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Farmers' Rights and Access and Benefit Sharing Mechanisms in Community Seed Banks in Nepal

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Ghanapokhara Community Seed Bank in Lamjung District. Photo: LI-BIRD Photo Bank

Abstract

Farmers' Rights and access and benefit sharing (ABS) are important and interlinked issues in the conservation and sustainable use of agrobiodiversity. This chapter aims to assess the current status and policy gaps of implementing farmers' rights and ABS mechanisms with regard to community seed banks and the conservation and sustainable use of agrobiodiversity in Nepal. It also explores potential options and strategies to promote community seed banks as local legitimate institutions for formalizing ABS mechanisms and realizing farmers' rights. The information for this study is generated and synthesized from a review of relevant policies and programs, key informant interviews and focus group discussions with community seed bank members and stakeholder consultation meetings. Recently, community seed banks (CSBs) are emerging as important community-based institutions for local level access and exchange of genetic resources, strengthening local seed system, realizing farmers' rights and safeguarding agrobiodiversity. They are also gradually emerging as a local grass-roots institution for crop improvement,

variety maintenance and registration of local varieties for increased benefit sharing with farmers and local communities. A well-functioning CSB adopts community biodiversity management (CBM) approaches and tools, such as community biodiversity register, diversity field school, diversity fair, community biodiversity management fund, participatory plant breeding, value addition and marketing to promote local access, exchange, use and conserve crop genetic resources using customary rules and practices. At present, however, there are no formal mechanisms, rules, guidelines and protocols for facilitating access, exchange and use of genetic resources from the CSBs in line with national and international policies and protocols. Considering this situation, we propose a model for developing a community seed bank as a legitimate institution (platform) for prior-informed consent (PIC) and ABS mechanisms and formalizing farmers' rights to genetic resources. This will, however, require creating incentive mechanisms for custodian farmers and communities and bringing support from formal sector agencies through relevant policies, legislation and programs to promote and sustain community seed banks.

Keywords: Access and benefit sharing, community seed banks, farmers' rights, policy

Introduction

Small farmers in developing countries have made unique, evolutionary and historical contributions to the conservation and development of genetic resources for food and agriculture. Over generations, farmers have selected, domesticated and nurtured crop varieties and their wild relatives by retaining seeds, recycling them for the next planting seasons and exchanging them with their neighbours and local communities to meet various household, social, economic and cultural needs (Gauchan 2011). It is estimated that 70-90 percent of the seeds required in developing countries is met through this type of informal seed system (Development Fund 2011), that promotes informal sharing, exchanges with local communities and local markets.

Recently, community seed banks (CSBs) have emerged in developing countries as important informal institutions for meeting local seed requirements, conserving agrobiodiversity and making seeds available of traditional varieties by promoting community exchanges, selection, sharing and improvement. The core functions of community seed banks are to preserve seeds of crop landraces for local use, providing access to quality seed and planting materials of diverse crops species and promote farmers' rights and food sovereignty (Shrestha et al 2013a, Vernooy et al 2014). Community seed banks give priority to the conservation and use through local saving, selection, reintroduction, improvement and facilitating local access and exchanges of local varieties through collective efforts. Such collective practices of selecting, sharing, saving and exchanging seeds are essential for preserving the dynamics of the seed system, conserving agrobiodiversity and facilitating access and availability of agricultural genetic resources to local communities. These vital roles that farmers play in selecting,

continuously improving, conserving and ensuring availability of agricultural genetic resources mean that promoting local level access and benefit sharing and preserving farmers' rights to traditional knowledge is essential (Gauchan 2016). Indeed, farmers' rights are closely linked to access and benefit sharing (ABS) in traditional farming systems, where farmers have control over their seed system through local selection, saving, exchange and improvement of seeds of traditional crops and varieties.

