

# **A summary of the impact of national seed legislation on the functioning of small-scale farmers' seed systems in Peru, Vietnam and Zimbabwe**

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## **Executive summary**

Seed systems in many developing countries are predominantly farmer-based. The balance between formal and farmers' seed systems varies, not only between and within countries and regions, but also between crops and farming systems within a country. The quality and the identity (variety) of seed in the market cannot be reliably assessed by farmers at the time of purchase. Seed laws are thus primarily meant to protect the farmer. Current seed policy in the partner countries is aimed at distribution and promotion of the use of formal sector seed varieties, with no or limited reference to the role of farmers' sector seed supply.

National seed laws as well as legislation on plant variety protection may impact in various ways on farmers' seed systems. Plant breeder's rights laws may set limitations to the use of seeds of protected varieties to various extents. National seed laws may interfere with activities in the small-scale sector at several points. These may limit all the selling of seeds to registered seed sellers. In addition, these may only allow selling of certified seeds<sup>2</sup> of registered varieties<sup>3</sup>, either for all crops or for a limited set of crops. Small-scale farmers may have difficulties with fulfilling the requirements for registration and certification of seed lots.

Therefore, national seed laws are important for the functioning of and support to farmers' seeds systems. This study is conducted under the IFAD- Oxfam Novib programme: "Putting Lessons into Practice: Scaling Up Peoples Biodiversity Management for Food Security". The objective of this study is to assess and recommend improvements of the national seed laws in the countries covered by the programme so that the programme support to farmers' seed systems can be sustained and scaled up. The three programme countries are Vietnam, Peru and Zimbabwe and projects in these countries are implemented by the respective partners: The Southeast Asian Regional Initiatives for Community Empowerment (SEARICE), *Assocasion ANDES* and the Community Technology Development Trust (CTDT).

The seed laws in the three countries that were studied provide for exemptions for traditional small-scale farmer activities, including the sales of (any) seeds, but also require that certain quality conditions are met. However, they do not create specific conditions to support farmer seed enterprise, for which both registration of (seed lots of) varieties and registration of the seller (legal or natural person) generally appear to be required. If such seed is sold in local markets only, meeting certification standards may be facilitated in some countries (e.g. Zimbabwe) but not in others (e.g. Vietnam). Furthermore, local authorities in Vietnam also accept the sales of non-registered farmers' seed at the local and sub-regional level (Vietnam). Taking into account these limited exemptions, overall such policies limit farmers' options to market their seed outside the local community, and in particular to market the seed of farmers' varieties that are only maintained in small-scale systems.

This programme has not only shown once more that farmers can be breeders, but also that farmers can be efficient and professional seed producers, thereby providing a major share of the seed needed as input for the functioning of farmers' seed systems. The project has provided new insights into how seed production of farmers' varieties and other varieties can be effectively organised at the local level. This programme has also linked the local farmers' agenda to the national and global policy agenda, providing evidence for the need to change policy rooted in community experiences.

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<sup>2</sup> Certified seeds have been tested for identity, absence of pathogens and germination vigour.

<sup>3</sup> Registered varieties have been tested for their properties and their adaptation to growing conditions

## Background

Seed systems in many developing countries are predominantly farmer-based. Sustained involvement of farmers in producing and distributing seeds is a condition for the supply of diverse and well-adapted seed, both from farmers' sources and formal sector sources, and a condition for meeting the goals of national food and seed security. Locally available crop diversity offers coping strategies in small-scale production systems in the framework of climate change. It is a major challenge to mobilize the knowledge on this diversity, to facilitate the development of new diversity, and to allow for horizontal transfer of materials and associated knowledge between communities and farming systems. These observations call for policies supporting the functioning of farmers' seed systems.

Seed from formal sources may offer new important traits relating to yield and resistances or higher quality than is available in regular farmers' varieties offered in local markets. Whereas formal sector seed is often not readily available or accessible to small-scale farmers, nevertheless formal sector seed is gradually and with some delay being absorbed in farmers' seed sector activities.

The balance between formal and farmers' seed systems varies. Differences are not only apparent between and within countries and regions, but also between crops and farming systems within a country. In general, the local market provides for the many open pollinated varieties and vegetatively propagated crops in response to farmer demands. The challenge for policy makers is to create policies and laws that support each of these various seed systems where they are most effective.

