential value of conserving biodiversity. In short, a market-oriented approach to promoting conservation. The basic link between the CBD and the IT was established at the point when the CBD text was adopted, with the Nairobi Declaration recognizing that issues of *ex situ* collections and farmers' rights were not addressed by the Convention, thereby laying the foundations for the IT negotiations. The underlying assumption of the IT expands slightly upon these issues by recognizing that the traditional agricultural research sector has special needs in the context of access and benefit sharing. These needs are largely based on the fact that the use of genetic resources in agricultural research tends to be characterized by, and benefit from, high volume and low margin transactions. This is in direct contrast to the low volume and high margin transactions that are the flagship successes of access and benefit sharing in the chemical and pharmaceutical sectors. There has been significant discourse to the effect that modern biotechnologies, particularly genetic modification, have more in common with the dynamics of the chemical and pharmaceutical sectors than with traditional agricultural research but the IT makes no direct distinction in this regard.

The Ethiopian Access to Genetic Resources and Community Knowledge and Community Rights Proclamation (No.482/2006) is primarily designed to implement the CBD framework in an orthodox manner that follows a commonly used approach targeting the chemical and pharmaceutical sectors. However, it also contains an

^{*}The views and opinions expressed are those of the author and do not reflect the official positions of Bioversity International in any way. The author also accepts responsibility, and apologizes, for any errors of fact.

explicit reference to the IT that provides for the optional implementation of its approach as a parallel mechanism operating through regulations (section 15.2).

How the international agreements link

Article 15 of the CBD establishes a basic framework of principles for access and benefit sharing but, partially based on the exclusions recognized by the Nairobi Declaration, the United Nations Food and Agriculture Organization's Commission on Genetic Resources for Food and Agriculture rapidly convened negotiations to revise the International Undertaking on Plant Genetic Resources, an earlier non-binding cooperative framework for agricultural research. The CBD's commitment to the establishment of a specific mechanism for access and benefit sharing in agricultural research was reiterated by a decision of the Conference of the Parties in 2000, which stresses that it is important that, in developing national legislation on access, parties take into account and allow for the development of a multilateral system to facilitate access and benefit-sharing in the context of the International Undertaking on Plant Genetic Resources, which is currently being revised (Decision V/26/A/7). In November 2001, the text of the IT was adopted as a replacement for the International Undertaking that provides a specific, but fully compatible, interpretation of the CBD framework that addresses both the Nairobi Declaration and Decision V/26.

What is a genetic resource?

In any legal instrument, the question of scope of application is of fundamental importance because it provides the basic outline of what is subject to the instrument's provisions and what is not. For the purposes of this section, the question is whether seed and propagating material, the raw materials of both formal and informal seed supply systems, fall within the scope of access to genetic resources regulations. All three of the instruments considered here use definitions as the key element in providing for their scope of application. In particular, the question of what falls within the understanding of 'genetic resource', which is the object of regulation in all of the instruments, must be considered.

Under the CBD, linked definitions of genetic material and genetic resource are used, producing a composite definition of 'any material of plant, animal, microbial or other origin containing functional units of heredity and of actual or potential value'. This clearly includes all forms of seed or propagating material, which fulfil both of the two main criteria of containing functional units of heredity and actual or potential value for humanity. The reason that the CBD definition is made up of the two nested elements, rather than some version of the composite used here, is largely a question of political history and emphasis. The term originated in the 1960s as a means of emphasizing the potential value of the heritable traits of biological materials to economic development. The two elements of the nested approach seek to emphasize, first, the key characteristic of heritability and, second, the fact that this characteristic has economic value.

The IT follows a very similar pattern to the composite definition from the CBD: 'any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity of actual or potential value for food

and agriculture'. However, the IT definition contains two important variations from the CBD approach. The first is the obvious restriction of the definition to material of plant origin, following the Treaty's narrower scope. The second is the limitation of the value element to value for food and agriculture, which creates a very significant limitation on the subject scope of the IT. However, for the purposes of the discussion here, the distinctions between the CBD and IT definitions are of limited relevance because both clearly, and in the case of the IT explicitly, include all forms of seed and propagating material.

