6.1 Genetic resource policies and rights

Opportunities and limitations for community biodiversity management

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Synopsis

Community management of plant genetic resources (PGR) operates through the use of seed and planting material by the farming communities. Apart from being carriers of genetic diversity, which makes seed (in its generic term, also covering other forms of reproductive material) the subject of biodiversity policies, seed has functions that relate it to other policy arenas. Seed is a primary input in any crop production system and a primary determinant of inherent values, such as product quality, yield potential and yield stability, and as such is the target of agricultural policies relating to food security and agricultural development. Seed is also a commodity that is consequently addressed by trade policies. The values and information embedded in seed are subject to innovations that are determined by prevalent innovation policies.

Many policies are translated into rights, such as intellectual property rights (IPRs), national sovereign rights over biological resources, and community and farmers’ rights over genetic resources and associated traditional knowledge. These policies and rights establish the rules concerning incentives that target farming communities and other stakeholders in PGR management. Moreover, they define the room for manoeuvre for farming communities and stakeholders to engage themselves in practices for community biodiversity management (CBM); such practices have an impact on the future of conservation and the sustainable use of PGR, at local and global levels. Figure 6.1.1 illustrates how the diversity of areas of policies and rights as defined by the various functions of seed determine the rules of the game for the conservation and use of plant genetic resources for food and agriculture. The figure guides the structure of this section and the current introductory chapter.

In this chapter, we introduce the areas of policies and rights defined by the various functions of seed, provide some examples for each and emphasize their interactions. Each area is introduced, followed by a description of the relevant policy considerations and their legal implementation. We thereby aim to describe the landscape of policies and rights, creating both opportunities and limitations for the implementation of CBM, with its aim to contribute to PGR conservation and livelihood development.
The section includes chapters on farmers’ rights, access and benefit-sharing (ABS), and seed and variety laws. Andersen (Chapter 6.2) describes how farmers’ rights are structured into four elements within the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA): the protection of traditional knowledge; the fair and equitable sharing of benefits; the right to participate in decision-making; and any rights that farmers have to save, use, exchange and sell farm-saved seed. For each right, the author shares experiences on how farming communities are increasingly being supported in expressing their rights. Bala Ravi (Chapter 6.3) takes a national perspective, explaining how India’s Protection of Plant Varieties and Farmers’ Rights Act creates a balance in the interests of farmers and breeders through nine farmers’ rights. Vernooy and Ruiz (Chapter 6.4) share how multiple forms of benefit-sharing, described through case studies from Honduras, Peru, Cuba,
China, Nepal, Jordan and Syria, provide the grassroots’ basis for establishing ABS mechanisms that increasingly meet the actual needs of communities. Albuquerque et al. (Chapter 6.5) address the implications of the Brazilian Provisional ABS Act on the interaction between traditional people and scientists, and discuss the fact that even though the Act was developed with the aim of protecting biodiversity and associated traditional knowledge, in practice the mechanisms that have been put in place result in the further appropriation of what was previously common heritage.

This section also addresses seed and variety laws and their potential impact on the farmers’ management of local varieties, and in particular on farm-saved seed and informal seed systems. Kastler and Moÿ (Chapter 6.6) describe the evolution of specific regulations within the European Union that aimed to promote on-farm management of plant genetic resources, arguing that the procedures put in place are not practical in terms of farmers’ dynamic management, and that they obstruct potential achievements. Santilli (Chapter 6.7) and Kastler (Chapter 6.8) look at the implications of seed and variety laws in Brazil and France, respectively, on the informal seed system, a system that facilitates the implementation of on-farm management of agrobiodiversity. In both countries, seed and variety laws favour the agro-industrial development model. The authors outline the need to secure a legal space for both farm-saved seed and informal seed systems, for the sake of on-farm management of agrobiodiversity and for guaranteeing the livelihoods of small-scale farmers. This bring us back to the definition of farmers’ rights as expressed in ITPGRFA; the question remains as to how to find the right balance between recognizing the role of farmers in conservation and in maintaining autonomy in their livelihoods, and supporting the application of intellectual property rights required to promote innovation by plant breeders.