Therefore, national seed laws are important for the functioning of and support to farmers' seeds systems. This study is conducted under the IFAD- Oxfam Novib programme: "Putting Lessons into Practice: Scaling Up Peoples Biodiversity Management for Food Security". The objective of this study is to assess and recommend improvements of the national seed laws in the countries covered by the programme so that the programme support to farmers seed systems can be sustained and scaled up. The three programme countries are Vietnam, Peru and Zimbabwe and projects in these countries are implemented by the respective partners: The Southeast Asian Regional Initiatives for Community Empowerment (SEARICE), *Asociación ANDES* and the Community Technology Development Trust (CTDT).

The need for a seed law follows from a fundamental problem: that the quality and the identity (variety) of seed cannot be reliably assessed by farmers at the time of purchase. Seed laws are thus primarily meant to protect the farmer by establishing a legal obligation for the seller to guarantee the quality and identity of seed by means of standardized inspection and testing procedures. Seed laws should also protect the seed developer and producer from unfair competition.

Seed laws commonly provide the procedures and standards for:

- variety release systems which aim to register only varieties of proven value to be made available to farmers through the formal seed system, and which require registration of seed producers;
- seed certification which aims to monitor and guarantee varietal identity and purity throughout the seed chain;
- seed quality control which checks on other seed characteristics such as viability and seed health.

National seed laws as well as legislation on plant variety protection may impact in various ways on farmers' seed systems. Plant breeder's rights laws may set limitations to the use of seeds of protected varieties to various extents. These laws might also provide special provisions for the protection of farmers' varieties. National seed laws may interfere with activities in the small-scale sector at several points. These may limit all selling of seed to registered seed sellers. In addition, these may only allow selling of certified seeds of registered varieties, either for all crops or for a limited set of crops. Requirements for registration and certification of seed lots might be more or less demanding, and it might be difficult for farmers to meet these. The options for small-scale farmers to sell seeds of their own produce appear to vary widely from country to country and from crop to crop.

It is probably fair to say that neither seed laws (dealing with seed identity and quality) nor laws on plant variety protection (governing ownership rights) have been developed and designed to regulate activities in the small-scale farmers' sector, although in fact they do. Rather seed laws have often been promoted to protect farmers buying formal sector seeds and to facilitate the development of a private

seed sector for the purpose of food security and economic development. In reality, commercial interests of rights holders, as well as options to police activities in the small-scale sector will often be limited. Many developing country legislators have relied on existing legislation of developed countries where the farmers' seed sector is of far less importance and has thus been given little attention. This fact may have aggravated the lack of interest for the impact of legislation on the farmers' seed sector of developed country economies.

In an attempt to support the private seed sector and to boost regional economies by providing options to sell seed across borders, regional harmonization of seed laws has been prepared, for example in Africa. Such harmonization should promote the distribution of appropriate and adapted varieties between countries within the region. However, these initiatives have also resulted in proposals for stricter rules, often only allowing varieties meeting the UPOV<sup>4</sup>-based DUS standards (Distinctness, Uniformity and Stability) to be marketed. Implications on the horizontal diffusion of protected varieties in farmers' seed systems might also occur.

It is questioned by various stakeholders whether in practice seed laws are fully effective in reaching their goals. Amongst other factors, this depends on government infrastructure and capacity to carry out regular seed inspections, which in a number of developing countries will not be attainable due to lack of resources, expertise and infrastructure. Our research has clarified if and to which extent these objectives are reached in the programme countries and which infrastructure and capacity has been developed to obtain an effective functioning of the seed legislation. Such analysis has also provided more insight in the impact of seed regulatory frameworks on small-scale agriculture in the programme countries Peru, Vietnam and Zimbabwe.

Current seed policy in the partner countries is aimed at distribution and promotion of the use of formal sector seed varieties, with no or limited reference to the role of farmers' sector seed demand and supply.