The Ethiopian approach in Proclamation 482/2006 varies from the CBD and IT approaches in form if not in substance, with one important exception. The basic structure of the definition follows that of the CBD, consistent with the Proclamation's primary function of implementing CBD Article 15: 'any genetic material or biological resource containing genetic information having actual or potential value for humanity and including derivatives'. There are no restrictions regarding only material of plant origin or of values relating to food and agriculture, as found in the IT. However, it is clear that such restrictions could be imposed on a subset of materials pursuant to Section 15.2. The inclusion of a reference to biological resources would seem to run counter to the CBD approach but, given the subsequent qualifications relating to genetic information and value, is unlikely to be read as leading to any substantive variation. There is no direct reference to the heritability of traits but, given the evolution of technologies and some of the possible problems with the CBD language, the alternative reference to 'genetic information' is probably substantially equivalent and may even be more practical. Where there does appear to be a substantive variation from the CBD is with reference to the question of derivatives, where the CBD is silent and the Ethiopian Proclamation contains a very broad understanding: "product extracted or developed from biological resource this may include products such as plant varieties, oils, resins, gums, chemicals and proteins" (sic). This definition of derivative suggests that the Ethiopian Proclamation does not only include seeds and propagating material, as with the CBD, but also claims to establish 'reach through' regulation of the products of such seed and propagating material, whether in the form of multiplied seed, improved materials or of commodities. The way this provision is made seems to establish that any derivative of an originally regulated genetic resource would be individually subject to regulation.

Sovereignty

Sovereignty is a much misunderstood concept that lies at the heart of all state powers and that is recognized as providing the basis for all regulation of access to genetic resources. The reason for the common misunderstandings is that sovereignty is a complex concept with a very wide range of implications that touch upon all aspects of the governance of a state. A convenient definition for the purpose of discussion here is, 'the international independence of a state, combined with the right and power of regulating its internal affairs without foreign dictation'. The two most common misunderstandings regarding sovereignty in the context of access to genetic resources are that, first, it is seen as meaning state ownership of genetic resources and, second, it is seen as being conferred by the CBD. The first misunderstanding confuses one

possible function of sovereignty, the establishment of property rights, with sovereignty itself. A state decision to declare genetic resources *res nullius*, or as having no owner and thus freely available to all, would be just as much an exercise of sovereignty as the decision to declare them state property. Sovereignty is the power to decide which property rights should, or should not, exist and how they may be exercised, rather than the rights themselves. The second misunderstanding is a failure to recognize the source of sovereignty. Sovereignty is innate to a state and basically derives from its jurisdiction over territory and people, although different political systems tend to view the precise details in slightly different ways. An international agreement is, therefore, actually established through the exercise of sovereignty by states: it exists because states use their collective sovereignty to say that it does. As such, international agreements are actually seen by lawyers as restrictions on sovereignty rather than sources of it. Through an international agreement, two or more states agree to temporarily limit their exercise of sovereignty as described in the agreement. In this context it should be realized that sovereignty is innate and absolute and cannot, therefore, ever be permanently surrendered (e.g. in the way that property rights can) except by the dissolution of the state which has the right to exercise it and, even in this case, it may be argued that sovereignty is not surrendered but merely transferred to a new sovereign power. In the case of international agreements falling short of the dissolution of a state, this means that a state always has some form of right to withdraw from an agreement.