Seeds of food: the right to quality seed

Seed is a crucial input in any form of crop production and is one of the most precious resources in farming. The genetic make-up of the seed determines crop and varietal identity, and potential yield and yield stability, as well as product qualities that may be linked to socio-cultural preferences. The germination percentage and seedling vigour determine the primary plant population in the field, while the seed health status can be a key element in determining the development and severity of a disease epidemic. The choice and handling of the seed thus determine, to a significant extent, the chances of success for the crop. In this context, the two key issues concerning seed for every farmer are accessibility and quality.

Seed has to be accessible for every crop production cycle; it has to be available at the right time, in the right quantities, with the right qualities and at the right price, to allow farmers to access the seed that they need (Louwaars and De Boef, 2012). Seed is both a reproductive unit and product for consumption, in the case of most cereals, pulses and oil crops, and, in principle, it should be readily available. Seed can also be a by-product with little value other than its use as seed or planting material. This is the case in crops like cassava, sweet potato, jute, cotton and tomato. This by-product is either readily available (e.g. cassava, cotton) or seed production needs to be a separate operation (as for many vegetables).
Even where the food grain can be used as seed, availability can be a problem. Poverty may result in individual seed security challenges (Lipper et al., 2010), and ecological or man-made disasters regularly create large-scale seed shortages for such crops (Sperling et al., 2008). Even when seed is available, the price may reduce poor farmers’ access to quality seed. Communities that regularly face such conditions commonly develop strategies to cope with them, such as the long-term storage of carry-over seed, and the use of complex, informal bartering and marketing systems (Abay et al., 2008; Sperling and McGuire, 2010).

Seed policies

Seed policies have been framed in many countries to regulate the production and distribution of quality seed; they focus on supporting and controlling the formal seed systems and, more specifically, on promoting private sector seed production and marketing. In order to protect farmers from buying sub-standard seed and to create a level playing field for seed producers, countries want to control seed quality. More recently, the approach of integrated seed sector development (Louwaars and De Boef, 2012) has taken root as a framework for guiding seed policy development (African Union, 2011; Louwaars et al., 2013). This is in contrast with the linear approach to seed sector development, which assumed that within the dominant agricultural development paradigm, all seed used by farmers would be produced and marketed through commercial (formal) systems (Douglas, 1980). The integrated approach fosters a pluralistic model, which matches and responds to a diversity of situations that vary for crops and which target farmers. Such an approach includes supporting international and national seed companies, but also local seed businesses or organized groups of small-scale seed producers. At the same time, it supports the availability of quality seed in several seed systems, as well as the wider use of genetic diversity. Moreover, integrated seed sector development acknowledges the vital functions played in agriculture by informal seed systems, including farm-saved seed. In order to take a pluralistic approach for supporting such diversified seed systems and promoting the use of diversity, it is essential that the different roles and functions of the government are carefully framed (Louwaars et al., 2013).

Seed laws

The seed laws that are developed on the basis of such seed policies commonly establish a seed quality control framework, a variety release procedure, and a regulatory mechanism for seed marketing. Seed quality control is based on seed testing procedures that have been harmonized through the International Seed Testing Association (ISTA). Seed certification (maintenance of variety identity and purity) uses a generation system, from breeders’ seed to certified seed, with strict rules concerning field/storage inspections and off-type counts.

Various problems have been identified in the scope and operation of seed laws. The scope of the laws often includes not only the formal seed systems but also, depending on the definitions, any seed that is marketed, transferred from farmer to farmer, or in some cases even farm-saved seed. All seed has to be certified and tested, and thus it
has to belong to the officially released varieties. Certification is voluntary in just a few countries, which leaves greater space for informal seed and farm-saved seed systems; a space that is vital for farmers and for on-farm/community management of PGR.

Seed certification procedures commonly do not allow the inclusion of varieties that are not uniform, thus outlawing most local varieties from the market, as for example in the case of local rice varieties in Vietnam, highlighted by Thomas and Anh (Chapter 4.5), and in the case of local varieties and their use by small-scale farmers in Brazil, described by Santilli (Chapter 6.7). This exclusion also applies to varieties produced through various methods of participatory crop improvement (PCI), which may not meet standards of uniformity, as further explained, for example, by Alonzo et al. (Chapter 5.8). Furthermore, certification and seed testing procedures may significantly increase the cost of seed, creating a barrier to local or specific adapted varieties, as illustrated by Kastler and Moÿ (Chapter 4.6), for local wheat varieties in France. If seed quality control operations are funded by local or regional government bodies, it may result in poor implementation of the rules or may even invite corruption. Formal and local systems thus follow distinct logics and dynamics, and they cater to the needs of different agricultural and marketing models (Lipper et al., 2010). This diversity of situations and seed systems has so far largely been underestimated by the predominant linear orientation of seed polices and their implementation mechanisms (Louwaars et al., 2012).

