FROM LESSONS TO PRACTICE AND IMPACT: SCALING UP PATHWAYS IN PEOPLES' BIODIVERSITY MANAGEMENT

Briefing note

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COVER PICTURE: Participatory plant breeding exercise, North Vietnam

FROM LESSONS TO PRACTICE AND IMPACT: SCALING UP PATHWAYS IN PEOPLES' BIODIVERSITY MANAGEMENT

The three-year global programme,[1] **'Putting lessons into practice: Scaling up People's Biodiversity Management for Food Security'** (hereafter, *the programme*), funded by the International Fund for Agricultural Development (IFAD) and Oxfam Novib, aims to uphold, strengthen, and mainstream the rights and technical capacities of indigenous peoples and smallholder farmers, so they may influence local to global policies and institutions on the sustainable use of plant genetic resources for food security, under conditions of climate change. *The programme* was implemented by Oxfam Novib (at the global level) and three country partners: ANDES[2] in Peru, SEARICE[3] in Vietnam, and CTDT[4] in Zimbabwe. Results show that the programme has benefitted around 83,700 households; including 15,532 primary target households[5], or 82,400 individuals, of whom 60% were women.

Findings on innovation and learning from the three partner countries have been consolidated into a global framework, and further conceptualised into **six scaling up pathways**[6], to ensure widespread impact—in such a way that social, environmental, or economic conditions can be enhanced beyond the context of *the programme*. The six pathways are presented in this briefing note and each pathway elaborates in detail: innovation and learning acquired during programme implementation (what was scaled up); achievements to date that have inspired the scaling up effort (the rationale for scaling up); concrete action plans that aim to ensure the sustainability and further mainstreaming of innovation and learning.

This briefing note also presents short case studies from Peru, Vietnam, and Zimbabwe, each providing examples of innovation and learning within *the programme*. They provide a model for scaling up and form the basis of the local to global, evidence-based, policy recommendations on Farmers' Rights and the sustainable use of Plant Genetic Resources for Food and Agriculture (PGRFA) of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). *The programme* is being scaled up further to a total of eight countries as part of the global programme, 'Sowing Diversity=Harvesting Security' (SD=HS).[7]

The Briefing Note is **organised as follows**: Introduction. Detailed overview of each of the programme's six scaling up pathways (PGRFA Participatory Toolkit; Farmer Field School (FFS); PGRFA Access; Climate Change Response; Policy Influencing; Gender Inclusion). Lessons learned, including policy recommendations.

NOTE

[1] 2012–2015
[2] Asociación para la Naturaleza y el Desarrollo Sostenible
[3] South East Asia Regional Initiatives for Community Empowerment
[4] Community Technology Development Trust
[5] Primary target households are households located in the geographic areas where most programme activities took place—2,062 in Peru; 6,750 In Vietnam; 6,720 in Zimbabwe—and to which most funding was allocated.
[6] The IFAD scaling up concept has been adopted and defined as expanding, replicating, adapting, and sustaining successful policies, programmes or projects in geographic space, and over time, to reach a greater number of rural poor (Linn 2011).
[7] SD=HS is a five-year (2013–2018) scaling up programme, funded by the Swedish International Development Cooperation Agency (Sida), implemented by Oxfam Novib with eight global partners, in eight countries. SD=HS aims to uphold, strengthen and maintain the rights and technical capacity of indigenous peoples and smallholder farmers, and to influence local to global policies and institutions on the access to and sustainable use of plant genetic resources for food and nutrition security under conditions of climate change.

"CROPS ARE NOT JUST EXPRESSION OF GENES BUT ARE ALSO THE EXPRESSION OF SPIRITS"

(Farmer Field School Lares 2015)

INTRODUCTION

Indigenous peoples and smallholder farmers (IPSHF) are important to global food security. They manage more than 80% of the world's estimated 500 million small farms, and provide more than 80% of the food consumed in a large part of the developing world, contributing significantly to food and nutrition security, and the reduction of poverty (FAO[8] 2014, IFAD 2013). At the same time, they have to address increasing urbanization, globalization, demand for high-value products, pressures on natural resources, and climate change. The latter means they have to face more extreme weather; also that droughts, floods, and storms have a more immediate impact. The more gradual effects of climate change, such as water stress in crops, coastal erosion from rising sea levels, and unpredictable pest infestations are felt too. All of this underlines how important it is for indigenous peoples and smallholder farmers to have the capacity to adapt their farming and seed systems, in order to strengthen their livelihood and food security.

Rather than simply sharing technology, or training farmers to produce seeds for distribution to other farmers, *the programme* and its scaling up strategy is centred around **people's capacities** to organise, learn, and act to continuously innovate and engage in corresponding policy changes (Oxfam Novib 2011). *The programme's* approach is grounded in **experiential learning processes** that encourage farmers and indigenous communities to reflect on their situation and build on their traditional knowledge (e.g., of seed systems, and on their perception of and responses to climate change); also to propose solutions or develop plans to manage plant genetic resources for food security. As a result, by adapting their knowledge to diverse contexts and external challenges, such as

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[8] Food and Agriculture Organization of the United Nations

environmental and market demands, farmers' capacity to develop innovations is strengthened. *Programme* findings confirm that many smallholder farmers and indigenous communities have vast knowledge on previous changes in climate and weather conditions, and that they develop adaptation strategies. At the same time, farmers need further support given the tremendous challenge to adapt to climate change. Farmers apply their traditional knowledge to early warning systems that calculate risks, or detect extreme weather events, droughts, or floods (FAO 2009; Oxfam Novib et al. 2014). The bridge between existing traditional knowledge and weather forecasting and climate data was strengthened through the programme. To achieve this, smallholder farmers, indigenous communities, and scientists all worked together as peers.

The experiences of the local communities that participated in *the programme* have enabled concrete recommendations to be made on local, national, and international policies. Moreover, global and national polices have been validated and/or recommended for reform at local levels. **Exchange, learning, and linking of local to global and global to local** are indispensable processes for each of the impact pathways; they also ensure the sustainability of *the programme's* scaling up strategy.