In Peru, as appears from interviews conducted for this study, agriculture is characterized by a great divide between the large-scale sector and the small-scale farmers' sector. It appears that INIA<sup>5</sup> experimental stations in Cusco (Andes) and Iquitos (Amazon), where the small-scale sector is dominant, experience severe budget and infrastructure limitations preventing them from responding in a timely manner to demands from small-scale farmers and seed producers. In the 1990s most experimental stations almost collapsed although more recently INIA has sought to revive these stations to serve the public cause once again (Ruiz, 2015). In strict legal terms, production and sale of non-certified seeds is illegal - except under certain circumstances (e.g. in the case of sale of non-certified seed under the seed law and under the sole responsibility of the seed producer). Reality dramatically overrides the rule of law with more than 90% of seed needs provided by farmer sources. In Zimbabwe, a long history of exclusively promoting hybrid maize varieties developed by the formal sector exists, and this is reflected in its national legislation. Most legislation in Zimbabwe was developed in the colonial era and at the time small-scale farmers were not able to influence the contents of laws. Since the adoption of the new Constitution it is a requirement that the government consults all relevant stakeholders before any new legislation is enacted. CTD has been involved in drafting a memorandum of principles for Farmers' Rights legislation in Zimbabwe.

In Vietnam, small-scale farmers have experienced both resistance and support when farmers' seed clubs wished to market the seed of their own, non-registered rice varieties, although sustained support from local and provincial authorities has been obtained.

In the country-specific analysis below, the following requirements and the exemptions for small-scale farmers, as well as the impact of farmers' seed systems will be discussed:

- registration of seed producers
- registration of marketed varieties
- registration for certification of seed lots<sup>6</sup>
- registration for the purpose of plant variety protection.

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<sup>4</sup> UPOV is an international legal instrument, the acronym standing for the International Union for the Protection of New Varieties of Plants.

<sup>5</sup> INIA stands for Instituto Nacional de Innovación Agraria, the national agricultural research system.

<sup>6</sup> Seed lots are individual production units of seeds.

## **Seed law requirements for the registration of seed producers**

If farmers, in the context of a farmer seed enterprise, wish to register as producers, be it for the production and selling of their own varieties or varieties obtained from third parties, national seed laws may require that they demonstrate to be in possession of certain expertise and facilities, which may form a challenge to a various extent for such farmer initiatives.

In Peru, the Seed Law and its regulations require registration of seed researchers, producers, and traders (SD 006-2012-AG). Seed producers can be natural or legal persons, including small-scale farmers, provided they comply with a series of conditions proving involvement of a qualified professional in seed production, identifying the legal status of the land used in production (property or lease), and describing the assets to be used in seed production. So far, small-scale farmers have not been recognized for listing. Unregistered “non-certified seed” (native or local) may be commercialized but under certain minimum conditions. These conditions include that, for example, the seed producer is registered, or that the producer takes full responsibility for seed quality, or that the field is also registered. This implies conditions which for small farmers are still very difficult to comply with (Ruiz, pers. comm.).

In Vietnam, the seed law provides that seed production and seed business for the varieties belonging to major crops will be strictly managed. It also requires that the Ministry of Agriculture and Rural Development will publish the List of major species, and the List of Plant Varieties for production and business, meaning that in order to produce and sell seeds of the selected species, producers need to fulfil specified requirements.

In Zimbabwe, registration of producers is required as well. In the last few years a new small-scale farmers’ seed enterprise had developed from a project basis, ZAKA Super Seeds, involving many small-scale farmer seed producers. ZAKA Super Seeds has been able to meet all the current requirements for registration as a seed producer and its varieties. It had obtained stable varieties from the national Crop Breeding Institute (CBI) to establish its portfolio of varieties.

## **Seed law requirements for the marketing of varieties**

In the context of the IFAD-Oxfam Novib programme, farmers have been trained (1) to select their own stable varieties from segregating populations obtained from formal breeding programmes, (2) to develop varieties from crossings entirely performed on their own, or (3) to enhance and regain the quality of certain preferred traditional varieties (e.g. sticky rice varieties in Northern Vietnam). If farmers wish to register such a variety to sell in the market, they are usually required to provide detailed information on the variety, showing that the variety fulfils the requirement for protection (Distinctness, Uniformity and Stability; DUS) and/or marketing (Value for Cultivation and Use; VCU). Registration may be required for specific varieties of some or all crops. Some seed laws have special and distinct provisions for the registration of farmers’ varieties, taking into account the specific features of farmers’ varieties and small-scale farmers’ capacities, whereas other have not. More details on Peru, Vietnam and Zimbabwe are provided below.