International convention and treaties and national policies are increasingly putting emphasis on developing provisions for ensuring farmers' rights and facilitate formal mechanisms for effective implementation of ABS. However, currently implementation of such provisions at the national level is limited and there are very few practical models for ensuring farmers' rights and facilitating formal mechanism for ABS at local level. In addition, due to the dominance of farmers' seed systems and prevailing informal access and benefit sharing practices, mechanisms to formalize ABS and ensure farmers' rights are not among the priority activities of community seed banks. In this context, there is a need of exploring options about the role of CSBs to facilitate local level formal ABS mechanisms and ensuring farmers' rights. This paper aims to explore this role. It argues that a community seed bank can be such a legitimate local institution in Nepal.

Methodology

The study used a combination of literature review, focus group discussion (FGD) with communities and custodian farmers in the UNEP GEF Local Crop project sites Dolakha, Humla, Jumla, and Lamjung. In addition, key informant interviews and interaction meetings were carried out in the last three years with key stakeholders in the project sites and other places including R&D professionals, private seed entrepreneurs and CSB leaders from Bara, Nawalparasi, Dalchowki. Using specific checklists, the information for this study was generated, compiled and synthesized. The concepts, rationale and feasibility of employing CSB as an institution to formalize ABS and farmers' rights were also discussed and presented in the UNEP GEF virtual workshop from December 15 2016 to January 15, 2017. Useful feedback was received from colleagues. A draft of the chapter was validated at the recently held consultation meeting with stakeholders and the national CSB Network in Kathmandu during the 2nd national CSB workshop 3-5 May, 2018.

Findings

International and National Policies on Farmers' Rights

The concept of farmers' rights was introduced in the Food and Agriculture Organization (FAO) of the United Nations Undertaking on Plant Genetic Resources

in 1979 and, later, in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFRA) in 2001, following a series of debates that started in the FAO about unequal distribution of benefits obtained from the sharing of germplasm (FAO 2001). The concept of farmers' rights, which is included in the ITPGRFA, emphasizes the need for promoting and protecting farmers' rights at both national and international levels. Article 9 of the Treaty recognizes the enormous contribution that farmers and local communities have made to the conservation and development of plant genetic resources for food and agriculture (PGRFA) and identifies measures to protect and promote farmers' rights (FAO 2004). It also recommends national governments to take national measures to realize farmers' rights. The Nagoya Protocol on Access to Genetic Resources and Benefit Sharing, under the Convention of Biological Diversity (CBD), supports and protects farmers' rights by seeking prior and informed consent (PIC) of related communities for obtaining access to genetic resources and traditional knowledge. It makes provisions for equitable sharing of benefits accruing from the use of genetic resources and associated traditional knowledge. The World Trade Organization (WTO)'s Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement has direct relevance to crop improvement, conservation, exchange and ownership (Gauchan et al 2017). The Article 27.3(b) of the TRIPS agreement has a provision for the requirement of Plant Variety Protection (PVP) that can be met either through patents, an effective *sui generis* system or combination thereof.

Globally, the Indian Plant Variety Protection and Farmers' Rights Act (2001) is the first example of a national *sui generis* law that recognizes farmers' rights. The Agrobiodiversity Policy of Nepal (2007) revised in 2014, recognizes farmers' rights to agricultural genetic resources. The Intellectual Property Policy of Nepal (2017), Agricultural Development Strategy (2015), National Biodiversity Strategy and Action Plan (2014) and National Seed Vision (2013) also mention farmers' ownership rights for genetic resources and traditional knowledge. The currently proposed Plant Variety Protection and Farmers' Rights draft Act of Nepal (2008) envisages a set of balanced rights of farmers and plant breeders in line with the provisions of the ITPGRFA and in line with the Indian Plant Variety Protection and Farmers Rights Act, 2001 (Gauchan 2016). Farmers' rights are important components included in the draft Agrobiodiversity Conservation and Utilization Act (2016) which is currently being finalized. The draft Access and Benefit Sharing Act of Nepal (2016), awaiting final approval by the government of Nepal, has provisioned the ownership rights of local and indigenous communities to genetic resources and traditional knowledge in line with the Nagoya Protocol and Convention of Biological Diversity (Gauchan et al 2017).