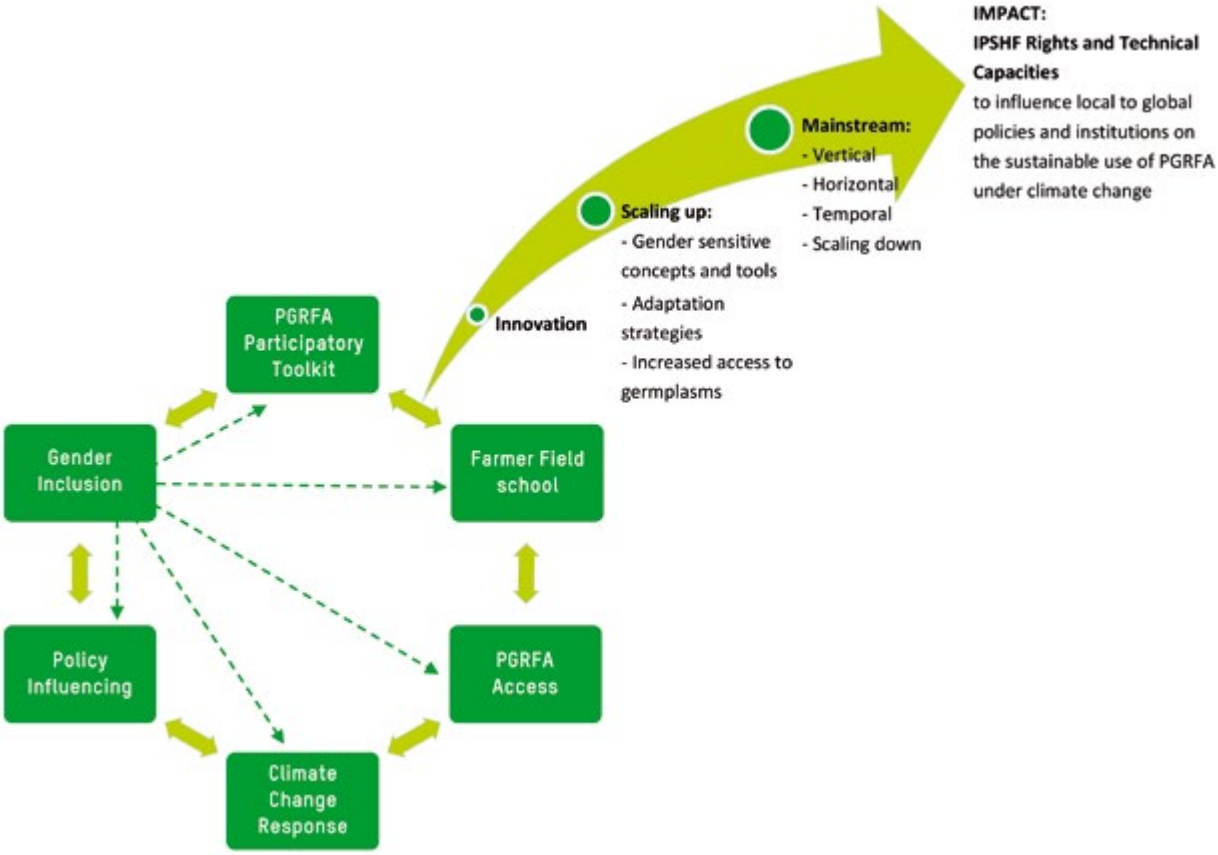

FIGURE 1. THE PROGRAMME'S SIX SCALING UP PATHWAYS

The programme's six scaling up pathways are summarised in Figure 1. Each pathway represents the programme's innovation and all pathways are closely interconnected. Exchange, linking and learning, and refinement of concepts and tools are integrated into all pathways. The six pathways contribute to key areas of achievement that will be scaled up at the end of the three-year implementation period. First, the PGRFA Participatory Toolkit, Farmer Field School (FFS), and Gender Inclusion pathways contribute to *gender-sensitive concepts and tools*; the PGRFA Access, Climate Change Response, and Policy Influencing pathways contribute to *adaptation strategies, improved access to and use of biodiversity for food security, and climate change resilience*. Second, these scaling up pathways are *mainstreamed*

at vertical, horizontal, temporal scales, and are scaled down to the local context. Third, these pathways will ultimately contribute to and scale up people's capacity to organise, learn, and act to continuously innovate and engage in corresponding policy changes. The six scaling up pathways are summarised below.

1. PGRFA PARTICIPATORY TOOLKIT SCALING UP PATHWAY.

The development of an elaborate participatory toolkit is essential for establishing a baseline to guide programme planning. Without a properly established baseline, it will not be possible to measure progress or attribute change to programme interventions.

2. FARMER FIELD SCHOOL SCALING UP PATHWAY.

This pathway focuses on the development of a self-explanatory Farmer Field School curriculum that is user friendly and can be adapted by a wide range of stakeholders within and beyond the scope of *the programme*. Autonomous FFS are central to the sustainability of *the programme* given the limited availability of professional experts and funding. FFS is the entry and exit strategy to move from an anecdotal to a high-impact phase in terms of *programme* results, sustainability, and outreach.

3. PGRFA ACCESS SCALING UP PATHWAY.

Facilitated access to plant genetic resources for food and agriculture is an important Farmers' Right. Often the greatest impediment to well-functioning, farmer-managed seed systems is the lack of access to a portfolio of diverse crops and varieties. Without access to diversity, investments in local plant genetic resources management are meaningless. In cases such as Peru, the access pathway is closely integrated in a framework of multiple land use options and practices, to ensure equitable and sustainable land use in efforts to achieve food security.

4. POLICY INFLUENCING SCALING UP PATHWAY.

Strengthening farmer-managed seed systems requires conducive policies in order to be sustainable. Collective policy analysis and advocacy are needed to promote and mainstream the local and global importance of farmer-managed seed systems.

5. CLIMATE CHANGE RESPONSE SCALING UP PATHWAY.

Today's food production takes place against a backdrop of climate change. The first four pathways cannot be separated from the effects of climate change and the responses of indigenous peoples and smallholder farmers to those effects.

6. GENDER INCLUSION SCALING UP PATHWAY.

Men and women play different roles in food production and seed management. To effectively improve food security, seed security, and farmers' livelihoods, it is imperative to recognise these different roles and discuss optimal, fair, and equitable division of labour, decision making, and access to PGRFA.

Participatory plant breeding, North Vietnam

Hoang Huy / Oxfam Novib

PGRFA PARTICIPATORY TOOLKIT

SCALING UP PATHWAY

INNOVATION AND LEARNING.

In 2012 and 2013 a baseline survey was conducted in the programme countries—Peru, Vietnam, and Zimbabwe—to understand and build upon local peoples' perceptions, knowledge, and needs relating to climate change and to identify and strengthen their coping strategies. A formulated research framework was used to develop a survey questionnaire and a gender-sensitive participatory rural appraisal (PRA). These were applied through a Multiple Evidenced Based (MEB) approach developed by the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES).[9]

A global framework based on the formulated research framework was also developed. This was essential for global comparison and consolidation, and helped structure and guide the analysis of the country findings that were used in combination with statistical data.

The survey findings revealed gaps pertaining to the data on agrobiodiversity and farming systems, and the tools were modified accordingly.

The following improvements have been made to the PGRFA participatory toolkit[10]:

1. Inclusion of a timeline of the agro-ecosystem and socio economic context that provides the basis for changes in crops and changes in the traits that are preferred by farmers; this provides a better understanding of why crops and varieties appear and disappear as it relates to changes in agro-ecosystems and the socio-economic conditions of IPSHF.
2. Better timeline analysis of seed sources and the practice of on-farm seed storage.
3. More support for the development of climate change adaptation strategies, including landscape approaches that take a strong bio-cultural and socio-economic perspective.

BOX 1. SELECTED FINDINGS FROM THE PROGRAMME'S BASELINE SURVEYS

- Farmers are aware that climate change is happening. How they respond depends on the effects of climate change on farming systems and crop performance.
- In times of increasingly irregular weather patterns, weather forecasts may help farmers improve their crop production planning. In addition to local methods steeped in tradition, meteorological weather forecasts have an increasing role to play, although they are not yet reaching all farmers.
- Diversification of crops and varieties constitutes farmers' response to climate change to varying extents. This is an essential climate change risk aversion measure.
- The practice of on-farm seed-saving is extremely important since seeds on the market are often unaffordable and/or not appropriate, and farmers have limited access to them. However, farm-saved seeds may be of poor quality and lack the necessary diversity.
- In particular, the PGRFA participatory toolkit for the baseline survey has been improved in the areas of analysing crop diversity, seed security, climate perceptions, and adaptation strategies.

Source: Oxfam Novib, ANDES, CTDT, SEARICE, CGN-WUR (2013).

NOTE

[9]http://www.ipbes.net

[10]The refined survey tools are: farmers' crop diversity; diversity in crop varieties; farmers' strategies to deal with changes in weather patterns; farmers' seed systems; farmers' diversity management; livelihood strategies; land-use options and practices; farmers' asset base; produce markets; farmers' adaptation strategies for changes in food demand, consumer prices, and availability of seed in the market.

The PGRFA participatory toolkit and the global framework guided the development of community and monitoring plans. Four key indicators (household reach—60% women, seed security, food security, and policy engagement) were monitored to measure *the programme's* progress in terms of impact (Table 1). Results obtained from the monitoring plan were used to prepare the endline results in which *programme* achievements and impacts were measured against initial objectives.

TABLE 1. SELECTED LIST OF KEY INDICATORS FROM THE ENDLINE RESULTS

Key indicators	Peru	Vietnam	Zimbabwe	Total
Number of primary target households	**2,062**	**6,750**	**6,720**[11] *(Initial target was 3,800)*	**15,532**
Number of varieties per household for the most important crop	**30** *(Baseline: 10)*[12]	**4 to 7**[13] *(Baseline: 2 to 3)*[14]	**6 to 7** *(Baseline: 3 to 4)*[15]	n/a
Number of potentially climate resilient seed varieties identified by farmers	**5 native potato varieties,** potentially resistant to frost; **20** varieties potentially resistant to late blight **97 corn varieties** (37 yellow, 60 white), adapted to local conditions	**12 promising lines of rice,** including 3 stable pure lines, selected by farmers in the F8 generation	**8** advanced lines of **sorghum; 6** advanced lines of **pearl millet; 2** varieties of **ground nuts; 2** varieties of **bambara nuts** **2** varieties of **rice**	n/a

BOX 2. BASELINE VS ENDLINE RESULTS: EXAMPLE FROM ZIMBABWE

Baseline findings in Zimbabwe showed that farmers grow, on average, five to six different crops and three to four different varieties of each crop; these are a mix of traditional and modern varieties.

The programme's intervention in the Goromonzi district of Zimbabwe led to an increase in the number of varieties cultivated per household (from three to five); a result of the introduction of new varieties and advanced lines within *the programme*.

Source: Consolidated baseline survey report (Oxfam Novib et al. 2013) and endline results paper, Zimbabwe (CTDT 2015).

WHY SCALE UP?