In Peru, over time various projects have been undertaken to enhance the quality of local variety seed available to small-scale farmers. In the respective UN International Years, native cultivars of potato and quinoa have been incorporated in the Register of Commercial Cultivars. In addition, the Seed Regulation includes clauses that should promote the registration of native varieties “that can be exploited economically” by exempting the listing of these varieties in the Register of Commercial Cultivars from trial payments and taxes (ANDES, pers. comm.). Further measures should promote the competitiveness of ancestral varieties by creating appropriate seed categories. In fact, communal seed (*Semilla Común*) is recognised as a specific category in the General Seed Law, albeit for specific species or groups of species (Article 19). Whereas the exchange of such seeds does not need to fulfil certification requirements, minimum levels regarding quality and health are still required. Specific regulations identify the species or group of species in which production and use of the class of common seed is allowed. Finally, one of the implementing resolutions (0533-2008-AG) has introduced the National Register for Native Potatoes, a non-constitutive register not granting specific or exclusive

ownership rights to individual farmers or communities. In its implementing guidelines, INIA specifies that the objectives of the Register are to:

- Register the genetic diversity and variability of Peruvian native potatoes,
- Recognize cultivars of native potatoes as originated in Andean communities and developed and conserved by generations of conservationist farmers,
- Promote inter-institutional collaboration to generate data and information regarding native potatoes,
- Implement an official national data base with passport data, morphologic information, agronomic evaluations, and photographic images of native potatoes,
- Contribute to develop tools to identify developers of these native varieties and prevent biopiracy acts.

Small scale farmers or individuals can request INIA to register their native varieties of potatoes. They must comply with certain conditions, which in practice can be met with the technical assistance of INIA and other institutions (including NGOs).

A potential conflict of interest is formed by the fact that many functions regarding seed management have been delegated by law to the national agricultural research organization INIA. It functions as the seed authority and evaluates varieties submitted for uptake in the Register of Commercial Cultivars, is responsible for seed certification, and produces and sells seed itself (ANDES, *pers. comm.*).

As mentioned above, the Seed Ordinance (2004) of Vietnam makes a distinction between major crops (regulated) and other crops (apparently non-regulated). Article 15 states that the Ministry will compile the List of Major Species as well as the List of Plant Varieties for production and business. Article 4 mentions as an operating principle that the seed production and seed business for the varieties belonging to major crops will be strictly managed. However, the seed law also provides for a small-holder exemption, stating that “households or individuals who produce and trade in major crops and do not belong to a person that has to register for business do not have to obey regulations stipulated, but must ensure the quality of plant variety and environmental sanitation<sup>7</sup> according to the law on plant protection and quarantine, the law on environmental protection and the law on fishery”. So, in practice, farmers can still sell their seeds locally even if not certified, as long as the variety performs well, and the seeds are of good quality, although in general selling uncertified seeds is an illegal act. Lacking a legal basis in national law, such activities are only tolerated by provincial authorities at a rather limited scale and within certain geographic boundaries (Searice, *pers. comm.*). The many farmers’ seed clubs established in the Mekong Delta and responsible for up to 30% of the rice seed supply in Vietnam’s rice bowl (Mekong Delta Development Research Institute, Can Tho University, *pers. comm.*), clearly reach beyond such limited scale. In addition, some farmers active in these seed clubs, have developed new farmers’ varieties adapted to local conditions such as high salinity. The policy issue following from this development has been whether seeds of farmers’ varieties may be allowed in the market, whether these varieties may be registered, and whether seed lots produced by farmers should be inspected and certified.

Indeed, local authorities confirmed that farmers would have to respect these seed law requirement. Currently, farmers in the Northern Vietnam project sites are not yet producing seed for sales outside their community. However, in the Mekong Delta, two farmer varieties have been registered, and seed of a number of public sector varieties was produced by the seed clubs of small-scale farmers . Also, seed of a number of non-registered varieties was produced. Non-registered varieties could only be sold by farmers in their own province, a relaxed policy given that these varieties were best adapted to local conditions (in particular salinity).

Many farmers feel that the compulsory certification scheme incorporated in national measures is not to their advantage. Farmer-breeders cannot afford the costs of certification (which amounts to a minimum of USD 625 per variety) in addition to the costs of multi-location trials, in the context of uncertainty about a return of such investments (Searice, *pers. comm.*). Farmers also complained about the lengthy procedures, resulting only in certification after the end of the lifetime of a new variety.