Some authors have argued that the community seed bank approach is an effective mechanism to realize farmers' rights on seeds, promote food sovereignty and address the issues of climate change adaptation in agriculture (Development Fund 2011, Vernooy et al 2017). Community seed banks function as a mechanism to implement farmers' or indigenous rights by way of recognition of the important roles of farmers as seed custodians, allowing farmers' participation in local benefit sharing and decision making and, to a lesser degree, in the development of a supportive policy and seed regulatory framework (Pistorius 2016). Farmers' rights to genetic resources are one of the fundamental rights to recognize the individual and collective contributions of farming communities. These rights should be complemented by incentives for their efforts in conservation and sustainable development of agriculture (Gauchan 2011, 2016). Another major accomplishment to advance farmers' rights in this way will be the legal recognition of community seed banks. This is still a challenge, including in Nepal.

International and National Policies on Access and Benefit Sharing

The major international policies with specific provisions of access and benefit sharing (ABS) of genetic resources are the Convention on Biological Diversity (CBD) and its Nagoya Protocol and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Concerning genetic resources in general, the Nagoya Protocol (2010) of the CBD provides national ABS mechanisms through prior informed consent (PIC) and mutually agreed terms (MAT). Nepal has not yet ratified the Nagoya Protocol. With respect to plant genetic resources for food and agriculture, the ITPGRFA is the important international policy provision that provides a mechanism for facilitated access of crop genetic resources through the use of the multilateral system of access and benefit sharing. The Plant Treaty provides mechanisms of access and exchange of genetic resources for 64 crops (35 food crops and 29 forages: the so-called Annex-1 materials) (FAO 2004). It makes the point that the creation of the multilateral system will benefit all contracting parties. The Treaty (Article 13) provides for sharing the benefits of using plant genetic resources for food and agriculture through information exchange, access to and transfer of technology, capacity building and the sharing of benefits arising from commercialization (Gauchan and Upadhyay 2006).

Some of the national policies and legislation in Nepal that have a provision of ABS of genetic resources include: Agrobiodiversity Policy 2007 revised in (2014), National Biodiversity Strategy and Action Plan (2014), ITPGRFA Multilateral System (MLS) Implementation Strategy & Action Plan (IMISAP 2017); draft Access and Benefit Sharing (ABS) Act (2016) and draft Agrobiodiversity Conservation and Utilization Act (2016). In a recently developed Terms of Reference (ToR) of the Germplasm Access and Exchange Authority Committee (GAC) of the Ministry of Agriculture and Livestock Development (MoALD) some guidelines are included for formal access and exchange of crop genetic resources as per the provision

of ITPGRFA multilateral system. A similar provision is also included in the draft Agrobiodiversity Conservation and Utilization Act (2016), which is under revision and finalization (MoALD 2018).

Formal Mechanisms of Access and Benefit Sharing

The development and use of formal mechanisms of access and benefit sharing, through a legal contract, are not very common for agricultural genetic resources; though for medicinal herbs some examples exist. One example of an agreement concerning agricultural crops is the ABS agreement between a number of Andean communities growing traditional potato varieties in Peru and the International Potato Centre (CIP) about the repatriation of their traditional potato varieties (Argumedo 2011). In Nepal, a formal access and benefit sharing agreement exists for improved hybrid Srijana tomatoes, signed between NARC (developer) and private seed companies and agro entrepreneurs. In this case, a MoU between NARC Horticulture Research Division (HRD) and seed companies was agreed in November 2010 (NARC 2010) to provide access of superior parental inbred lines to the private sector. In return, the private sector agreed to share some benefits with NARC Horticulture Research Division (developer of the parental lines) through the payment of a royalty of commercial seed sales. According to the agreement, private seed companies and entrepreneurs need to pay 3% of the value of seed sales in dealer price to NARC.