The PGRFA participatory toolkit provides farmers with insights into their livelihoods, especially concerning past, present, and future changes in their seed and food security, in cropping patterns, and farming practices. The toolkit is a living document and should be adapted continuously as it aims **to help farmers set their community planning**. Identifying the changes in their cropping patterns and farming practices helped farmers better understand their decision to

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[11]Initially the primary target of Zimbabwe was 3,800. So there is an increase of 2,920 households.
[12]Ten varieties of potato
[13]Mainly farmer-selected, rehabilitated traditional varieties & some high yielding varieties
[14]Mostly hybrid rice
[15]Main crops include maize, cowpeas, and groundnuts

exclude some crops and varieties from the farming system. It also helped them gain an understanding of the consequences of those decisions. Furthermore, some crops and varieties may be lost unintentionally due to persistent, inclement weather conditions in subsequent seasons. In the course of *the programme*, indigenous peoples and smallholder farmers have become more self-confident and aware. This knowledge and understanding of their own situation provides evidence of the effectiveness and relevance of the PGRFA participatory toolkit.

ACTION PLAN FOR SUSTAINABLE SCALING UP.

Continuous, discovery based learning and innovation will be promoted further in the programme's target areas in Peru, Vietnam, and Zimbabwe. To enable this, the PGRFA participatory toolkit and—in particular—the participatory rural appraisal tools will continue to be used in the Farmer Field Schools, to help farmers better assess and understand their current situation; this in turn will allow them to adapt and plan accordingly.

The integration of the PGRFA participatory toolkit in the FFS allows more in-depth analysis. The PGRFA participatory toolkit will be made widely available; one option currently being considered is to make it available for free on a website, which will also function as a channel to request feedback and suggestions for further improvement. A second is to design a toolkit 'app' to run on mobile devices, such as smartphones and tablets to reach a larger number of communities. Additionally, the programme's existing collaboration with national research institutions and government agencies will allow the toolkit to be institutionalised as it is adapted, modified, improved, or replicated beyond the programme areas. So far, the improved toolkit has been adopted by the SD=HS programme and applied in South Vietnam, Peru, and Zimbabwe16 ; also in a new country—Laos. Some elements of the PGRFA participatory toolkit (women's PGR management; seeds and nutrition; neglected and underutilised crops) are being further adapted in Myanmar, India, Mali, and Senegal, and are being applied in Peru, Vietnam, and Zimbabwe.

Photo: Jiska van der Heide/Oxfam Novib

Agricultural calendar developed by three communities in the middle zone of Lares, Peru

NOTE

[16]In Peru and Zimbabwe the toolkit has been adopted in villages near to those participating in the programme

Diversity wheel exercise during a seed fair in UMP district, Zimbabwe

Photo: Anita Donat/Oxfam Novib

FARMER FIELD SCHOOL

SCALING UP PATHWAY

INNOVATION AND LEARNING.

A well-designed FFS is an effective instrument for capacity strengthening since it uses experiential learning and participatory approaches, where hands-on management skills and conceptual understanding (based on non-formal, adult education principles of action, observation, analysis, and decision making) are nurtured. On completion of the baseline surveys, **91 season-long FFS** were organised in Peru (7), Vietnam (19), and Zimbabwe (65). A total of 2,614 farmers (1,890 women) participated in the three countries: 100 (60% women) in Peru; 498 (79% women) in Vietnam; and 1,292 (71% women) in Zimbabwe (Table 2). These FFS were conducted with a focus on improving crop production, by addressing the need for crop and variety diversity at the community level. *The programme*'s focus, when developing and/or refining an FFS curriculum and a training of trainers (ToT) session, is extremely important since the FFS should be an environment that enables farmers and indigenous communities to propose solutions to challenges, such as lack of access to appropriate diversity, sub-optimal yields, pest and disease infestation, and climate change. The schools should also help provide an understanding of how to implement those solutions. *The programme* partners agreed on a common framework for evaluating and revising the partners' existing FFS curricula. This framework includes gender analysis, a bio-cultural approach, policy engagement, and specific crop focus. Based on the review of the existing FFS curricula, new versions were developed and tested for rice, maize, and potato. Additionally, a draft toolkit with training materials on establishing bio-cultural sites was developed and tested in Peru, and proposed for adoption by an international network of indigenous peoples from a mountain environment. A review of the FFS curriculum used in Vietnam was also undertaken to evaluate its gender-sensitivity.

TABLE 2. SEASON-LONG FFS IN PERU, VIETNAM, AND ZIMBABWE

Season-long FFS	Peru	Vietnam	Zimbabwe	Total
Number of FFS established	7	19	65	91
Number of farmer participants	164	630	1,820	2,614
Number of women participants	100 (60%)[17]	498 (79%)	1,292 (71%)	1,890 (72%)
Average number of participants per FFS group	23	33	28	28

Two FFS models evolved in the three countries. The first—observed in Peru and Zimbabwe—focused on increased diversity at both crop and variety levels. Using this model, farming systems benefit either from the addition of suitable crops absent from or rare in the system or from having an enhanced number of well adapted varieties of staple crops to choose from. The second model—observed in Vietnam—focuses on an improved set of varieties, often of staple crops, and tends to focus on selection from segregating populations of crosses obtained from breeding *programme*s. In Peru, efforts were concentrated on

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[17]One hundred are permanent members of FFS; eighty are members of an Association of Women of Barter Market Park

[18]Presentation by R. Selvaraju on System of Rice Intensification at the fifth annual investment days in Rome, 2013. http://www.fao.org/fileadmin/templates/tci/pdf/Investment_Days_2013/17_December/1c._System_of_Rice_Intensification__SRI__-_Selvaraju.pdf

the proper management (conservation and use) of potato varieties that are available in the communities, but threatened as a result of climate change. This approach places emphasis on maintaining genetic diversity in the framework of bio-cultural processes that support on going on-farm conservation.
In Vietnam, the FFS paid specific attention to a recent approach in rice cultivation—System of Rice Intensification (SRI).[18] An important *programme* innovation is the FFS approach in SRI that enabled farmers to adapt it to their specific agro-ecologies, in other words, tailor it to their own context. FFS in Zimbabwe responded to climate change by focusing on the (re)-introduction of more diversified crops to the farming system, specifically staples such as cereals, pulses, and root and tuber crops, that traditionally played a role in the farming system. Such an increase in crop diversity in a farming system aims to make the system more resilient to adverse weather conditions.
A second tangible innovation was the improvement of the participatory rural appraisal tools used in the FFS. The 'timeline analysis' tool was improved by adding a new table to describe context over time. Including the context will explain how changes in agro-ecosystems and socio-economic conditions affect crop priority and variety traits. The 'diversity wheel' was also improved—by introducing 'family labour' as a new parameter, in addition to the existing 'land' parameter (Box 2). Training of trainers is equally important, since a successful FFS depends on a well performing facilitator. He/she should have skills in managing participatory, experiential learning, as well as the technical knowledge to guide FFS participants to achieve the FFS objectives. Two season-long training of trainers sessions were organised in Vietnam.

WHY SCALE UP?

In all three programme countries, FFS has been an effective learning forum in which farmers' and indigenous communities' traditional knowledge and science-based knowledge and technology were used to strengthen technical capacities and offer a vital opportunity for interaction and collaboration between local communities and public sector experts—e.g., breeding institutions, gene banks, and universities (Box 3). Training sessions in Zimbabwe provide further examples of FFS effectiveness. 750 farmers have been trained in small grains seed production, and have produced 17 tonnes of pearl millet seed and 7 tonnes of sorghum seed. These have been sold locally.

ACTION PLAN FOR SUSTAINABLE SCALING UP.

As a 'living-document', the FFS curriculum and training of trainer sessions from the three countries provide a sound basis for continued innovation, local adaptation, and uptake of the FFS tools by other communities.
A season-long FFS curriculum is being further modified to offer modules on different approaches to improve food production (selection between and within crops and breeding) and on different crop types,[19] possibly at different levels of integration (from farm to landscape). The FFS curriculum should also be tailored to accommodate the distinct roles of community members.[20] To date, improved curricula have been drafted, tested, and used in ToT sessions in Peru, Vietnam, and Zimbabwe; they will benefit FFS in other communities in India, Laos, Mali, Myanmar, and Senegal—part of the SD=HS programme. Building on a successful model of partnership, the role of research and breeding institutions in FFS, in providing expertise and access to more diverse PGR, should be further strengthened.