The Seeds Act of Zimbabwe (Chapter 19:13) does regulate that the obligation to register “shall not apply to the sale of seed which is grown by any farmer and sold by him to a person for use as seed by such person” (i.e. another farmer). Small-scale farmers in the UMP and Tsholotsho districts have

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<sup>7</sup> The term “quality of plant variety and environmental sanitation” is interpreted to refer to identity and phytosanitary condition.

established community seed banks where they save, use, exchange and sell farm-saved seeds (CTDT, *pers. comm.*). This may also act accordingly for farmer seed enterprises. Realization of new farmers' varieties may be within reach, but only as the result of a positive attitude of interpretation of law by the authorities.

### **Seed law requirements for the certification of seed lots**

According to the Seed Ordinance of Vietnam, only registered varieties of major crops can be marketed and all seed lots of registered varieties have to be tested and certified. Asked whether meeting certification standards was a problem, farmers from the seed clubs in the Mekong Delta said they could meet the seed lot certification requirements as a result of the trainings provided by SEARICE and its partner, the Mekong Development Research Institute of Can Tho University.

Also in Zimbabwe, it appeared from various sources that generally farmers active in the IFAD-Oxfam Novib programme have no problem in meeting certification standards and, to the contrary, are confident and proud that they can meet the same standards as the commercial producers. It has been reported in the past that compulsory seed certification may act as a disincentive for local seed companies to invest in low-value non-hybrid seeds. As it appears from the activities of Zaka Super Seeds, a community-owned cooperative in Zaka district, listing 450 members, certification of produced seeds of cowpea, sugar bean, maize, sorghum and rice for sales in the local market has been a prerequisite. Although quality standards applied may have been relaxed, Zaka Super Seeds has been able to meet the requirements. Whereas farmers have shown to be able to meet the requirements, many farmers feel that these requirements are not necessary under certain conditions, since social structures are also able to control the quality of the offered seed.

In Peru, except for industrially produced crops such as cotton and rice, grown in coastal areas, the use of certified seed is marginal (below 10% of all seed sales), an indication of the limited impact of the formal seed system in national agriculture. Under the formal seed framework, all commercial seed needs to be certified by a third party organization duly recognized by INIA. Under this regime, seed production by small-scale farmers will not be covered by this type of certification, for whom however an alternative option for certification is available. This organic production regime has incorporated Participatory Guarantee Systems (PGS) as a form of social control and certification of organic production by small-scale farmers themselves. This form of certification requires that seed is organically produced. In practice, small-scale farmers are adopting this form of certification in various regions (e.g. Huánuco, Cajamarca, Cusco).

### **Plant variety protection and the small-scale farmers' seed system**

The WTO TRIPS<sup>8</sup> Agreement requires that before 2021 all member countries introduce legislation on intellectual property protection in international trade, but also allows member states to introduce special (*sui generis*) legislation for plants and animals other than micro-organisms, or essentially biological processes for the production of plants or animals, other than microbiological processes. A proposal for further extension of the 2021 deadline has been made. Many countries have opted for such a *sui generis* legislation on the protection of plant varieties, and quite a number of these countries have opted for UPOV membership. However, UPOV's lack of flexibility to allow smallholder farmers to use, exchange and sell farm-saved seed of a protected variety has discouraged some developing countries, in particular in Asia, from joining UPOV and implementing UPOV's model for plant variety protection.

In reality, over time UPOV has adopted various acts (1968, 1972, 1978 and 1991), which differ in requirements for variety protection. The 1991 version has the most stringent requirements, and is valid for most current and any new members of the UPOV Convention. In particular, the breeder's exemption and the farmers' privilege have become more limited. The so-called farmers' privilege applies most directly to farmers' practices including in the small-scale sector.

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<sup>8</sup> World Trade Organization- Trade Related Aspects of Intellectual Property Rights.