Informal Mechanisms of Access and Benefit Sharing

At present, mechanisms to regulate access and benefit sharing are mostly informal, without any formal legal procedure. Community seed banks largely operate as part of the informal seed system and accordingly have developed mostly informal norms, rules and practices of access and exchange of genetic resources and sharing benefits arising from their use. Traditionally, there has always been free access to genetic resources and traditional knowledge in farmers' seed systems. Some localized/customary benefit sharing mechanisms can be found. Seed producer farmers involved in a CSB generate benefits from seed production and marketing of promising local varieties as well as improved varieties. This is usually done through coordinating the production, exchange and marketing of the seed of locally adapted seed varieties among farmers in the form of Truthful Labeled (TL) seeds. Community seed banks and other forms of seed exchange are effectively putting informal access and benefit-sharing into practice in a way that enhances the resilience and autonomy of food producers and their farming systems while preserving biodiversity (Pistorius 2016). Some of the other important informal mechanisms employed in Nepal for access and benefit sharing are supporting farmers and building their capacity to establish and operate community seed banks through collaboration with the national genebank, farmers' involvement in participatory grassroots breeding, seed selection, multiplication and registration, and value addition and marketing of local crop genetic resources.

Community Seed Banks as Emerging Institutions for ABS

Recently, community seed banks (CSBs) are emerging as collective informal community-based institutions for strengthening local seed system and safeguarding agrobiodiversity. Most of the community seed banks act as an extension of farmers' informal seed systems, in which the various stages of seed management—selection, conservation, exchange and improvement—take place without involvement of or control by research, development or government agencies (Pistorius 2016). According to De Jonge et al (2016), community seed banks can be seen as a collective framework and institutional platform for making decisions about crop cultivation, seed production and conservation of locally adaptive germplasm. As such, they are effective mechanisms to implement farmers' rights as defined by the Plant Treaty. CSBs are also becoming important intermediary institutions at the local level to provide access of genetic resources to farmers and outside agencies as well as obtain genetic resources from outside communities and external agencies (**Figure** 1).

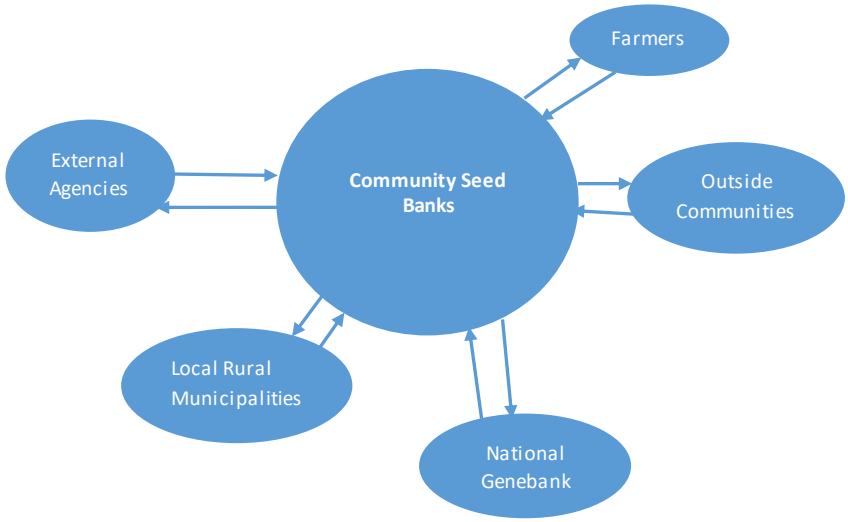

Figure 1. Community seed bank as a local institution for access and benefit sharing.