**Seeds of change: technology transfer**

Discussions on agricultural development inevitably lead to the subject of seed (Tripp, 2001). Since seed is the carrier of the genetic make-up of the plant, it is a key tool for technology transfer. Seed and agrobiodiversity are, together with soil and water management, at the centre of the sustainability of traditional farming systems. As recent history has shown, seed of new improved varieties, or even seed of new crops, is capable of changing complete farming systems, or even creating new ones. This can be illustrated by the zero-tillage system that transformed the Brazilian cerrados into an agricultural landscape, facilitated by the introduction of herbicide-tolerant soybean varieties, and by the current rice revolution that is occurring in many African countries, facilitated by the Nerica rice.

The genetic basis of varieties can contribute to increased yield stability, through tolerance to abiotic stress factors or resistance to pests and diseases. It can also result in increased product value, through qualities that are either important for obtaining a good price in the market, such as grain colour of legumes, or that create direct nutritional benefits for home processing or direct consumption. As a result, seed is a key tool for technology transfer and technology-driven agricultural development strategies, and is widely considered a focal point in agricultural progress. It has direct implications on agrobiodiversity, being embedded in diverse agricultural landscapes of different crops and varieties, as well as on the livelihoods of the communities that have created but also depend on them.

The seed policies and laws that facilitate the green revolution mode of agricultural production in many of these countries also constrain the informal (local) seed systems, grossly undermining the role and importance of such systems in local crop production and food security. We will detail this in the following sections.
Crop research and breeding policies

In most countries, the promotion of uniform, so-called ‘modern varieties’ is of key importance in the modernization of the agricultural development paradigm to increase national food security. A large proportion of national and international agricultural research is devoted to plant breeding. Below, we describe three major weaknesses, which result from agricultural research and development policies that guide public breeding programmes.

First, international research that is carried out by the Consultative Group on International Agricultural Research (CGIAR) concentrates on crops of international importance, such as maize, rice and wheat, and, within those crops, targets just a few important traits. This focus on crops and traits gives the highest return on investment. However, national public breeding programmes often follow, or are destined to copy, this focus. Locally important crops are under-researched and locally important breeding goals, such as yield stability under small-scale farming production conditions, and aspects such as cooking quality of legumes for women farmers in areas where firewood is in short supply are given little priority.

Second, targeting various major areas with one single or a limited group of crops and varieties means that selection for specific adaptation is often neglected. Such selection is particularly important for the development of varieties that are adapted to ecologically diverse environments and that respond to the culinary preferences of culturally divergent communities.

Third, public plant breeders commonly focus solely on CGIAR materials, which are the principal source of improved germplasm. Because of standardization requirements for release, these breeders develop varieties that are genetically uniform. The limited source of improved germplasm, coupled with practices of standardization, are a tremendous force that favour uniformity and monocultures of just a few varieties within the dominant agricultural development paradigm. Within a context of resilience, they disregard the importance of local materials and the potentially adaptive properties that this diversity may have. Alternative breeding methods, including various methods related to participatory crop improvement, may bypass such limitations, as addressed by De Boef et al. in Chapter 5.1. Policies which determine that breeders are to be evaluated on their scientific output (articles) and on the number of officially released varieties, instead of on the areas or the number of dissimilar agro-ecologies covered, continue to act as disincentives for breeders to reorient their methods towards creating a diversity of varieties.

Laws for variety registration and release

The policies applied to plant breeding are supported by formal release procedures. These are commonly based on multi-location tests and statistical analysis of the results, and are decided on by a variety release committee. Varieties that are not approved are, in most countries, banned from the market.