UPOV states that “the wording of the Convention clarifies that the optional exception (the farmers’ privilege) relates to the use of the product of the harvest by the farmer on his own holding. Thus, for example, the optional exception does not extend to propagating material, which was produced on the holding of another farmer.” UPOV also provides for an interpretation of the phrase acts done privately and for non-commercial purposes (Article 15): “the propagation of a variety by a farmer exclusively for the production of a food crop to be consumed entirely by that farmer and the dependents of the farmer living on that holding, may be considered to fall within the meaning of acts done privately and for non-commercial purposes. Therefore, activities, including for example “subsistence farming”, where these constitute acts done privately and for non-commercial purposes, may be considered to be excluded from the scope of the breeder’s right, and farmers who conduct these kinds of activities freely benefit from the availability of protected new varieties.”<sup>9</sup> UPOV recently seemed to relax its views on the exchange of seeds of protected varieties among farmers slightly through a new and wider interpretation of its exemption on “private and non-commercial use”, as published on its frequently asked questions page of its website. (“Within the scope of the breeder’s right exceptions provided under the UPOV Conventions, UPOV Contracting Parties have the flexibility to consider, where the legitimate interests of the breeders are not significantly affected, in the occasional case of propagating material of protected varieties, allowing subsistence farmers to exchange this against other vital goods within the local community.”) However, it remains to be seen how this flexibility is interpreted in the development and implementation of national laws.

The PVP laws of the countries of this case study contain provisions that are aiming to exempt some activities in farmers’ seed systems from the scope or effects of the legislation, as detailed below. The plant breeder’s rights laws of Peru and Vietnam are relatively strict. Both Peru and Vietnam have ratified UPOV 1991. The Peruvian law does allow the storing of seeds for own use, as well as the selling of such produce as raw material or food, albeit “within reasonable limits and subject to the safeguarding of the legitimate interest of breeder”, a phrase directly taken from UPOV 1991. Small scale farmers in Peru, whether organized as legal persons (associations, cooperatives) or as individuals, can apply for PVP if the variety fulfils regular protection requirements – novelty, uniformity, distinctiveness and stability (Decision 345 and Article 6 of Seed Decree).

Closely following the UPOV provisions, Article 190 of the Law on Intellectual Property of Vietnam (2001) states as limitations on rights of plant variety protection certificate holders that “the following acts shall not be regarded as infringements of rights to protected plant varieties: using plant varieties for personal and non-commercial purposes”, and “using harvested materials of protected plant varieties by individual production households for self-propagation and cultivation in the next season on their own land areas”. Neither this provision nor other in the same law contains further qualifications. Until now, Zimbabwe has not become a member of UPOV 1991. The Plant Breeders Rights Act of Zimbabwe contains in Article 17 as exemptions the right of a small-scale farmer (with less than 10 hectares) to propagate the seed of a protected variety on his own lands, and the rights of a farmer who derives at least 80% of his income from farming on communal land to exchange such seeds with any other such farmers. The intentions of these provisions in the legislation seem to be to exempt the small-scale sector from the effects of plant breeder’s rights legislation, although some ambiguity remains (are small-scale farmers in Zimbabwe allowed to sell seeds of protected varieties?). Recently, members of the African Intellectual Property Rights Office (ARIPO) adopted the so-called Arusha Protocol, which calls on member country governments to become a member of UPOV 1991 by ratification of the Protocol. The provisions of UPOV 1991 are stricter than those of the current national law in Zimbabwe, in particular with regard to the farmers’ privilege. The IFAD-Oxfam Novib programme partners have taken the conclusion that with a view of supporting farmers’ seed systems, national interpretation of this clause in Zimbabwe should be such that sales of seeds by a farmer in his/her own community should be regarded as for “private and non-commercial use”. In this context, it should be noted that it may take several years before the current PVP law will be amended to conform with the UPOV 1991 obligations. Until that time a dual registration will come into place allowing for registration of varieties at the regional level through ARIPO, or at the national level through the Seed Services Department of the Ministry of Agriculture.

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<sup>9</sup> See [http://www.upov.int/edocs/expndocs/en/upov\\_exn\\_exc.pdf](http://www.upov.int/edocs/expndocs/en/upov_exn_exc.pdf) .

## Conclusions

The seed laws studied provide for exemptions for traditional small-scale farmer activities, including the sales of (any) seeds, but also require that certain quality conditions are met. However, they do not create specific conditions supportive of farmer seed enterprise. In the case of farmer seed enterprise, both registration of (seed lots of) varieties and registration of the seller (legal or natural person) generally appear to be required. If such seed is sold in local markets only, meeting certification standards may be facilitated in some countries (e.g. Zimbabwe) but not in others (e.g. Vietnam), although some countries may tacitly accept such practice at the local and sub-regional level (Vietnam). Such policies limit farmers' options to market their seed outside the local community, and in particular to market the seed of farmers' varieties that are only maintained in small-scale systems and that contribute to a wider diversity in farming systems.