CSBs not only provide farmers' access to seed diversity, but also the ability to share in the benefits of the continuing cycle of seed conservation and development (De Jonge et al 2016). Previous studies have demonstrated that CSBs are effective for the exchange of traditional knowledge and genetic resources in communities (Shrestha et al 2013b). They have positive effects on increasing access to local seeds; development of new varieties; identification, conservation and promotion of local landraces as well as increased benefit sharing from marketing of local varieties (Paudel et al 2008). CSBs have the potential to expand the use of the multilateral system of exchange of genetic resources nationally and

internationally through linking CSBs with national and international genebanks (Bhatta et al 2013). CSBs that adopt tools and approaches of CBM, such as community biodiversity register, diversity fair, participatory seed exchanges and participatory plant breeding and that use the prior informed consent (PIC) mechanism effectively facilitate the regulated exchange of genetic resources and traditional knowledge.

Community seed banks can play an important role in providing access to seeds during a crisis, such as disasters, droughts, floods or cyclones. During Nepal's devastating 2015 earthquake, some community seed banks in the country (eg CSBs of Tanahun, Dang and Nawalparasi) provided access to locally adapted seeds through a seed relief program to farmers and communities in earthquake affected areas far away from their locations (Shrestha 2018). Recent evidence of the "Seeds for Needs" initiative of Bioversity International from India and Ethiopia indicate that CSBs can play a role in making local seed systems more cost effective and efficient, foster seed exchanges at local and supra-local levels, access novel diversity not conserved locally and access seeds from areas where plants have adapted to extreme weather conditions (Vernooy et al 2017). Therefore, CSBs are emerging as an important platform for accessing and sharing diverse sources of germplasm in a decentralized manner.

Case Study of UNEP GEF Project Managed Community Seed Banks

Community seed banks operating actively in Nepal managed by the UNEP GEF Local Crop Project (LCP) in the mountains of Nepal have implemented various community biodiversity management (CBM) tools and approaches: diversity fair, diversity field school, participatory plant/grass-roots breeding, community biodiversity register and community biodiversity management fund. Farmers and local communities access, exchange and share quality seeds of locally adapted crop varieties through these CBM tools and approaches often at a lower price than prevailing market rates. The project was initiated in 2014 in four remote mountain districts of Humla, Jumla, Lamjung and Dolakha representing western, central and eastern Nepal. The project focuses on eight target underutilized traditional mountain crops: amaranth, barley (both hulled and hull less), beans, buckwheat, foxtail millet, finger millet, proso millet and cold tolerant rice. The project is being implemented by Bioversity International jointly with NARC, LI-BIRD and Department of Agriculture (DoA) with funding support of the Global Environment Facility (GEF) through UN Environment.

The project supports CSBs to carry out seed collection, exchange and display through routine activities. It works with local social networks and organizes specific events, such as diversity fairs and food fairs, diversity field schools, participatory seed exchanges, participatory variety selection and grassroots breeding. It trains farmers to do on-farm characterisation and evaluation, and

crop and seed value chain development. The method used to train local custodian men and women farmers is the diversity field school (DFS), which also include exchange visits and exposure to national decision making and policy fora. These activities are important to realize farmers' rights. The project has also supported the development of farmers' variety catalogues and a varietal registry procedure that facilitate sharing of information and traditional knowledge resulting in better access and benefit sharing from the use of underutilized local farmers' varieties. Another activity has been the use of diversity kits and IRD (Informal Research & Development) kits of target underutilized crops to a large number of farmers beyond the project sites and districts. **Table** 1 presents the status of crop genetic resources that have been conserved and made available and that have produced benefits to farm households and communities in the project districts of Humla, Jumla, Dolakha and Lamjung of the remote mountains.