Article 15.1 of the CBD recognizes that states have sovereignty over their natural resources, including genetic resources, and, therefore, that they have the ultimate right to decide on questions of ownership and access. This means that, while the rest of Article 15 establishes a basic framework for access to genetic resources, the CBD accepts that states are exercising their sovereignty in doing this, and that they are free to interpret the details of this framework according to national law and practice. The IT goes significantly further than the CBD on the question of the exercise of sovereignty because, through the Treaty, states have agreed to make a selection of plant material available on fixed terms and conditions that constitute a detailed interpretation of the CBD framework. That is, they have limited their sovereign right to determine these terms and conditions unilaterally. The ongoing discussions for an international regime for access and benefit sharing under the CBD would, if successful in their current objectives, bring the level of limitation of sovereignty under the CBD to one similar to that established under the IT.

In Proclamation 482/2006, Ethiopia has clearly exercised sovereignty by establishing that the ownership of genetic resources lies with the state and that the ownership of community knowledge lies with those communities. The author assumes this approach is compatible with the constitution of Ethiopia (constitutions essentially being the rule book setting out how governments may exercise sovereignty on behalf of the state), as it is not the purpose here to consider such matters. Having established these basic points, the bulk of the Proclamation then goes on to address the manner in which the government, in this case on behalf of the state, and communities may exercise their rights of ownership. In effect, these detailed provisions constitute

limitations on the rights of ownership, as ownership may only be lawfully exercised in compliance with them.

Facilitated access

Article 15.2 of the CBD provides for the main limitation on sovereignty that parties to the Convention have agreed to: that they will facilitate access to genetic resources, provided that this access is for purposes that do not run contrary to the Convention's objectives. The basic requirement is that states should make access to genetic resources within their jurisdiction as easy as possible, within the limitations of the other provisions of Article 15 and the basic requirements of sovereignty. The qualification relating to the Convention's objectives may be assumed to mean that access should be subject to the overriding concerns of the conservation and sustainable use of biodiversity.

The IT matches the CBD's requirement for facilitated access by states agreeing to make a specific list of materials, as provided for in Annex I of the Treaty, available to all, subject only to a predetermined set of terms and conditions detailed in the Treaty and its subsidiary instrument, the Standard Material Transfer Agreement. As a result, both providers and recipients are made fully aware of their rights and responsibilities, even prior to the completion of any exchange, and transaction costs are reduced to a minimum. The major exception to this standardized, 'as of right', system is that it is limited to access to materials that are under state control and in the public domain, as this is all that states can basically agree to without contradicting earlier sovereign actions regarding the creation of private property rights. There is also a further limitation, which is that the uses of material accessed are restricted, largely to the field of food and agriculture, which matches the basic scope of the IT discussed above.

Ethiopian Proclamation 482/2006 does not specifically refer to facilitated access but may be deemed to be generally fulfilling this requirement by providing for a clear process by which genetic resources may be accessed. However, some key questions do remain, in particular the nature of the yet to be promulgated regulations on prior informed consent and the degree to which the authorities are bound to the criteria established for the acceptance or rejection of a request for access. This latter point may be important to applicants for access in terms of the transparency of the access process. The Proclamation also allows for the possibility of establishing a distinct facilitated access process for agricultural materials by allowing for a direct co-opting of the IT's provisions for that purpose, something that is dependent upon future regulatory action.

Country of origin

Article 15.3 of the CBD provides for the identification of countries of origin as a means of identifying the relevant rights holders in the case of particular genetic resources. Countries of origin are deemed to be those where particular material is found in *in situ* conditions or, in the case of cultivated species, where they developed their distinct characteristics. The distinction between cultivated and non-cultivated species is made as a means of dealing with the fact that cultivated species have been

moved around the world for centuries prior to the conception of the CBD, so that the relationship between their ultimate centres of origin and any contemporary sovereign rights is tenuous at best. Many commentators suggest that this may be equally true of non-cultivated species, given that the science of centres of origin is still often unreliable and open to debate. One category of providers of legitimate authorization for access to genetic resources is, therefore, countries of origin. A second category consists of those who have legitimately acquired material pursuant to the CBD, whose authorization is presumably subject to any restrictions under which they obtained access. In this regard, it is important to note that the failure of a country to establish an access to genetic resources regime does not necessarily mean that all access is illegitimate. It is more likely, in the absence of any specific provisions, to be deemed *legally* legitimate, although the political aspect of things may be more complex. A third category is *ex situ* collections developed prior to the entry into force of the CBD but provided for under the IT, which largely consist of those of international agricultural research centres.