Poor representation of stakeholders in the variety release committees, particularly by farmers and the private sector, means little attention is given to traits other than yield and yield components, and commonly leads to the rejection of varieties with specific adaptation or quality aspects. Varieties are tested for release under favourable
(high-input) conditions of experimental stations, which creates a bias towards varieties that may benefit commercial farmers and industrial modes of agricultural production (Tripp and Louwaars, 1998). Statistical analysis of the results of those tests focuses on wide adaptation, not recognizing the value of varieties that perform well in ecological niches (Ceccarelli, 1994). Very few countries have explicit policies on the use of genetically diverse varieties. The European Union passed a directive in 2009 on ‘conservation varieties’, allowing, with strict quantitative restrictions, the marketing of seed of varieties that are naturally adapted to local and regional conditions, and which are threatened by genetic erosion. Brazil’s seed law also creates some legal space for local varieties; however, common standardization requirements and the pull to uniformity, driven by the predominant agricultural development paradigm, create obstacles for its practical implementation, as described by Santilli in Chapter 6.7.

Seeds of sovereignty: biodiversity

Seed carries an important component of agricultural biodiversity: plant genetic resources (PGR), that is, the gene pool of plants of present or future value. Since they are also a component of the total biodiversity, they are thus covered by the environmental policies that emerged in the 1980s following concerns over the loss of habitats and species. These were brought together in 1992 by, among other agreements, the Convention on Biological Diversity (CBD). The CBD targets the conservation of biological diversity, its sustainable use, and the fair and equitable sharing of benefits arising out of such use.

But to whom does crop genetic diversity belong? The International Undertaking on Plant Genetic Resources for Food and Agriculture (IUPGRFA) established that such genetic resources are the heritage of humanity and consequently should be available without restriction (FAO, 1983). The CBD, however, takes a much broader outlook, addressing more than just plants and agriculture and concluding that all biological resources fall under the sovereignty of nations. Consequently, countries have the responsibility to conserve and to promote their sustainable use, and also to make them available after prior informed consent and based on mutually agreed terms. The CBD also recognizes the rights of local and indigenous communities over these resources, but places the responsibility for ensuring such recognition with the countries themselves. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is an international agreement associated with the CBD. It aims to ensure that the benefits arising from the utilization of genetic resources are shared in a fair and equitable way, through appropriate access to genetic resources and the appropriate transfer of relevant technologies, taking into account all rights over those resources and technologies; and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components. This protocol raises the bar in terms of what countries are obliged to do vis-à-vis traditional knowledge.

Since bilateral negotiations that are based on CBD principles are difficult to implement in the field of plants and agriculture, the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) was negotiated and came into force in 2004. The major argument in favour of establishing the ITPGRFA is that the PGR
that are vital to food and agriculture cannot be bound by bilateral agreements. The ITPGRFA includes a multilateral system for facilitated access and benefit-sharing (ABS) for a limited selection of plant genetic resources (i.e. certain crops and resources that are under government control).

**Biodiversity policies**

Biodiversity policies include biodiversity at landscape, ecosystem, species and genetic levels. Ecosystems are important for PGR conservation when they are repositories of crop wild relatives (Hunter and Heywood, 2011). The conservation of these important gene repositories is essential, as every loss of gene is an opportunity lost for the future. The strategic importance of crop wild relatives for present and future agriculture has increased with recent advances in molecular biology, which now facilitates the mobilization of genes across species and generic reproductive barriers.

Conserving agro-ecosystems or domesticated landscapes may be considered part of strategies for on-farm management, as described by Peroni et al. (Chapter 3.1). Conservation of agrobiodiversity targets further development at system, species and genetic levels, through a combination of farmer-led and natural selection procedures. Peroni et al. argue that such conservation strategies, which involve vital interactions between people, plants and their environment, can only be sustained and strengthened by building upon CBM. The diversity generated and maintained through such dynamic and complex patterns is vital for achieving resilience and thereby is likely to prove valuable in an era of climate change (De Boef et al., Chapter 7.3).

Gene banks are important for the *ex situ* conservation of genetic resources, and for making them available through their evaluation, documentation and seed management systems (Engels and Visser, 2003). Genetic diversity does not evolve any further in gene banks, but they play a critical role in conserving PGR that would otherwise be lost. Given their different strengths and limitations, the three conservation strategies that focus on the *in situ* conservation of habitats with crop wild relatives; the continued use and evolution of crops and varieties in agricultural ecosystems (through on-farm management, i.e. CBM); and the conservation of PGR in gene banks (*ex situ* conservation), are complementary strategies that strive towards the one goal of maintaining these resources for future use (Hawkes et al., 2000).