Table 1. Crop genetic resources conserved, made available and households benefited

SN	Community seed bank	Province	Major crop species	No. of local crops	No. of local varieties	No. of HHs benefited from CSB
1	Jungu, Dolakha	3	rice, beans, finger millet, buckwheat	24	42	2374
2	Ghanpokhara, Lamjung	Gandaki	rice, finger millet, foxtail millet, beans	15	74	1410
3	Chhipra, Humla	Karnali	rice, beans, finger millet, amaranth, proso millet, foxtail millet, buckwheat	29	51	6900
4	Hanku, Jumla	Karnali	rice, beans, finger millet, amaranth, foxtail millet	21	65	9400
Total				35	232	20,084*

***Source**: Bioversity International (2018); *Cumulative estimation 2014-2018.*

In the last three years, the project, through the national genebank and other research centres, has deployed a total of 300 varieties of eight target underutilized mountain crops for on-farm testing in four project sites. 60 varieties of these eight under-utilized crops were made available to about 16,000 households until mid 2018 in remote mountainous project sites of Jumla, Humla, Lamjung and Dolakha (Bioversity International 2018). When major food crop varieties of lower altitude rice, wheat and maize including other non-target crops (eg legumes, oilseeds and vegetables) are considered, the project has provided access to diverse varieties and quality seeds of about 35 food crops covering over 20,000 households. This is resulting in better food security and livelihood of

smallholder farmers in the remote risk prone mountains of Nepal. Participation of local farmers and communities in on-farm germplasm evaluation is increasing their awareness and capacity to identify and recognise specific attributes and suitability of crop varieties. This is a more focussed approach to promote ABS, where the seeds managed and made available to the local communities in the community seed banks are managed through evolutionary adaptation. They are kept under the direct control of the farming community to strengthen their capacity to adapt and mitigate the risks related to climate change and natural disasters.

The CSBs manage a Community biodiversity management (CBM) fund that allow direct benefit sharing by local communities in the form of credit flow to needy, poor and vulnerable communities (poor, women and disadvantaged social groups). Stronger collaboration of the CSBs with the national genebank and NARC research centers such as Hill Crops Research Program (HCRP), Kavre, Dolakha and Agricultural Research Station, Jumla, has provided better access to and choice of germplasm from other parts of Nepal. Farmers are also reaping the benefits of technical information and scientific knowledge provided by these national research organizations. In conclusion, the CSBs managed in remote and risk prone high mountains of Nepal are providing easy and timely access of seed diversity of underutilized traditional crops to smallholder poor farmers in marginal farming systems. They do this in a context where access to seeds and support from formal sector agencies is either very much limited or absent.

Community Seed Banks for Participatory Crop Improvement and Variety Registration

CSBs are also gradually emerging as a local grass-roots institution for crop improvement, variety maintenance and registration of local farmers' varieties for increased benefit sharing with local communities. Their engagement in participatory plant/grassroots breeding and variety selection activities have strengthened access to and availability of improved seeds and increased diversity through collaboration between farmers, plant breeders and seed producers. For instance, the CSBs of Chippra, Humla and CSB Hanku, Jumla are engaged in improvement of local farmers' varieties, such as *Dudhe Chino* variety of proso millet and *Rato kodo* variety of finger millet respectively through grass-roots breeding. CSB Jungu, Dolakha is also engaged in selection and maintenance of seeds of two endangered varieties of bean (*Khairo Ghiu simi* and *Panhelo simi*) and is in the process of registration for marketing in collaboration with formal sector agencies. CSB Bara (Kachorwa) has engaged in development and improvement of Kachora-4 variety of rice through participatory plant breeding and maintaining seed quality, registration and marketing of this variety. Community seed banks practicing participatory plant/grassroots breeding activities build on the existing and mostly informal forms of access and benefit sharing while adding new

elements. They have control over management of seeds and planting materials to realize their rights to seeds.