NOTE

[19]self-pollinating, open-pollinating, vegetatively propagated
[20]related to gender, age, wealth and expertise

BOX 3. DIVERSITY WHEEL *PLUS*: IMPROVEMENTS TO THE DIVERSITY WHEEL

Farmer Field Schools in Peru, Vietnam, and Zimbabwe use a series of PRA tools. One such tool is the diversity wheel. The idea of the diversity wheel came from the *4-cell analysis* developed initially by the Nepalese NGO, Local Initiatives for Biodiversity, Research, and Development (LI-BIRD) and Bioversity International. The 4-cell analysis aims to assess, in a participatory way, the amount of crop diversity available in a community, and identify varieties at risk of disappearing. In 2011, the tool was developed further into a *5-cell analysis,* known as a diversity wheel. This development took place within the framework of the IFAD-funded grant to Bioversity International; the fifth cell was added to account for varieties that have disappeared from communities. This tool is useful for monitoring the level of genetic erosion of crops, in order to prevent their loss. In *the programme,* the existing diversity wheel was improved in three ways. First, **the diversity wheel has been used separately for crops and varieties to help understand which crops, and corresponding varieties**, are most or least important to the communities. Using the diversity wheel for both is important, since communities can identify the positive and negative traits of specific varieties. These would remain unknown if the diversity wheel were used only for crops. Understanding what farmers consider to be the most important traits is the first key step to defining the breeding objectives. The indicator used to define this importance is land allocation. Second, ***family labour* has been added as a new parameter for the diversity wheel exercise on crops.** This takes into consideration that land and labour, together with genetic resources, are the main assets for most farm households. With family labour as a parameter, farmers can further identify which crops are allocated to which percentage of family labour. Priority allocation of labour to a crop is an indicator of the importance of that crop. For example, in many parts of Vietnam, although vegetables are cultivated in smaller plots than rice (not even 10% of the size of the total rice plots), they are assigned more than 50% of family labour—because they are of higher value and more difficult to grow. Vegetables also provide more income than rice. The third is the **expanded use of the diversity wheel in the FFS context** to help farmers define the most important traits of a variety, which then guides them in the development of their breeding objectives.

Source: Aide-mémoire mid-term evaluation in Zimbabwe (IFAD 2013), Rima Alcadi and Shantanu Mathur 2014[21] and draft FFS-PPB for Rice (Oxfam Novib 2015).

NOTE

[21]http://ifad-un.blogspot.nl/2014/02/zimbabwean-communities-set-diversity.html

Diverse collection of farm-saved seeds displayed in a seed fair, Zimbabwe

Photo: Shepherd Tozvireva / OxfamNovib

PGRFA ACCESS

SCALING UP PATHWAY

INNOVATION AND LEARNING.

Seed security is essential to food security. However, it is not just a matter of increasing volumes, it is also necessary to improve quality (e.g., better germination rates, better seed diversity, and ensuring absence of pests and diseases). The seeds of most cultivated varieties are kept in the community, saved by farmers for the next cropping season, and shared with others as farm-saved seed. The practice of saving seeds on-farm is dying out. Hybrid maize and rice are now most commonly purchased, farmer-to-farmer exchange is declining, and the quality of farm-saved seeds is deteriorating. Traditional varieties become threatened, and often lack of access to preferred diversity is a major shortcoming in the functioning of local farming systems. Organizing and running a Farmer Field School regularly results in identifying crops and traits that are not available, although considered by the community to be potentially useful introductions for them.
Such crops and traits may be accessed from various sources: local and regional markets (for commercial varieties); barter markets (for specific crops and traits); public institutions (for near stable or segregating breeding lines); gene banks (for lost farmers' varieties); and private or state-run seed companies (for modern varieties, adapted to local conditions).

Increased cooperation between local communities and the formal sector in *the programme* is the main example of innovation in this pathway. The FFS was used as a mechanism to facilitate collaboration with the formal sector, and as a result, farmers gained greater access to PGR diversity. Through improved access, farmers were able to extend their crop and variety diversity by (re)-introducing crops and varieties that were (almost) absent in the farming systems; this is demonstrated in the FFS in Peru and Zimbabwe. Improved access also means that better quality PGR diversity is available to farmers. Improved PGR diversity is obtained through farmers' selection of preferred traits (yield, taste, storability, pest and disease resistance, drought tolerance, early maturity) from varieties of staple crops provided by external sources, as illustrated in the FFS in Vietnam. In obtaining preferred varieties, farmers can select from either stable lines or segregating populations, preferably in later generations. The facilitated cooperation with public sector institutions, in particular breeding institutes, provides a major entry point to realise higher yields and novel diversity.

BOX 4. CASE STUDY ON PGR ACCESS SCALING UP PATHWAYS

A major initiative undertaken was the transfer of almost 400 native potato cultivars from one project area in Peru to another (from the Potato Park to the Lares Valley). This took place under an agreement between the Potato Park communal gene bank and the Lares communities, with support from the International Potato Center (CIP) and *the programme* partner, ANDES. CIP also assisted with evaluation trials of potato varieties in the Potato Park. This model is based on an **indigenous landscape approach (Bio-cultural Territory)** that enhances a key objective of on-farm conservation: maintaining crop evolution in farmers' fields, farms, and landscapes. The approach enhances farmers' efforts to adapt landraces to their changing field conditions and socio-cultural preferences.

In Zimbabwe, two sorghum varieties were repatriated from the national gene bank[22] to farmers in the Chiredzi district, and four local sorghum varieties to project communities in the Uzumba-Maramba-Pfungwe (UMP) district. The varieties involved had been inadvertently lost from their farming systems. Twelve sorghum and six pearl millet advanced breeding lines, and additional varieties of other crops, such as maize and cowpeas[23] (both farmers' varieties and formal sector varieties), were introduced in farmers' fields, in collaboration with the Matopos research station. In Vietnam, fifteen varieties were added to the communities' diversity portfolio: eight favourite traditional rice varieties were re-introduced (three adapted to climate change); four formal sector varieties were adapted to local needs; and three farmer-bred varieties (of which two are a cross between a local and an improved variety) were developed.

Source: Endline result report (CTDT 2015), year two annual report IFAD-ONL, Scaling up programme (Oxfam Novib 2014).

BOX 5. CASE STUDY FROM VIETNAM

The dominance of commercial rice production has resulted in much loss of diversity in the rice fields of Vietnam. The rice land estimate in the North is up to 1.8 million hectares[24], of which around 700,000 are planted with hybrids[25] and 1.1. million hectares with inbred varieties. One inbred rice variety—BC15—accounts for up to 60% of the inbred varieties[26]. It is a modern variety with good eating quality, and strong resistance to pest and diseases. However, like any other variety, BC15 will also deteriorate over time, due to introgression, mutations, or decreased resistance to pests and diseases. Eventually rehabilitation or new and more diverse varieties will be needed.

Dependence on a narrow range of varieties, along with increased risk of disease (as the varieties eventually deteriorate), could make rice production very vulnerable. This context was significant in shaping *the programme's* Farmer Field School objectives, and will continue to be relevant for further scaling up.

Despite the dominance of hybrid and modern rice varieties, famers still maintain some traditional varieties for their eating qualities and/or cultural importance. This is especially true for sticky rice varieties, of which there are very few, if any, new introductions from breeding and research organizations. *Nep Lech* is a traditional sticky rice variety that is frequently consumed by farmers on special occasions and is a favourite amongst all the *programme* sites in Vietnam. The diversity wheel exercise in Vietnam revealed that most farmers in Bao Ai commune usually grow Nep Lech on small plots of land to make rice wine and cakes—especially for traditional festivities, including the Tet Holiday. Communities grow Nep Lech for its good eating traits; it is aromatic, tastes good, and is soft and glutinous in texture. Market incentives for higher and more stable yields have led to the loss of many traditional rice varieties and made it difficult for farmers to access those varieties in the local market. Nep Lech has survived because of its niche value, but communities reported that they also needed to improve its quality, increase productivity, enhance its taste and aroma, and make it more resistant to pests and diseases.

Through *the programme's* Farmer Field School, communities in Bao Ai commune, particularly the women, received the necessary support to assess the strengths and weaknesses of Nep Lech, which resulted in the setting of the women's breeding and selection objectives. The process enabled the women to identify their preferred Nep Lech traits. After three seasons of systematic selection, the Bao Ai communities were able to enhance the quality of their Nep Lech variety with a reported 30% increase in productivity and greater pest resistance. This FFS result is a good example of conservation through use where the women conserved their local cultivar by enhancing the cultivar's traits.

Another best practice for scaling up in Vietnam is illustrated by the partnership model between farmers and plant breeding institutions on FFS-Participatory Plant Breeding (PPB). Through this *programme*, the Field Crop Research Institute provided each FFS in Son La with two fourth filial generation (F4). The FFS in Son La successfully applied the bulk selection techniques over three seasons, which resulted in well-performing F8 cultivars—better than the strongest inbred lines that survived the massive drought caused by El Niño at the beginning of 2015.