**Biodiversity law**

The CBD stipulates that the Parties to the Convention shall enact national laws in compliance with its principles and articles. Many countries have since established national biodiversity laws that are commonly broad in scope, covering endangered species and protected areas, and which define the national competent authorities that are responsible for handling access and ABS issues. The CBD requires its Parties to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities that are relevant for the conservation and sustainable use of biological diversity, through their national laws. However, there are many differences between countries in this respect. Even though examples of the implementation of benefit-sharing exist, few cases concerning the use of agricultural genetic resources,
where actual benefits have reached communities, have been documented (Visser et al., 2005; Ruiz and Vernooy, 2012).

An increasing number of countries are now implementing the ITPGRFA, and gene banks are making their genetic resources available, by using the standard material transfer agreement, and by including these resources in the multilateral system for facilitated access and benefit-sharing. However, even though countries formally accept the multilateral system, they are slow to implement, or have different perspectives on how to implement, the practice of allowing free access to those resources in their national collections, as outlined in the conditions of the agreement (Frison et al., 2011).

**Seeds of profit: intellectual property**

The value of seed for crop production, as well as the investments needed to breed new varieties and to manage seed through production, quality maintenance and marketing, add to its commercial value. Notwithstanding the strong, public good characteristics of the seed that arise from its self-replicating nature, seed is a high value commodity. Quality seed may be bartered in local exchange systems for food grain at an equally high rate (Lipper et al., 2010). The actual value of seed for some crops in commercial systems can exceed 50 times the cost of production (Almekinders and Louwaars, 1999) and, in commercial farming, vegetable seed may be more expensive than gold per unit weight. Such prices reflect the actual value of quality seed for farmers and also accommodate the economic return for significant investments by shareholders in research and breeding, and in the production of quality seed.

**Intellectual property policies**

Supporting innovation is a key element in agricultural policies. Investments in plant breeding and breeding research are considered important, and protecting intellectual property generated from such research is gaining increasing significance in international and national policies. The World Trade Organization (WTO), under its Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs), requires member countries to enforce a minimal standard in the protection of intellectual property rights (IPRs) related to new plant varieties (WTO, 1994). However, bilateral trade negotiations and free trade agreements often go beyond this minimal standard.

Plant breeders’ rights (PBRs) on varieties, and patent protection on biotechnological inventions, aim to promote the commercialization of newly developed varieties and associated innovated processes. PBRs often go hand in hand with restrictions on farmers concerned with saving, reusing or exchanging and selling their seeds of such protected varieties. Patents are much stronger than PBRs, and offer no room to farmers for saving and reusing seed, and as such the patenting of seed has attracted much discussion and debate (Louwaars et al., 2009).

**Plant breeders’ rights and patent laws**

The concept of plant breeders’ rights was developed in Europe in the mid-twentieth century, following recognition that the patent system was not suitable for protecting
breeders’ work. A major difference between patents and PBRs is that PBRs do not use claims and have different requirements for protection (distinctness, uniformity, stability and novelty instead of inventiveness, industrial use and novelty). The novelty prescribed for PBRs and patents is also defined differently. Unlike patents, PBRs allow some significant exceptions; these are the breeders’ exemption and the farmers’ privilege. The breeders’ exemption permits the protected varieties to be freely used for further breeding and developing new varieties that are also protectable. The farmers’ exemption may allow any of the following: the saving and reuse of seed of protected varieties in the farmers’ own fields, and its informal exchange and sale. The farmers’ exemption, however, varies in countries that are subject to the international conventions to which they are bound, and the national interpretation of such conventions.

Few countries allow the protection of varieties through patents (notably the USA). The emergence of plant biotechnology, and processes and products of molecular research that contribute to plant breeding, has led to an increased demand for patent protection. Several countries allow patents on plants and plant parts, but not varieties (e.g. Europe). Other countries, mainly in Africa, consider the exclusion of plant varieties to mean that protection cannot be granted to plant parts. The exclusive right granted by the patent system is absolute and normally does not allow any scope for farmers’ and breeders’ exemptions (Louwaars et al., 2009).