The IT largely sidesteps the question of country of origin and focuses on the underlying question of the relevant rights holders who may authorize access. Using the IT's multilateral system, countries surrender not only their right to determine the individual terms and conditions of access but also their right to authorize it. As a result, it is the multilateral system that becomes the source of the legitimacy of access and the question of country of origin becomes a moot point, particularly as it is also the multilateral system that accrues benefits, as discussed below.

In Proclamation 482/2006, Ethiopia does not directly address the question of country of origin and adopts a *de facto* position that Ethiopia will act as the country of origin of all material found in Ethiopia, whether or not it is actually the country of origin. This is considered to be *de facto* on the basis that it is not explicitly addressed but, since the Proclamation establishes that Ethiopia will assume the rights and obligations of a country of origin, in particular the right to authorize access, for all material accessed within its jurisdiction, this is the ultimate practical effect. There are no CBD compatible references to the rights of countries of origin as defined in the CBD and there is no provision for rights acquired through legitimate acquisition. While the author is not familiar with the details of property law in Ethiopia, it is probable that rights established through legitimate acquisition will, however, be recognized, as, otherwise, the Proclamation would have the effect of extinguishing prior rights. While this anomaly might be addressed by clever drafting of regulations for implementation, for the moment it would appear that the Proclamation is, in this respect, not in compliance with the CBD in its failure to recognize the rights of countries of origin.

Mutually agreed terms

Sub-articles 15.4 and 15.5, along with 15.7, provide the central operative elements of the mechanism for access to genetic resources adopted by the CBD. While all of these three sub-articles have been the subject of much debate since the entry into force of the Convention, they are not particularly complex, or even original, in their basic form but are, rather, adopted directly from the almost universally accepted principles of

legal contracts. 15.4 states that access to genetic resources must be subject to mutually agreed terms. No detail is stipulated, only that such terms must exist. This reflects the traditional legal principle that a valid agreement cannot be based on fraud or duress.

The IT matches the CBD requirement for mutually agreed terms by actually stipulating what those terms are in the various relevant articles of the Treaty and its subsidiary instrument, the standard material transfer agreement. This reflects the mutual agreement between the states that negotiated the Treaty as to the terms upon which they will all provide access to, and receive, listed material. Any states acceding to the Treaty subsequent to the agreement on its text are deemed to mutually agree with the existing parties through the act of accession and any other collections, such as those of the international agricultural research centres, are similarly deemed to agree to the terms upon submitting their collections to the jurisdiction of the Treaty.

Proclamation 482/2006 lies somewhere in between the approaches of the CBD and of the IT. It does not provide the sort of precise terms and conditions found in the IT, but it does move beyond the basic principles found in the CBD by providing an indicative outline of typical terms. This, at least, provides a signal as to the intentions and objectives of the competent authority in any negotiations. This indicative outline appears to be flexible but, to a large degree, this is highly dependent upon administrative interpretation.

Prior informed consent

Sub-article 15.5 of the CBD is very closely related to 15.4 and requires that any access to genetic resources must be on the basis of prior informed consent. The basic meaning of this is straightforward: any transaction must be clearly understood and agreed to prior to its actually taking place. However, in practice things tend to be significantly more complex, particularly due to varied perceptions of the appropriate standards for 'informed' in the context of highly asymmetrical relationships between key actors and a general lack of clarity regarding who it is that must be informed and consent on the providing end of the transaction. Despite these problems, the CBD is actually very clear about who should give their consent: the state or whatever other actors the state may empower. This is a reflection of the sovereignty principle recognized by sub-article 15.1, as it is for the state to determine issues of ownership and rights.