Source: Back to office report, FFS refresher course in Vietnam (Oxfam Novib 2015).

NOTE

[22]Department of Research and Specialist Services of the Ministry of Agriculture
[23]Nine different varieties for the Chiredzi, UMP, and Tsholotsho districts, respectively and a further eighteen different varieties for the Goromonzi District
[24]Nguyen, N.L. (2013)
[25]Xie, F. (2011)
[26]Discussions with Plant Protection Sub-Department (PPSD) deputy director and PPSD staff in 4 provinces in North Vietnam.

Community-to-community PGR transfer is another interesting option for facilitating PGRFA access. Community seed banks emerged with the aim of making seeds available to the local community from one planting season to the next, through mechanisms that usually require the users to replenish their seed stocks at the end of each cycle (Vernooy et al. 2014). Community seed banks in Peru and Zimbabwe emerged from local needs to access and maintain diverse farmers' seeds within local communities, to provide diversity for crop enhancement, and serve as strategic reserves for farmers during times of disaster. For example, because of the extreme drought in Zimbabwe in 2014 and 2015, farmers in Tsholotsho could rely only on seeds stored in the community seed banks to meet their needs for the following season. Community seed fairs in Vietnam and Zimbabwe and the barter market in Peru are further examples of community PGR exchange within *the programme*. Community seed fairs and barter markets are ideal platforms for farmers in and outside the community to exchange crop products and seeds, along with the corresponding knowledge and experiences on seed management and farming systems. Food fairs already existed in *the programme* areas of Zimbabwe, so seed fairs were introduced to complement them. Combining seed and food fairs is vitally important—to address not only the loss of PGR diversity, but also the loss of traditional knowledge on food preparation and the nutritional value of biodiverse diets. The loss of traditional knowledge on how to produce, process, and cook certain varieties often results in those varieties being neglected or underutilised.

WHY SCALE UP?

The Vietnam case illustrated how access to additional diversity permitted farmers to select a rice cultivar that is well adapted to disaster (e.g., increased salinity). Access to seed diversity (from the gene bank and through community exchange, facilitated by *the programme*) strengthened farmers' capacity to cope with adversity as a consequence of globalization, market forces, and climate change. Farmers in the three programme countries use combinations of early maturing (short duration) crop varieties, drought tolerant and pest resistant seeds, and a combination of diverse crop species—maize, small grain cereals, and legumes— to secure their food and nutrition base (Oxfam Novib et al. 2013). For example, early maturing and drought tolerant varieties are cultivated in a way that allows farmers in Vietnam to harvest right before the crops are exposed to the hot months. To strengthen farmers' capacity to adapt, it is necessary to ensure their seed system has a rich and diverse germplasm base, i.e., a genetically diverse portfolio of crops and varieties, suited to a range of agro-ecosystems and farming practices, and resilient to climate change (Bioversity 2012; FAO 2011). Results from *the programme* confirm the effectiveness of bridging cooperation between farmers and the formal sector, and of strengthening community-to-community exchange and PGR transfer, to help farmers gain access to diverse germplasm bases on-farm. This diversity gives farmers the flexibility to select cultivars with traits that meet their needs (market demand and/or climate induced changes).

ACTION PLAN FOR SUSTAINABLE SCALING UP.

Assessment of a community's access to PGR diversity through the baseline survey, endline survey, and during the preliminary activities of an FFS, proved to be very valuable in providing *the programme* with information on missing diversity. As a result, this assessment was integrated into, and will be further mainstreamed in, the PGRFA participatory toolkit and FFS curriculum. The scaling up pathway on access to PGR is the increased cooperation between local communities and the formal sector. Community-to-community PGR transfers offer another interesting entry point to access additional diversity. It is therefore important to further strengthen and mainstream those mechanisms that allow communities access to additional diversity. In the formal sector, collaborating breeding programmes and gene banks need to develop and promote practices and procedures that facilitate access to their breeding materials. *The programme* could provide further support to gene banks to identify, jointly with farmers, lost farmers' preferred varieties, and regenerate and multiply the seed stocks of such varieties. Traditional

and scientific knowledge can be linked in the form of facilitated and/or directed access to relevant PGRFA, by helping farmers to identify their preferred traits and breeding objectives. Furthermore, considering the existing collaboration with breeding institutions in the three countries, those institutions could facilitate the on-farm testing of new stable lines or still segregating populations, or advise on the use of particular lines as parents, in farmer breeding efforts. Hybridisation at the local level could focus on combining better yields and pest and disease resistance, obtained through formal breeding with traits preferred by local communities, e.g., in relation to taste, processing, and non-food purposes.

In relation to community-to-community PGR transfer, it has been observed that a long-term community conservation strategy is needed to secure lasting availability of less preferred varieties. The role of community seed banks in securing access to a diverse portfolio of crops and varieties should be further explored. As clearly illustrated in Peru, a landscape approach (which puts emphasis on maintaining genetic diversity in the framework of bio-cultural processes that support on-going on-farm conservation) may contribute to such a strategy.

A second example from Peru is the strengthening of barter market practices. The barter market is an autonomous system that has existed for many generations, and is a reliable source of planting materials for native potato varieties. Many more varieties are available at the barter market than at commercial markets (up to 60% of the region's estimated 240 varieties at barter markets and 25% at commercial markets). Women in the Andes, often amongst the weakest sectors of farming communities, are the most active users of barter markets; yet despite the relevance to households' food and nutrition security, their produce are often marginalised. Women's produce, such as blemished and irregular shaped crops, are often rejected by the market, although they are nutritious and important for poor households. The Association of Women of Lares (AMUL) was formed through *the programme*, to address this. One of AMUL's key activities is to organise seed fairs through the barter markets in at least four communities to revive traditional seed-exchange practices. The seed fairs will benefit over 30 participating communities, and the barter market will be a distribution channel through which some of the 225 native potato cultivars, repatriated from the Potato Park, will benefit other communities in the region.

Photo: Jiska van der Heide / Oxfam Novib

Community's weather station in Peru

CLIMATE CHANGE RESPONSE

SCALING UP PATHWAY

INNOVATION AND LEARNING.

Adaptation to climate change is a central theme of *the programme*. Global climate change predictions point to an increasingly drier climate in Zimbabwe, to higher temperatures in the Andes, and to more irregular weather patterns in Vietnam. As reported in Oxfam Novib's 2013 briefing note,[27] the baseline survey concluded that farmers' experiences concur with these global predictions. Farmers confirm that they have been exposed to observable changes (onset/cessation, intensity, and duration of weather events) and have responded by adapting their farming systems and crop performances. They adapt by extending their traditional knowledge of weather predictions, biodiversity management, and cropping calendars. In addition, farmers in Vietnam and Zimbabwe resort to short duration varieties to adapt to climate change impact, especially drought and unpredictable weather patterns. Farmers in Peru have perceived considerably more incidences of extreme weather events and have associated an increase in pest and disease infestations with these events. They responded by adopting traditional potato varieties that were more flood and drought tolerant. A new community seed bank strengthened farmers' capacity to store seeds of local varieties; increases in extreme climatic events are increasing the risk of field losses, reducing the capacity to save and share seed.

Through *the programme*, farmers have taken climate change into account in their decision making. This was facilitated by integrating climate related participatory tools into the baseline survey and follow up Farmer Field School, including, amongst others, timeline analysis, diversity wheel, crop calendar, farmers' perception of climate change, traditional knowledge on weather forecasting, and farmers' PGR related adaptation strategies. The inclusion of climate related tools enabled *exchanges and comparison between farmers' perception of climate change and meteorological data* that would not have taken place otherwise. Another example of innovation in *the programme* related to climate change is the formalised partnership with one of the largest providers of mobile communication services in Zimbabwe, Econet Wireless. This partnership means 450 farmers registered with 'Eco-farmer' (an agricultural information service) receive up-to-date agricultural information, including weather forecasts.

WHY SCALE UP?

Understanding the effect of climate change on communities' seed and farming systems and how it affects their PGR management and agricultural planning, has helped communities to build on their perceptions and traditional knowledge of weather forecasting. In addition, access to meteorological data have strengthened and further developed their **adaptation strategies through improving their crop calendars**. Moreover, based on this understanding, communities could further convey their limited ability to react to climate stresses. The many failed maize crops in the dryer areas of Zimbabwe and the need for communities of the Andes to grow potatoes at higher altitudes, are examples of climate change playing out at the local level. Realistically, however, there is a limit to what communities can do to adapt. Some of the diversity needed under the new weather conditions is simply not available and may not be easily accessible outside the community. Collaboration with the public sector is important, therefore, to provide access to novel crops and varieties that may not be accessible to smallholder farmers.