Gaps in Implementation of ABS and Ensuring Farmers' Rights

Farmers and stakeholders lack awareness and knowledge about ABS issues including ownership rights of farmers and communities to genetic resources. In addition, farmers are not adequately represented in national level fora and decision-making bodies concerning the use and conservation of agricultural genetic resources. Community seed banks as a form of farmer organization, do not have formal legal status as such, hindering their organizational development. The country lacks legal means to protect farmers' rights and traditional knowledge on genetic resources (Gauchan 2008). Legislation on plant variety protection, farmers' rights and access and benefit sharing mechanisms is not formally in place, which hinders facilitated access and exchange of genetic resources and the creation of incentives for farmers, plant breeders and other actors to conserve and sustainable use the diverse agricultural genetic resources of the country (Gauchan et al 2017). The Seed Act 1988 (amended 2008) mentions breeders' rights (specific details are not outlined), but the provision for farmers' rights is not included. The Agriculture Development Strategy (2015) clearly emphasizes the broad rights of farmers related to agriculture, land and support services, but does not elaborate specific rights of farmers and local communities to agricultural genetic resources as per the provisions of the ITPGRFA.

As a party to WTO TRIPS and the CBD, Nepal has drafted a Plant Variety Protection and Farmers' Rights Bill (2005) and an Access and Benefit Sharing Bill (2016). Both have recently been revised, but are still in draft form. They need improvement and approval from government before they can be implemented to support ABS, farmers' rights and conservation of agrobiodiversity. The present draft Access and Benefit Sharing (ABS) legislation (2016), now in the process of final approval, focuses on access and benefit sharing of genetic resources with the provisions of Prior Informed Consent (PIC) and mutually agreed terms (MAT) as per the provision of the CBD and Nagoya Protocol (2010). However, the Bill has limited application to agricultural genetic resources (MoFE 2018). Since crop genetic resources in community seed banks are presently maintained and used through frequent and free exchange and sharing between and among the communities, an access legislation that restricts facilitated and free exchange of seeds among communities, will likely have negative effect on farmers' incentives to manage and promote local seed security and conservation of biodiversity. Other challenges include the current varietal registration and release formats, guidelines and procedures that are not farmer friendly. The varietal development and release/registration processes are dominated by the formal system providing no alternative, incentives and flexibility for farmers wishing to assess different cultivars, obtain access to seeds, increase the genetic diversity of their crops or add value to them (Gauchan et al 2005).

Community Seed Banks as Legitimate Institutions for Farmers' Rights and ABS Mechanisms

Many countries are in the process of developing (or some have developed) national policies and legislation in line with international conventions, treaties and protocols to implement farmers' rights and ABS mechanisms. These policies and legislation affect how national and local governments, public research organizations, private sectors and farmers conserve, protect, manage and make available and exchange genetic resources among different users and stakeholders and also ensure rights of farmers and local communities to these genetic resources. While the policy and legal frameworks are essential at the national level to recognize, protect facilitate and implement ABS and ensure the rights of farmers and communities, their practical implementation remain the major challenge in a least developed agro-based country like Nepal (Gauchan 2011).

In this context, a local level institutional mechanism is required to implement and facilitate effective ABS and ensure rights of farmers and local communities in line with national and international policies. Considering this, the community seed bank is proposed as a local legitimate institution or platform. A CSB facilitates local level collective sharing, exchange, conservation and use of local genetic resources. Many of the past and on-going projects and initiatives of Bioversity International jointly with LI-BIRD and NARC have developed and piloted some good practices, approaches and tools of community biodiversity management (CBM) in Nepal (Sthapit and Gauchan 2006, Shrestha et al 2013c). CSBs use these practices to enhance ABS at the local level and ensure rights of farmers to genetic resources (Paudel et al 2008). **Figure** 2 illustrates this.