The IT does not specifically address the question of prior informed consent because it considers that all states that are parties to the agreement, and the rights holders of any other collections submitted to it, have given their prior informed consent, if not during the Treaty negotiation process, then during the process of ratification, accession or submission. Given that the Treaty only applies to material under state control and in the public domain, private rights holders are not affected.

Proclamation 482/2006 establishes a basic approach to prior informed consent that broadly mirrors that of the CBD, albeit one that is more complex where community knowledge is deemed to be at issue. Where one is seeking access to genetic resources, without any community knowledge content, only the consent of the Institute of Biodiversity Conservation (IBC) is required, as the IBC acts as the competent authority on behalf of the state. Communities are given the right to

petition the IBC regarding any decision it makes but only post facto and it is not clear what obligations such a petition might impose upon the IBC. Communities have stronger rights of prior informed consent where community knowledge is concerned, but these rights are still shared with the IBC and are subject to the promulgation of regulations on the issue. In addition to rights of prior informed consent by communities, customary law is also deemed to apply to access to community knowledge. Given that customary law is rarely codified and raises political questions when being interpreted by state agencies, this is likely to be a complex and challenging issue in a country as ethnically diverse as Ethiopia.

Research

The CBD's specific reference to research based on genetic resources in sub-article 15.6 is, in many respects, an aspect of benefit sharing and can be considered as much a question of emphasis as of substance. The CBD includes two non-binding recommendations: that research involving genetic resources should involve the country providing access to those resources and should take place in the country of origin. This is clearly intended to contribute towards the technological development of countries of origin that are developing countries and avoid their playing a role purely as raw material providers.

The IT follows the same approach to research as the CBD, at least to the extent that it seeks to promote exchanges that will avoid developing countries acting purely as raw material providers. It does not link particular resources and associated research activities with particular countries but rather seeks to generally promote collaborative research projects and access to technology involving genetic resources accessed under the Treaty's multilateral system.

Proclamation 482/2006 almost exactly follows the provisions of the CBD regarding research. Sub-section 12.7 establishes a non-binding requirement that research involving genetic resources accessed from Ethiopia should take place in Ethiopia with the involvement of Ethiopians. The non-binding element is introduced by the fact that the requirement should be fulfilled unless "it is impossible". Presumably this does not actually mean 'impossible', a situation which might never exist, but rather is intended to mean impractical or undesirable.

In general terms, the CBD's research requirement, and the associated technology transfer provisions found in the CBD and other international agreements have proved controversial, with many commentators bemoaning their lack of effective implementation. However, in the case of the CBD, at least anecdotal evidence suggests relatively significant interest and activity in this area.

Benefit sharing

Sub-article 15.7 of the CBD contains the Convention's main provisions regarding benefit sharing, although there are numerous direct and implied references elsewhere in the text, and, as such, it represents one of the pillars of the agreement. However, apart from establishing the basic principle of benefit sharing, the CBD defers to national jurisdictions regarding all details. What the CBD does require, is that all parties must take measures "for fair and equitable sharing of research results and

benefits from use". This creates an obligation for states acting as both providers and recipients of genetic resources and does not discriminate between developed and developing countries. Particular emphasis is placed on three categories of benefit: technology transfer, biotechnology and monetary benefits (both bilateral and multilateral).

The IT, primarily in its Article 13, follows the basic pattern of benefits proposed by the CBD, albeit with more detail, particularly regarding monetary benefit sharing. However, the IT stresses that the ability to access material that it guarantees to all of its parties constitutes the primary benefit it will provide. Monetary benefit sharing under the IT is largely voluntary, except where commercial products are not freely available to others for research purposes, and is based on a sales royalty mechanism.