The importance of climate change in strengthening farmers' seed and farming systems and adaptation strategies becomes the foundation for further scaling up and integrating climate change modules into the PGRFA participatory toolkit and FFS curriculum. Concrete examples can be found in the five provinces in North Vietnam, where climate change features prominently in the communities' breeding objectives.[28] This is evident in the varieties they have decided

NOTE

[27]'Building on farmers' perception and traditional knowledge: Biodiversity management for climate change and adaptation strategies' (Oxfam Novib et al. 2013).
[28]Previously, the focus was on yield.

to select, either for seed production or as parent materials for breeding. The farmers selected varieties with traits reflecting adaptability to a changing climate (i.e., short duration, high tolerance to stresses), in addition to good eating quality.

ACTION PLAN FOR SUSTAINABLE SCALING UP.

In response to climate change adaptation, it is essential to promote enhanced biodiversity management by farmers, in particular the integration of more crops and varieties into the farming systems. How can farmers be supported to stay ahead of the climate change curve? Integration of climate change modules into the PGRFA participatory toolkit and FFS curriculum will help mainstream the awareness of climate change and the options for managing it. Participatory tools, such as season calendars that measure weather patterns and crop performance, may be promoted. Adaptation strategies, including local adaptation plans, may be integrated into the FFS curriculum. Provision of novel crops and varieties (not normally within reach of smallholder farmers) by other stakeholders, may help local communities respond with more success to the effects of climate change. Collaboration between farming communities and meteorological stations, as in the context of *climate farmer schools* in Zimbabwe, may increase the usefulness of weather forecast data.

In Peru, an agreement of collaboration was signed with SENAMHI, to use meteorological data and identify options to use traditional knowledge for the purpose of weather forecasting. Capitalising on this existing partnership, the possibility for SENAMHI[29] to establish weather stations in all *the programme* communities will be explored.

Photo: Bertram Zagema/Oxfam Novib

Women farmers participating in FFS exercise in Vietnam

NOTE

[29]Servicio Nacional de Meteorología e Hidrología del Perú

FFS local technician in Lares (Peru) proudly explaining the nutrition value of community's purple colored potato variety.

Photo: Jiska van der Heide/Oxfam Novib.

POLICY INFLUENCING

SCALING UP PATHWAY

INNOVATION AND LEARNING.

The programme enabled policy engagement in many forums at several levels: local, national, and global. The key innovation is *empowerment*, whereby local communities' awareness of seed policies was increased, and their capacity to engage in and influence local and global food, agriculture, and climate change policies strengthened. A range of seed policies embodied in national laws and regulations, including those coordinated at the international level, influenced smallholder seed systems. Some international agreements, notably the WTO TRIPS[30] agreement and the UPOV[31] system, are reflected in national policies on intellectual property rights that apply to crops. The Convention on Biological Diversity (CBD) and the International Treaty on Plant Genetic Resources for Food and Agriculture developed the concepts of access and benefit-sharing (ABS) and Farmers' Rights. At the national level, patent laws and plant breeders' rights laws offer protection to developers of modern varieties, whereas ABS laws may set requirements on the access to plant diversity originating from that country. However, Farmers' Rights, recognizing the role of smallholder farmers in conserving crop diversity, are only embodied in law in a limited number of countries. At the national level, these international agreements need to be translated into a national context, in a coherent and non-conflicting manner. Seed laws, in particular, tend to interfere with the functioning of smallholder seed systems; they are often introduced with the aim of improving food security by promoting the cultivation of modern high-yielding varieties, developed and marketed by the private sector and—sometimes in the case of certain crops— the public breeding sector. These laws set requirements relating to the properties of new varieties, and to the capacity and facilities of breeders and seed multipliers. Often, these requirements cannot be met by farmers wishing to register their own varieties and market their own seeds. However, successes have been reported in Vietnam, where two farmer-developed varieties were registered after a tedious and costly process. In Vietnam, propagating and purchasing unregistered seeds, or those not included in the list of plant varieties approved for production and trading, is prohibited[32]; violation of this rule has corresponding administrative sanctions and monetary fines.[33] During the latest Farmer Technical and Policy Conference (FTPC) organised by *the programme* in Vietnam, local provincial, government officials cited this prohibition to deter the promotion of farmer developed varieties through *the programme* in the North Vietnam sites. *The programme* raised the communities' awareness of these national and international agreements, enabling them to analyse not only the impacts of the policies on their seed systems, but also how they may be able to influence such policies. Another innovation is increased awareness by those in the development field of the barriers faced by farmers, and their capacity to adapt and propose ways to further strengthen and support farmers' role in PGR management and food security. Partners in the three countries adopt different approaches, tailored to their own context. For example, at local level in Vietnam, *the programme* was successful in building partnerships with local stakeholders. Through the FFS, a policy circular on managing the production of 'Farm Households' Plant Varieties' was developed, to reinforce implementation by the local authorities. This is based on a policy issued by the Ministry of Agriculture and Rural Development. At national level, Zimbabwe is active in national debates on Farmers' Rights, and in Peru, local cases have been presented at the global level, highlighting the challenge faced by farmers to be rightfully and equally supported as breeders.

At the global level, side events were organised during the fifth session of the Governing Body of the ITPGRFA, in 2013 and at the 15th Regular Session of the Commission on Genetic Resources for Food and

NOTE

[30]World Trade Organisation (trade related aspects of intellectual property rights)
[31]International Union for the Protection of new Varieties of Plants
[32]Article 9, Section 2 of the Vietnam Seed Ordinance
[33]As stipulated in Decree 114/2013/ND-CP

Agriculture in 2015, highlighting *the programme* results and the initial findings of its study on seed laws. Following active lobbying by Civil Society Organizations (CSOs), before and during the 15th regular session of the Commission, the Voluntary Guide for National Seed Policy Formulation was approved; it included texts suggested by SD=HS and other CSOs. The approval of the Guide is significant because it recognises and supports the importance of informal seed systems, unlike most seed policies and laws that cater only to the formal sector. Despite the Guide being voluntary, it is hoped that many developing countries will consult it in response to the need to formulate or revise their national seed regimes. CSOs and farmers organizations will also use the Guide as a reference when developing proposals to their governments for a more inclusive seed systems approach, which is vital for the national economy and a country's food and nutrition security.

WHY SCALE UP?

Although the level of policy engagement differed in each country, *the programme* provided concrete evidence to inform global policies on farmers' seed systems by taking initiatives, setting examples, and creating coalitions to promote change, from local, to national, to global levels. This local, to national, to global evidence-based, policy engagement is a model which can be adapted by others. Each country's different approach and emphasis regarding seed policies engagement have contributed to a diverse set of narratives, representing local and national cases that enrich international discourses. In Peru, two municipal ordinances were proposed at community level, dealing with food and seed security and the protection and promotion of barter markets, respectively. In addition, the Lares Policy Platform was established to address policy and issues of power distribution at local level, and to provide a platform for discussions between indigenous farmers, relevant government representatives, and other stakeholders, around national and sectorial policy on climate change. An attempt by the National Institute of Agricultural Innovation (INIA) to establish plant breeders' rights on a number of traditional potato varieties was successfully challenged[34] (Box 5). In Peru and Vietnam, initiatives have been taken to develop bio-cultural protocols that facilitate exchange of local varieties. In Vietnam, two Farmer Technical and Policy Conferences were held to raise awareness on policies; a third will take place soon. Also, FFS advocates are being trained to use a policy module in Farmer Field Schools. Furthermore, a study on the national seed law suggests that a national policy is needed to endorse local certification of locally adapted farmer-bred varieties; this will complement and correct policies focusing on commercial production.

In Zimbabwe, policy reviews were organised with farmers and the farmers union, and collaboration with all national stakeholders was sought to address such issues as Farmers' Rights and seed laws. A new Farmers' Rights Bill was drafted between CTDT staff and officers at the Ministry of Agriculture. Nearly 6,000 farmers were informed about Farmers' Rights and the Right to Food through FFS, seed fairs, food fairs, and farmer field days. In addition, an alliance with the Zimbabwe Farmers Union ensured outreach to more than 10,000 farmers in neighbouring districts. Two on-farm seed production associations drafted their constitutions to recognise and regulate the contribution of farmer associations to national seed production. Furthermore, a national workshop—involving all relevant stakeholder groups—was held, to discuss Promoting seed, food, and nutrition security in Zimbabwe in the context of climate change.

NOTE

[34]http://www.larevistaagraria.org/content/%C2%ABprotecci%C3%B3n%C2%BB-del-inia-sobre-papas-nativas-puede-afectar-peque%C3%Blos-agricultores
http://biocultural.iied.org/patent-claims-native-potatoes-spark-protest-perus-indigenous-farmers

ACTION PLAN FOR SUSTAINABLE SCALING UP.