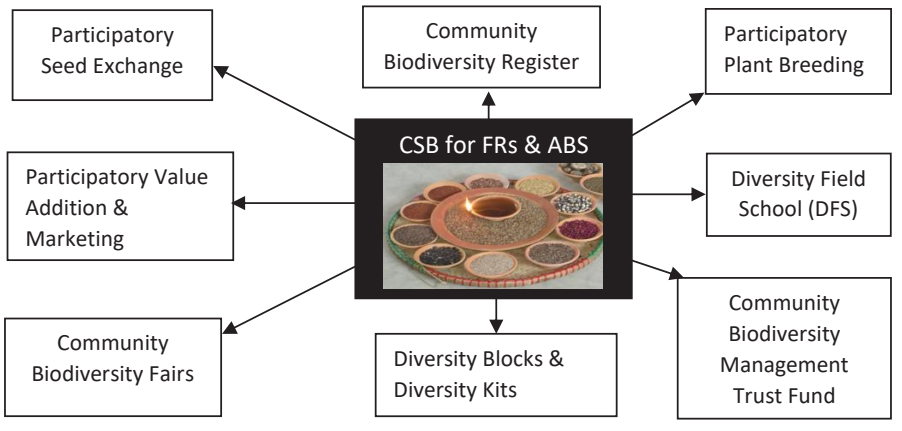

Figure 2. Mechanisms that realize farmer's rights and local level ABS in Nepal

A promising event is that the Association of community seed banks of Nepal (ACSBN) recently formed by a network of 27 functional CSBs has agreed to serve their member CSBs as the designated local institution for implementing and defending farmers' rights and ABS mechanism in respective parts of Nepal. According to Anderson et al (2018), community seed banks are relevant stakeholders and may thus be among those organizations that could be engaged in decision making at the national level. National institutions including agricultural extension services should provide the best institutional infrastructure to embark on a scaling up of such approaches.

Conclusions and Implications

Farmers' Rights and access and benefit sharing are important and interlinked issues in the conservation and sustainable use of agrobiodiversity. Key applicable approach based on existing rural realities are community seed banks and farmer seed systems, which serve as local points of access to genetic resources as well as ensuring equitable sharing of benefits. Community seed banks can enhance both informal and formal access and benefit sharing through strengthening farmers' seed system and promoting its linkages with formal sector agencies. They provide mechanisms that promote the availability and accessibility of seed diversity and quality seeds of preferred varieties (both traditional and modern). Community seed banks involved in participatory plant breeding and variety selection and maintaining quality source seeds of farmer varieties and their engagement in variety registration and release of locally adapted varieties promote improved access and benefit sharing to local community, particularly for traditional underutilized crops and landraces, where options for access to seeds from external sources is limited and absent.

The information presented above envisages that community seedbank can be an effective institution to implement farmers' rights and ABS through saving, exchanging, sharing and using farm-saved seeds and promoting prior informed consent to obtain access to plant genetic resources and traditional knowledge associated to local genetic resources. In addition, they can be used for enhancement of farmers' varieties, their registration, certification and marketing of quality seeds by strengthening organizational capacities of local institutions for promoting commercialization and wider sharing of benefits. Considering these, we propose a model for developing CSB as a legitimate local platform for prior-informed consent (PIC) and access and benefit sharing mechanisms that promote and ensue farmers rights to genetic resources. This will however, require legal recognition of community seed banks as farmer organization and creating incentive mechanisms for custodian farmers and communities by bringing support from formal sector agencies through relevant policies, legislations and guidelines. Furthermore, there is a need of programs and action plans to support, promote and sustain community seed banks by linking with

national genebank and other formal sector R &D agencies for formalizing farmers rights and promoting facilitated access and effective equitable benefit sharing. New national laws on access and benefit sharing, agrobiodiversity conservation and utilization and plant variety protection and farmers' rights that are under formulation should make appropriate provisions of recognizing community seed banks as local platform for facilitated ABS mechanisms and formalizing farmers rights. This is a best suggested option because, presently there are no other local level institutions that have knowledge, skills, experience, and expertise other than community seed banks. International policies and funding mechanisms such as Benefit sharing fund of ITPGRFA should make sure that sufficient funds for supporting community seed banks are in place as part of their obligations to implement Farmers' Rights and other provisions of the Plant Treaty, such as facilitating multilateral system of access, exchange and fair and equitable sharing of benefits arising from the use of genetic resources.

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