In most respects, Proclamation 482/2006 provides a typical interpretation of benefit sharing provisions that includes an indicative list of benefit sharing options but leaves all details to be the subjects of negotiation. In line with the ownership pattern established by the Proclamation, benefit sharing regarding genetic resources is largely the business of the IBC as the representative of the state. The exception is that communities are entitled to 50% of any such benefits accruing to the state, although it is not clear how such a 50% calculation will be arrived at, particularly in the case of in-kind benefits, nor how appropriate communities will be identified. Communities are directly engaged in determining, and benefiting from, benefit sharing where community knowledge is concerned. The main omission from the Proclamation appears to be that there is no consideration of Ethiopia's potential role as a consumer of genetic resources. However, the country is most likely to play this role in the context of agricultural materials that could mostly be catered for in regulations implementing the IT.

Proclamation 482/2006 and the informal seed sector

Having provided a broad overview of the relationship between the CBD, the IT and Ethiopia's Proclamation 482/2006, this section concludes by considering several issues that may impact the informal seed sector in Ethiopia but that have not come out clearly in the previous discussions. The first of these is the treatment of Ethiopian individuals and organizations, which revolves around three elements:

- i) sub-section 4.2(a) provides for the exemption of customary use and exchange of genetic resources and community knowledge among Ethiopian local communities;
- ii) sub-section 11.4 exempts state institutions with a statutory conservation mandate; and,
- iii) sub-section 15.1 provides for the special treatment, but not exemption, of Ethiopian research and higher learning institutions.

These three special treatment provisions clearly indicate that all other activities conducted by Ethiopians, including all actors from the private sector to local communities, are subject to authorization by the IBC. In the case of establishing farmer- or community-based seed production enterprises, which would seem an unlikely fit in any understanding of customary use and exchange, this means that

access to genetic resources requirements are going to apply. Admittedly, under the Proclamation the IBC has the flexibility to make the process of authorizing access relatively simple but, with the current text, this is not guaranteed or immediately apparent.

A further issue is the potential burden that the Proclamation places upon local communities. Local communities are entitled to a series of privileges and benefits under the Proclamation but they are to be identified on the basis of a series of criteria, where the community must (i) live in a distinct geographical area, and be (ii) custodian of a given genetic resource; or, (iii) creator of given community knowledge. The first of these is not problematic but the latter two, while possibly attractive from a rhetorical point of view, raise serious questions as to who will verify or certify that these criteria have been met and how might any resulting determinations be challenged? This is of particular concern when one considers that genuine local communities tend to be those most disadvantaged in terms of resources and access to legal systems and these criteria could be used to place quite strict conditions on their access to what are effectively affirmative action provisions.

A third and final issue is that, under Section 29, regional bodies are given some responsibilities in the monitoring of the implementation of the Proclamation in their respective jurisdictions. This section could, perhaps, be used to further develop a principle of decentralization and devolution. This might simultaneously make the community aspects of the Proclamation easier to implement and provide an opportunity to link the aspects of the Proclamation that are likely to impact the informal seed sector more directly with the administrative levels at which this sector is primarily intended to be active.

7.5 Opportunities for policy development supporting informal seed supply of local crops and varieties in Ethiopia*

Walter de Boef and Anthony J.G. van Gastel

Many seed policies and accompanying legal and regulatory frameworks are exclusively targeting formal seed supply, ignoring the informal seed system, even if the latter is the most dominant system in sub-Saharan African countries, including Ethiopia. Even though they have the objective to contribute to seed and food security, seed policies are often considered a constraint, particularly in targeting the support of informal seed supply. Barriers raised by policy and regulatory frameworks are met by alternative strategies directed at supporting informal seed supply, such as farmer- or community-

* The current section elaborates the analysis and recommendations of a workshop addressing policy issues organized 25-26 July 2007 in Addis Ababa, within the framework of the Tailor-Made Training Programme: “The improvement of farmer-based seed production and revitalizing informal seed supply of local crops and varieties in Ethiopia”.

based seed production, the establishment of community-based or small-scale seed enterprises, participatory approaches to plant breeding, and efforts supporting farmers' management and use of local crops and varieties.