Awareness-raising and brokering partnerships between the communities and key stakeholders at local, national, and international levels will be scaled up to other countries in the SD=HS programme. The SD=HS programme will permit greater opportunity for exchange, learning, and coalition building with other partners and stakeholders in five other countries[35]. Learning and exchanges between the SD=HS countries will be documented into evidence-based local to global narratives, in order to influence international policy discussions. Knowledge management is essential, particularly to further articulate how existing policies and regulations have a negative effect (whether intentional or not) on the functioning of farmers' seed systems and how to address this through informed decision, at national and international levels. It is also important to continue helping farmers to claim and establish a role in policy making at the national level, and to support them in the formulation of views on addressing PGR and food production policies.

BOX 6. CASE STUDY FROM PERU

In early 2013, Peruvian indigenous farmers were angered when it was revealed that the National Institute of Agricultural Innovation (INIA), a government research agency, had claimed plant breeders' rights to more than fifty traditional varieties of potatoes. The potatoes had not been bred by government researchers, rather by indigenous farmers, who considered the claims to be an affront to their culture, knowledge, and resources. A purple variety, named Leona, was among those claimed; one farmer reacted, saying 'The breeding on that variety was done 500 years ago'! Most of the varieties had actually been provided to INIA by the International Potato Centre (CIP), which had collected them from the farmers' fields. If the aim was to protect the varieties against misappropriation by others (as stated by INIA), why did INIA not simply use the registry of native potatoes, which does not give exclusive rights.

Taking advantage of their presence in Oman for the fifth session of the Governing Body of the ITPGRFA, *the programme* facilitated informal discussions among all concerned parties. At the same time, indigenous peoples and farmers federations from the Cusco region gathered in a workshop convened by ANDES and the Potato Park Association, to analyse and debate INIA's claims on native crop species. A crisis commission, that included members of the various participating communities, was formed and tasked with challenging the INIA claims. In letters to government, in meetings, and during a protest in the city of Cusco, the potato farmers insisted that the claims be dropped. In December 2013, the National Patent Office, INDECOPI,[36] rejected INIA's claims, and the case was officially closed.

Source: ANDES Communiqué: Patent-like claims on native potatoes spark protest by Peru's indigenous farmers (ANDES 2013).

NOTE

[35]India, Laos, Myanmar, Mali, Senegal
[36]the Intellectual Property Rights Office (Instituto Nacional de Defensa de la Competencia y de la Protección de la Propiedad Intelectual)

BOX 7. CASE STUDY FROM ZIMBABWE

In Zimbabwe, CTDT has a prominent role in facilitating dialogue between farmers and governments on seed laws and Farmers' Rights. Gaps between policy and local implementation, especially farmers' participation in decision making processes and awareness raising, remains an issue for many countries—also Zimbabwe. Through years of collaboration and trust building, CTDT has enabled farmers to openly share their experiences and concerns as concrete inputs to national legislation pertaining to the ITPGRFA. CTDT facilitated dialogue and awareness-raising amongst stakeholders that allowed farmers to be well informed on recent developments concerning their seed and farming systems.

As part of *the programme*, a national, high level multi-stakeholder workshop, *Promoting Seed, Food, and Nutrition Security in Zimbabwe in the Context of Climate Change*, was held in March 2015 and raised awareness on seed laws and Farmers' Rights. Concerns were shared about: 1. The recent takeovers of some of the most established southern African seeds companies (PANNAR; MRI; SeedCo) by large, global seed companies. 2. The speed of regional harmonisation of seed and plant variety protection laws that lacked both input from farmers and an adequate understanding by regional policy makers of farmers' seed systems—and how they may be affected by these policies. 3. The possible human rights implications of a UPOV based, plant variety protection regime—particularly on Farmers' Rights to save, use, exchange, and sell their seeds.

The workshop resulted in the formation of a Seed Security Network Dialogue Initiative in Zimbabwe. This network will review the current seed laws and the establishment of a national seed policy, with an integrated seed system approach. The proposed policy will highlight how best to formulate and implement an alternative plant variety protection policy through *sui generis* legislation, in order to incorporate and guarantee Farmers' Rights, as articulated in the International Treaty on Plant Genetic Resources for Food and Agriculture.

Source: Sixth Grant Trimester Report, October 2014 to March 2015 (CTDT 2015).

Photo: Shepherd Tozvireva / Oxfam Novib

Community seed bank in Zimbabwe.

Photo: Shepherd Tozvireva / Oxfam Novib

Rain gauge in Zimbabwe

GENDER INCLUSION

SCALING UP PATHWAY

INNOVATION AND LEARNING.

The programme adopted IFAD's view, that gender equality and women's empowerment are both objectives and instruments of poverty reduction. The feminization of agriculture—the result of urban migration and prevalence of HIV-AIDS in Zimbabwe, for example—means that seed and food security intervention will only succeed with the inclusion and participation of women. Moreover, considering women's role in biodiversity management for food security, both *the programme* and the communities benefited from working with women and their social networks. Addressing gender roles is not only an important component of this scaling up pathway, gender is also addressed in each of the other five pathways.

Three examples of programme innovation in relation to gender can be observed. The first is the inclusion of women's preferences when defining the communities' breeding objectives. At present, except for a few tools (like the gender agricultural calendar[37]), most existing tools (spatial maps and timelines) tend to be gender blind. *The programme* modified the participatory tools used in FFS to make them more gender-sensitive and accommodate women's needs and preferences. Identification of female-headed households, gender balance in focus group discussions, women enumerators, and gender disaggregated data are all important factors in the management applications of the PGRFA participatory toolkit.

The survey confirmed women's roles in the management of biodiversity; at the very least, a role shared equally with men. Women's roles in seeds management include selection, storage, sowing, maintenance, enhancement, and exchange. Additionally, as part of *the programme*'s participatory plant breeding, conducted through the FFS, both men and women made decisions on breeding selection. In many instances, women's capacity to pay meticulous attention to detail seemed indispensable when observing and selecting breeding lines during the major stages of growth; also when performing the precise operations required in cross-breeding, or dealing with very small crop flowers. Women's knowledge of gathering and processing neglected or underutilised species occurring in the wild formed important coping strategies, especially during hunger periods. Therefore, addressing gender roles is important in groups that include both men and women, special focus is also needed on the specific traits and breeding objectives preferred by women. Women's access and benefits from PGRFA are crucial, not only for their empowerment but for food security, at household and community levels. This, in turn, may impact on national and global food security.

The second example of innovation is the inclusion of gender role awareness in the FFS curriculum. This can be improved further to include both gender and social inclusion perspectives. Consciously selecting women participants and running Training of Trainers sessions for women are important to sustain and further scale up gender-sensitive Farmer Field Schools to reach more women. This helped *the programme* break the traditional bias against women's participation in training sessions. Furthermore, the fact that FFS are conducted in situ meant women could not be excluded for reasons such as not being able to reach the training site.

Organising the FFS in such a way that varieties preferred by women are tested on women's land ensures that FFS developed/adapted varieties meet women's needs. While it was difficult to document this systematically, the use of video cameras proved to be very useful. Another lesson is that collecting data from the FFS sites is best done just after sunrise, when insects are easier to observe or gather. However, as this is also the busiest time for women's additional household tasks, household negotiations (a small process, as part of the FFS Guide) to relieve women of

NOTE

[37]The gender agricultural calendar is a tool that captures men's and women's activities in the cropping and non-cropping seasons, to observe the role and position of women in the family and farming practices, in order to improve their positions and develop more sustainable livelihoods for the rural poor.

household chores one morning per week to participate in the FFS session are recommended.

The third example of innovation shows that *the programme* helped empower women by strengthening their technical knowledge and increasing their self-confidence. During the three-year implementation period, good results were obtained in varietal enhancement, for example, by subjecting selected cultivars to strong positive or negative selection pressure. Women were able to systematise the management of their diverse crops by enhancing their productivity through careful selection. This, in turn, resulted in a clear appreciation of how women's work supports household and community food security, leads to increased income, and allows consumption of their most preferred varieties, such as the Nep Lech rice variety in Vietnam.

However, the need for the social inclusion of women is especially difficult to address in the context of marginalised indigenous peoples, particularly in North Vietnam. PGRFA also has a dimension of peoples' culture and identity. The Potato Park[38] in Peru has successfully integrated this notion into the bio-cultural heritage site, and the model is being adopted by *the programme* in Lares.

WHY SCALE UP?