Seeds of harmony: farmers’ and community rights

Seed is a vital element of farming that is inextricably linked to the culture of the people who developed, selected, maintain and use it. The concept of ‘cosmovision’, developed in Latin America, approaches agriculture holistically and visualizes it as a continuous interaction between the indigenous culture, the environment and technologies (Reijntjes et al., 1992). It sees the role of people as that of protecting the harmonious coexistence of the spiritual and material worlds, including their agricultural methods. Living organisms, such as seeds, play an important role in bridging the spiritual and material worlds (Ishizawa, 2004). Traditional people, or their representatives, consider themselves the source of biodiversity that has developed in association with their cultural diversity (Pilgrim and Pretty, 2010; Maffi and Woodley, 2010). Such a vision on bio-cultural diversity leads to claims that this linkage between spiritual and cultural diversity, and material diversity, needs to be protected from outside pressures and demands. In the field of PGR, this translates into the fact that varieties and seed must be protected from exploitation by others outside the community to which they belong. In addition, all property claims on seed is rejected, because of the belief that spiritual powers give the seed its special character (Haverkort et al., 2002).

Generally speaking, the recognition that farmers have developed and continue to contribute to the genetic resources that they use is the basis of the concept of farmers’ rights, which was first established in 1983 by the IUPGRFA, and later defined in more detail in the ITPGRFA, in 2001.

Farmers’ rights policies

The ITPGRFA recognizes farmers’ rights as the protection of traditional knowledge relevant to PGRFA; the right to equitably participate in the sharing of benefits aris-
ing from the utilization of PGRFA; and the right to participate in decision-making, at national level, on matters relating to the conservation and sustainable use of PGRFA. However, the concluding part of Article 9 of the ITPGRFA, which is devoted to farmers’ rights (FAO, 2001), affirms that ‘nothing in this article shall be interpreted as to limit any rights that farmers have to save, use, exchange and sell farm-saved seed subject to national law and as appropriate.’

Farmers’ rights laws

Several countries have included articles in their national biodiversity laws to safeguard the rights of indigenous and traditional communities, but only a few guarantee to protect their lifestyles and spiritual values. Few countries have explicitly included farmers’ rights in their national laws. An exception is India, which has included the right for farmers to save, use, exchange and sell seed (only on a non-commercial basis), and which has established a national gene fund to promote the on-farm conservation of PGR by farmers and indigenous communities. Bala Ravi (Chapter 6.3) describes the farmers’ rights law in India in more detail. However, as when farmers’ rights are overshadowed by agricultural development and intellectual property, the new seed bill, which is currently pending in India, has provisions which might nullify some of the farmers’ rights provisions, as it requires that all traded varieties be registered and that performance evaluation is one of the requirements for such registration. This is likely to negate the right to exchange and sell seed of farmers’ varieties.

Seeds for community biodiversity management

The recognition that gene banks are just one component of PGR management, and that PGR have a value not only for breeders but also for farmers in increasing the resilience of their farming system, led to the need to acknowledge the importance of on-farm management of PGR and to design practices to strengthen it. Even though on-farm management strategies were originally designed by scientists, as in the case of the practices in Nepal that are described by Subedi et al. (Chapter 1.2), it is now clear that they must be developed as part of the process which is now referred to as community biodiversity management (CBM). In the CBM process, non-governmental organizations and local public development organizations encourage farming communities to assume the conscious responsibility of their agrobiodiversity, as illustrated by Shrestha et al. (Chapter 1.3). CBM, as a common approach for contributing to on-farm management of PGR and livelihood development, forms an umbrella over a wide range of practices. It does not have a proper policy arena of its own, but its practices are highly dependent on the range of policies and legal instruments that affect seed systems.

The wide range of policies that seeds are subject to, and the large number of international and national laws that affect the handling of seed, creates a complex environment that communities, and those parties who assist the communities in managing their biodiversity, should be aware of. On the one hand, communities may have rights over their genetic resources, and a say in negotiating the terms of their use; on the other hand, other entities may also have rights over or may impose restrictions on communities in their use of plants and seed.
A distinction needs to be made between locally developed genetic resources and introduced or commercially improved materials. Local genetic resources, such as local varieties of crops that have been managed by the communities for generations, as well as the crop wild relatives about which communities have knowledge, may fall under the national rules respecting customary rights at community level. Depending on how such rules are framed, these may require communities to establish a way to express their rights over such local genetic resources and to assign or assert their entitlement to negotiate access to these resources. One view is that such rights may also reduce or impede access to local varieties that are held in a particular community, for members of another community in the same country. For example, such restricted access to material may go against public interest, if the material in question is considered important for breeding varieties for the benefit of other farming communities.