In Ethiopia, many stakeholders and institutions play important roles in these frameworks on the one hand, and at the same time are involved in the development of such alternative strategies. At the federal level key stakeholders are various departments and services of the Ministry of Agriculture and Rural Development (MoARD), the Ethiopian Seed Enterprise (ESE), the Institute for Biodiversity Conservation (IBC), and the Ethiopian Institute for Agricultural Research (EIAR). At regional government levels, key stakeholders are the Bureau of Agriculture and Rural Development (BoARD), Regional Agricultural Research Institutes (RARIs) and Cooperative Promotion Agencies (CPUs). Other non-public stakeholders include NGOs, international projects and private seed companies. All stakeholders are embedded within the framework that poses constraints, and at the same time they are supporting the development of alternative strategies. This situation creates a demand for establishing a forum in which strategies for supporting seed supply, constraints in policy frameworks and requirements for policy change are discussed.

Within the Tailor-Made Training Programme (TMTP) "the improvement of farmers based seed production and revitalizing informal seed supply of local crops and varieties in Ethiopia" a policy workshop was organized in Addis Ababa, 25-26 July 2007, to address these topics. The convening partners were the ESE, Wageningen International and the ICARDA Seed Unit, and participants were representatives of all relevant stakeholders at both federal and regional levels, and representatives of the teams participating in the TMTP.

The general objective of the workshop was to address policy and regulatory frameworks related to genetic diversity and informal seed supply. The workshop aimed to contribute to the following: (i) raising awareness among stakeholders on informal seed supply and seed policies relevant to informal seed supply, including seed regulations, mechanisms for plant variety protection and the release of varieties, and biodiversity and genetic resource access laws; (ii) facilitating stakeholder interaction and linkage for sharing the experiences and structure of the training programme with stakeholders active in the seed and genetic resource policy arena at both the federal (MoARD, EIAR, ESE, IBC, NGOs) and regional (BoARD, NGOs, RARIs) levels; (iii) analysing and discussing the bottlenecks within the current seed and genetic resource policies and regulations; (iv) on the basis of this analysis, determining opportunities for the development of seed and genetic resource policies and regulations, and if required, re-adjustment at both federal and regional level; and (v) determining the responsibilities and pathways, and ensuring the commitment of stakeholders at federal and regional levels to realizing conducive seed and genetic resource policies and regulations supporting informal seed supply and the establishment of small seed enterprises. The workshop took the two key elements of the TMTP as leading perspectives, namely (a) supporting informal seed supply at the regional level, and (b) establishing small-scale and community-based seed enterprises. It is important to realize that the participants represented the full spectrum of stakeholders involved in policy development at federal and regional level, and in the

development of alternative strategies supporting seed supply. This section shares the outcome of the analysis and above all compiles the recommendations as formulated by the participants during the workshop.

Making policies supporting informal seed supply

The seed policy and seed law should be revised to accommodate and support the development of the informal seed sector, including the establishment of community-based and small-scale seed enterprises (CB/SSE). In this process of revising the law, one of the following options is recommended: (a) include additional section(s) or articles addressing the informal seed sector, or (b) develop a new proclamation.

Continued cultivation and use of local varieties and minor crops should be promoted through the National Policy on Biodiversity Conservation and Research. One mechanism to achieve this goal is to promote the establishment and strengthening of community-based organizations that particularly focus on those varieties and crops. Regional governments should implement conservation policies and strategies based on the federal conservation policy and strategies. Regional BoARDs, with the support of the IBC, should develop modalities for biodiversity registers.