Formalities in seed registration and certification often impose excessive transaction costs which small-scale farmer-seed producers cannot regularly meet. As long as farmers' seeds will be considered local and therefore not qualifying for oversight and regulation no problems may occur, but as soon as quantities or marketing areas reach beyond the local these requirements may become real impediments.

More in particular to farmers' roles and options the following observations can be made.

- *Farmers' ability to acquire the seeds of their choice, through trade, barter, or exchange*  
Seed laws in the programme countries may indeed hinder farmers in acquiring seeds to the extent that only registered and/or certified seeds may be offered in the market by registered sellers. In particular, barter and exchange of seeds of varieties protected by plant breeder's rights may be prohibited. Information from the programme partners shows this to be the case for the marketing of farmers' varieties of maize and other cereals in Zimbabwe and of rice in Vietnam.

- *Farmers' ability to save, reuse and exchange farm saved seeds*  
Saving of seeds of varieties protected by plant breeder's rights and re-using these seeds on the same farm is effectively fully exempted from obligations for small-scale farmers in all countries where currently plant variety protection is in place. To which extent exchange (*vis-à-vis* organized marketing; see above) in the community is also exempted varies from country to country, and where the boundaries of the community are located, is unclear.

- *Farmers' ability to breed and/or select (new) farmers' varieties*  
Breeding and selection of farmers' varieties is not regulated, as is apparent from a wide array of community support activities undertaken by project partners. However, formal registration and public marketing of resulting farmers' varieties might appear difficult or even impossible if requirements to be met would be identical to those posed for the formal sector.

- *Farmers' access to breeding material, e.g. from public (national or international) gene banks and research institutes, or from private sources*

Farmers' access to breeding materials other than marketed varieties is often limited, but this is not the result of seed policies and laws. Rather, it depends on factors such as the capacity and policy of public breeding institutions and extension services, and on project partners' networks to access such materials. Partners in Peru, Vietnam and Zimbabwe have shown that cooperation with the public sector in providing breeding materials to farmers can be very effective.

- *Farmers' ability to register (new) farmers' varieties, including cost of registration*  
It appears difficult to register farmers' varieties given legal requirements regarding DUS/VCU testing and seed certification, as well as seed seller registration.

- *Farmers' ability to sell (new) farmers' varieties locally and to commercialize more widely*  
Since registration of farmers' varieties is a prerequisite for wider commercialization, such marketing is difficult to arrange. Only the seed clubs in Vietnam have been able to gain permission of rice seed selling at the provincial level.

- *Farmers' ability to establish farmer seed enterprises*  
The seed laws demand registration of seed producers and sellers and set further requirements, providing a significant hurdle to take for farmer seed clubs as well as for future farmer seed enterprise.

In general, the gap between the DUS/VCU system incorporated in seed laws and small farmers' capacities is still very large. Policy advocacy should be based on this experience.

UPOV generally sets strict limitations on the use by farmers of seed of protected varieties. These rules do not take into account regular farmers' practices in small-scale agriculture and limit the economic

development of small-scale farmers. Furthermore, these rules threaten farmers' contributions to reaching full seed and food security in developing countries, including in Peru, Vietnam and Zimbabwe. UPOV should be challenged to further and more fundamentally revise its provisions in order not to negatively interfere with the essential role of the small-scale sector in providing seed and food security. Discussions may focus, amongst other, on the interface with the International Treaty for Plant Genetic Resources for Food and Agriculture, and its provision that nothing (in the Treaty) should limit the farmers' rights "to save, reproduce, exchange and sell seeds". Such discussions may also take into account the feasibility and desirability of protecting farmers' varieties by plant breeder's rights in the future.

This programme has not only shown once more that farmers can be breeders, but also that farmers can be efficient and professional seed producers, thereby providing a major share of the seed needed as input for the functioning of farmers' seed systems. The programme has provided new insights into how seed production of farmers' varieties and other varieties can be effectively organised at the local level. Furthermore, the programme has shown that farmers take the lead in such initiatives, selecting crops, setting breeding objectives, performing evaluation and selection, and creating new crop diversity in addition to maintaining preferred traditional diversity. Finally, this programme has linked the local farmers' agenda to the national and global policy agenda, providing evidence for the need to change policy rooted in community experiences. It has provided ideas and recommendations for a policy change addressing both seed laws and plant variety protection laws that will further strengthen the role of farmers' seed systems in local and global food supply.