Another example can be seen with the legal restrictions that prevent or discourage genetic diversity under cultivation, promoting, instead, genetic uniformity. The restrictions imposed by seed laws on the standard of genetic purity and other aspects of seed quality being commercially transacted, prevent the wider use of local varieties, as well as those commonly grown and disseminated, without circumventing the procedures prescribed by such laws (i.e. non-released varieties and all planting materials that pass through the informal seed system). This situation results in the formal public and/or commercial system, which promotes only the certified seed of a relatively small set of varieties with a narrow genetic base, and which prevents the organized seed production and distribution of many local and diverse varieties by farmers’ groups or cooperatives, through its legal and regulatory framework (Louwaars et al., 2012).

An important CBM practice is the enhancement of local varieties through the various methods of participatory crop improvement (PCI), as described by De Boef et al. in Chapter 5.1. Methods such as grassroots breeding and participatory genetic enhancement may produce varieties that conflict with patent laws if the parent material used is protected. However, this is not the case in current practices. PBRs with breeders’ exemption do not impose such restrictions on PCI methods. However, there are cases where participating farmers or breeders (moreover, the institutions of participating breeders) would like to protect the product of such breeding through PBRs. Several development organizations strongly oppose such protection (Salazar et al., 2007), since a free flow of materials imposes limitations on any form of protection of PCI varieties, as can be seen with the implementation of plant varietal selection that builds strongly on the function of exchange within informal seed systems.

Few systems for PBRs facilitate the protection of non-uniform varieties that are likely to come out of PCI. The formal recognition (registration) of varieties bred though such PCI methods is likely to be faced with a number of problems, including the fact that the variety release system is too expensive for the farmers’ groups promoting such varieties, or that such registration systems recommend registration only for those varieties that do well throughout the country, or in all test regions. In other words, a registration system that approves only those varieties that show good average performance across many locations and agro-climatic regions, but which does not approve those that are better performing in specific locations, does not encourage local or diverse PCI varieties; it creates constraints for the use of genetic diversity in
the crop production systems. This is antithetical to the CBM approach and to the principles of the ITPGRFA, which both support the sustainable use of plant genetic resources.

Where new and protected varieties form part of the local gene pool, their PBRs may be restricting their use at the local level. This may not become a serious problem in countries where public research generates and provides new varieties without the PBR tag. However, when public institutions start claiming PBRs on their varieties, the space for farmers to apply their rights becomes severely restricted. This becomes serious, particularly if the country adheres to the International Convention for the Protection of New Varieties of Plants, where the farmers’ privilege does not include the right to exchange seed among farmers (UPOV, 1991). However, India, through its Plant Variety Protection and Farmers’ Rights Act, aims to create the appropriate balance between the multiple interests that define this arena, and to develop a framework that is conducive for several elements of farmers’ rights and CBM (described in detail by Bala Ravi in Chapter 6.3).

With all these conflicting interests in the PGR arena, the silver lining is that many national laws are not implemented at all levels. For example, many seed laws, while their definitions may include any seed that is sold or bartered, only affect the public and private entities that specialize in seed production and marketing, and do not affect those farmers and their organizations that sell seed among themselves. However, CBM strategies that intend to facilitate the improvement of seed quality at local level may run into problems with the rule of law at some stage of the attempt to professionalize and institutionalize their operations in the informal system.

As illustrated earlier in Figure 6.1.1, a wide range of international and national policies deal with the handling of seed, in relation to the various functions of seed in society. CBM processes and their accompanying practices may be affected by national laws for implementing policies that are developed in response to national needs, or by requirements of international agreements that are strongly embedded in the normal agricultural development paradigm, to which CBM itself is a response and creates new pathways. Since these laws sometimes seem to contradict each other, the rights of the communities and their obligations may not always be clear, thereby transforming these genetic resource policies and rights into seeds of confusion (Louwaars, 2007).