Farmer and community-based seed production of local varieties and minor crops should be embedded in a revised national seed policy. The revision should be such that farmer seed production of local varieties and minor crops is recognized and promoted; incentives should include technical support and training. Policies should: (i) support access to credit for cultivation and seed production of local varieties and minor crops, (ii) strengthen farmers' market access for these seeds and their products, (iii) support processes of value addition and (iv) facilitate the development of relatively 'easy' procedures to recognize and denominate products of geographic origin. Efforts should be made to raise farmers' awareness on options and potentials encouraging the cultivation of local varieties and minor crops.

Decentralization (from federal to regional or local levels) *and increased farmer participation* should be embedded and included in a *revisited variety release system*. This revision is required to increase the system's efficiency and effectiveness. The process should be coordinated by the national variety release committee and handled within the framework of the national variety release rules and procedures. Special procedures and standards should facilitate the release of varieties for specific agro-ecological niches. Farmers' selection criteria and demands should be used in the testing of varieties and farmers should participate (through community-based organizations) in on-farm testing, defining criteria and standards, and decision making.

Basic seed should be available to seed producers at reasonable costs. To increase the availability of basic seed and the seed producers' access to it, research institutes should guarantee sufficient supply of breeders' and pre-basic seed of released varieties at reasonable cost. The ESE should guarantee availability of sufficient basic seed of released

varieties. For crops and varieties where no basic seed exists (minor crops, local varieties, non-released varieties), appropriate organizations should be allowed to provide seed for further multiplication (provided they can produce sufficient quantity and quality). Such organizations include the BoARD (through its nurseries), the IBC, community seed banks, NGOs, private sector companies, research institutions, community-based organizations, farmers, etc.

Seed quality control should be decentralized to regional levels following the provisions in the seed law (Article 22 and 30). This process of decentralization should include certification. Seed laboratories and capacity building are required to realize this process.

Mechanisms should be developed to support seed production on the principles of 'quality declared seed'. Field and laboratory seed quality standards should be examined and standards for seed produced in the informal sector should be different from those applied in the formal sector. The standards in these regulations should be based on the principles of 'quality declared seed'.

Various mechanisms should be developed and put into place to support the establishment of community-based and small-scale seed enterprises. The legal status of CB/SSEs should facilitate optimum access to incentives. CB/SSEs should be allowed to produce seed without registration and be supported through credit by NGOs and regional governments. Cooperative Promotion Agencies should provide legal advice and relevant market information at the woreda level. Capacity building should be the responsibility of regional governments and NGOs. Local BoARD institutions should facilitate linkages with the IBC, research institutions, the ESE, NGOs, financial institutions, input providers/industry and other stakeholders. The BoARDS should also provide assistance in promotion and marketing of quality seed at regional, zonal and woreda levels. Through the DAs and regional laboratories, the BoARDS should support CB/SSEs in: (i) the development of procedures for internal quality control; (ii) production of seed meeting the required quality standards; and (iii) training of members/associated farmers to meet these standards.

Opportunities in the way forward

The above recommendations should (i) be used when drafting and implementing regional strategies; (ii) be translated into rules, regulations and guidelines that can be implemented; (iii) be made widely available within the regions, and (iv) be translated into efforts at the grassroots level. To realize all these recommendations, capacity building at all levels is an important component of the support required.

There is a lot of demand for support for revision and decentralization. In order to meet the challenges these changes pose, and to transform policy, legal and regulatory frameworks from barriers into supportive structures, a complex process is envisioned. This process needs to include many stakeholders, and above all, decision and policy makers at federal and regional levels. The kind of sharing of experience (hybridization of ideas) between regional and federal staff and national and

international resource persons that occurred in the policy workshop and training programme should be continued, so as to form a creative forum for policy dialogue and development. All the stakeholders at the workshop committed themselves to policy change and action, considering seed as a major input and constraint in all regions. The important role of the informal sector in seed supply, food production, poverty alleviation and food security was confirmed during the workshop. This consideration should be better embedded in federal and regional policies: there is an urgent need to support the informal sector.