During programme implementation, highlighting women's contribution to successful participatory plant breeding and the challenges they face to be able to participate in early-morning FFS has contributed to **increased awareness by those in the development field** of the significant potential of women's roles, knowledge, and participation in the management of plant genetic resources and food security—and what could be done to strengthen this potential. Since Programme findings show that women's participation is crucial, Farmers' Rights, including the right to participate equitably in benefit-sharing arising from the utilization of PGRFA (ITPGRFA, article 9.2.b) and the right to participate in decision making on the conservation and sustainable use of PGRFA (ITPGRFA, article 9.2.c), should be enforced and consciously extended to women.

ACTION PLAN FOR SUSTAINABLE SCALING UP.

By adapting the PGRFA toolkit to include women's preferences and needs, an effective gender-sensitive FFS curriculum was finalised. This curriculum will be further scaled up in the SD=HS Programme and will benefit women farmers in five other countries. To date, about 2,000 women are already participating actively in Farmer Field Schools that have been organised in Peru, Vietnam and Zimbabwe. The gender-sensitive FFS curriculum will also benefit women in those three countries who live in communities outside the scope of *the Programme*. In Peru, a training module on gender analysis was further developed to highlight women's indigenous knowledge and needs. Training focuses on the importance of the indigenous women's site-specific knowledge and use of biodiversity. In Vietnam, a review of gender-sensitive learning modules for FFS was carried out. These become the basis for further refinement and strengthening of the PGRFA tools of the FFS curriculum. Development interventions in gender empowerment often tend to use the framework of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW),[39] which addresses discrimination against women by gender and class, but not discrimination by ethnicity. For indigenous peoples' issues, the SD=HS programme phase will work towards adding the framework of the International Convention on the Elimination of All Forms of Racial Discrimination (CERD). [40]

NOTE

[38]http://ipcca.info/about-parque-de-la-papa
[39]http://www.ohchr.org/en/hrbodies/cedaw/pages/cedawindex.aspx
[40]http://www.ohchr.org/EN/ProfessionalInterest/Pages/CERD.aspx

LESSONS AND POLICY RECOMMENDATIONS

In line with Article 6 (on the sustainable use of PGFRA) and Article 9 (on Farmers' Rights) of the International Treaty on Plant Genetic Resources for Food and Agriculture, the following policy recommendations are based on *the programme*'s innovations and best practices.

1. The sustainable use of PGRFA requires strengthening the technical capacities and rights of indigenous peoples and smallholder farmers. Access to resources is not only dependent on the availability of materials and corresponding conditions under the Multilateral System, it is also determined by peoples' capacity to exercise their rights. Broadening of the genetic base of crops in farmers' fields requires multi-stakeholder collaboration to take a rights-based approach. It is recommended that the Treaty and all related initiatives on biodiversity management, build this approach into work programmes, and work on capacity building.

2. The right of farmers to participate in decision-making on the improvement and use of PGRFA is very important. Tools (such as PPB and empowerment of farmers in FFS) and policy space (farmers' participation in local, national and global forums) are required to facilitate this; i.e., enable farmers to use their technical expertise and exercise their political rights to use for their own research, breeding, and selling of their seeds. Intellectual Property Rights (IPR) and seed laws that prevent farmers' access and use, violate Farmers' Rights and people's Right to Food. It is recommended to actively guide Contracting Parties in the development and implementation of these rights. This guidance should include the presentation of cases or contexts, in which intellectual property rights limit Farmers' Rights, or act as a barrier to the full use and conservation of PGRFA.

3. The sharing of best practices should focus on scaling up such practices, on designing impact pathways to reach many more farmers—especially women—and on clarifying the roles of the various stakeholders. It is recommended that related development and research programmes be guided by an articulated scale up pathway, and that budgets be allocated to the relevant stakeholders, according to their roles in *the programme*—ensuring benefits are targeted primarily at indigenous peoples and smallholder famers, especially women.

4. Considering the diversity and complexities of farming systems worldwide, and the impact of climate change at the local level, participatory diagnosis—using the PGRFA toolkits, for example—enables farmers, extension agencies, and breeding institutions to jointly understand the changing needs of farmers, as dictated by environmental and socio-economic conditions. It is recommended that the ITPGRFA facilitate dialogues between national and international public sector breeding institutions and smallholder producers, to promote more effective collaboration.

5. Access to additional and novel diversity proved to be a consistent theme among all the communities in *the programme*. Community-to-community exchanges offer one reliable gateway to access; however, with profound changes in climate and market conditions, mechanisms by which communities can access additional diversity need to be expanded, further strengthened, and mainstreamed. In particular, it is recommended that formal sector breeding institutions, and national and CGIAR[41] gene banks, develop policies and promote practices to facilitate access by farmers to the potentially useful PGRFA in their breeding materials and collections. Gene banks can be supported to identify—together with farmers—farmers' preferred varieties that have been lost, and to regenerate and multiply the seed stocks of such varieties.

6. Under the Multilateral System for Access and Benefit-sharing, farmers need access to materials, including local high potential germplasm, for the purpose of further enhancement and use. To facilitate this, research institutions and CSOs have a role to play in ensuring farmers gain access to the materials, and in helping them to develop an informed selection process. Their role is to enable farmers to identify their desired germplasm characteristics and match these with PGRFA that have the potential to provide such traits and user-friendly characterization. It is recommended that the Treaty Secretariat collect lessons in best practices of facilitated access.

7. Climate change is resulting in new biotic and abiotic stresses[42], requiring crop varieties to have traits that can cope with these constraints. In this context, farmers' adaptation strategies have shown they favour the use of short duration varieties, many of which are bred for intensive systems that have replaced local short-duration varieties. Facilitated access by farmers to these short-duration varieties, which are often IPR protected, is essential, to adapt farming systems to new climate conditions. It is recommended that the holders of rights to such varieties publicly declare that they will make these varieties available, at no cost, to indigenous peoples and smallholder farmers, for plant breeding purposes.

8. The FFS is an empowering learning tool, and offers an essential opportunity for interaction and collaboration between local communities and experts from the public sector (e.g., breeding

NOTE

[41]The CGIAR Consortium is an international organization that, together with the CGIAR Fund, advances international agricultural research for a food secure future by integrating and coordinating the efforts of those who fund research and those who do the research (http://www.cgiar.org/cgiar-consortium/)
[42]Biotic stresses are damage to plants from other living organisms such as bacteria and virus. Abiotic stresses include drought, flood and salinity.

institutions, gene banks, and universities), as well as extension services. FFS design provides a channel for organising and strengthening the capacity of a community and its individual (model) farmers, to access and enlarge diversity that caters to the identified needs of that community. Lack of access to diversity may be alleviated by the actions of CSOs and other stakeholders, by introducing additional diversity from external sources, complemented by selection, adaptation and crossing experiments in the community. Above all, it is recommended to strengthen the role of research and breeding institutions and extension services in the FFS, to provide support, expertise, and—especially—PGRFA materials.

9. Women's access to and use of PGRFA tend to be marginalised by the same factors that discriminate women by gender, class, and ethnicity. Since Programme findings demonstrate that women's participation is crucial, Farmers' Rights, including the right to participate equitably in benefit-sharing arising from the use of PGRFA (ITPGRFA, article 9.2.b) and the right to participate in decision making on the conservation and sustainable use of PGRFA (ITPGRFA, article 9.2.c), should be enforced and consciously extended to women. It is recommended that related programmes should incorporate criteria and indicators on the inclusion of women in participatory diagnosis, planning, monitoring, and evaluation, in relation to the conservation and use of PGRFA. Additionally, all impact pathways should strengthen the role of women specifically, as managers of biodiversity.

10. Some local varieties are fetching high market prices, sometimes 50–100% higher than modern cultivars. However, many of these local varieties have been largely replaced or even lost, especially in areas where farmers adopted components of intensive agriculture (e.g., irrigated rice lands). Some of these local varieties may no longer be cultivated, but can be re-introduced, or used as parent materials, upon request by farmers. It is recommended that gene banks and breeding institutions treat farmers' requests for these materials as a matter of priority.

11. Policy development takes place in a local, to national, to international continuum. *The programme* was able to empower local communities to influence policies (local to international) on food, agriculture, and climate change. Successful cases need to be sustained and mainstreamed into policy reforms. To that end, policies should be guided by a comprehensive understanding of local cases from multiple countries and take into account the diverse experiences from each country. A global policy agenda needs to focus on strengthening informal production systems and maintaining crop diversity—in alliance with multiple stakeholders, ranging from local to global institutions. It is recommended that ITPGRFA review the procedures of its Governing Body, particularly in view of the changes that have been adopted by governments and UN agencies through the Committee on World Food Security (CFS), with a view to strengthening the active participation of indigenous peoples and smallholder producers in policy discussions.

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