

RESILIENT SEEDS



Understanding access and benefit-sharing mechanisms
in law and policy through the prism of resilience.

Resilient Seeds: understanding access and benefit-sharing mechanisms in law and policy through the prism of resilience.

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Summary

This thesis investigates Access and Benefit-Sharing (ABS) mechanisms for genetic resources and traditional knowledge. Access and Benefit-Sharing is deeply embedded in international law. Several international agreements regulate the fair and equitable sharing of benefits. Alongside the directly applicable treaties other regimes of international law guide its implementation too, namely international environmental law, intellectual property law, and farmers' rights. In order to understand ABS's place in this international framework it is explored as a tool to increase resilience of socio-economic systems. Although direct monetary benefits are not certain for communities engaging in ABS, non-monetary benefits such as awareness and education can be realised. This thesis centres on high-altitude farming communities in Nepal, where the local seed systems are investigated. The implications of ABS for farming communities are developed by mapping the needs and constraints of farmers in Nepali mountain communities. ABS fits in with the needs of the system and the farmers, but it is concluded that a careful implementation on a fitting scale is necessary. This thesis proposes biocultural marketing of specific varieties as a way for communities to start engaging with ABS. By these means it is concluded that ABS is distributionally just, and positively impacts resilience, farmers' rights, and food security.

Keywords

Access and Benefit-Sharing; Nagoya Protocol; CBD; ITPGRFA; genetic resources; traditional knowledge; biodiversity; seed-systems; community-based management; resilience; high-altitude agriculture; Nepal; subsistence farming.

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List of abbreviations

ABS - Access and benefit-sharing
ACAP - Annapurna Conservation Area Project
ASC - Agricultural Service Center
BI - Bioversity International
CAMC - Conservation Area Management Committee
CBD - Convention on Biological Diversity
CBM - Community-based Biodiversity Management
CBNRM - Community-Based Natural Resource Management
CBR - Community Biodiversity Register
CSB - Community Seed Bank
DADO - District Agriculture Development Office
DADS - Diversifying Availability of Diverse Seeds
DFS - Diversity Field Schools
DSDC - District Seed Coordination Committee
FAO - Food and Agriculture Organization of the United Nations
GDP - Gross Domestic Product
GEF - Global Environment Facility
ICIMOD - International Centre for Integrated Mountain Development
IIED - International Institute for Environment and Development
ILC - Indigenous and Local Community
ITPGRFA - International Treaty on Plant Genetic Resources for Food and Agriculture
LCP - Local Crops Project
Li-Bird - Local Initiatives for Biodiversity, Research and Development
LGCDP - Local Government Community Development Program
masl - meters above sea level
MAT - Mutually Agreed Terms
MDG - Millennium Development Goal
NARC - Nepal Agricultural Research Council
NAFOS - National Alliance for Food Security
NBSAP - National Biodiversity Strategy and Action Plan
NGO - Non-Governmental Organization
PES - Payment for Ecosystem Services
PIC - Prior-Informed Consent
PGRFA - Plant Genetic Resources for Food and Agriculture
PPB - Participatory Plant Breeding
REDD - Reducing Emissions from Deforestation and Forest Degradation
SAWTEE - South Asia Watch on Trade, Economics and the Environment
SDG - Sustainable Development Goal
SQCC - Seed Quality Control Center
UN - United Nations
UNEP - United Nations Environmental Programme

UNFCCC - United Nations Framework Convention on Climate Change
UPOV - the International Union for the Protection of New Varieties of Plants
US AID - United States Agency for International Development
VCLT - Vienna Convention on the Law of Treaties
TRIPS - the Agreement on Trade-Related Aspects of Intellectual Property Rights
VDC - Village Development Committee
WTO - World Trade Organization
WWF - World Wildlife Fund

Chapter 1: Introduction

Seed. There is nothing quite as powerful. It is the beginning of life for plants that sustain and nurture. For everyone, but especially farmers, everything starts with seed. Whether it is large-scale agriculture with acres upon acres of wheat, or a subsistence farmer sowing just enough rice to feed the family. Even though seeds are at the base of all life, they are not free from commodification and regulation. In large-scale conventional agriculture, this is mostly a structured process of farmers buying seeds in large quantities from companies that employ plant breeders to develop those varieties preferred by the farmers. The process is very different for small-scale subsistence farmers, who save their seeds and exchange them within personal, informal, networks. The different natures of these networks do not mean that they are fully independent of one another, and this thesis will investigate the places where the systems interact. The focus lies on farmers and their communities in the Global South producing on a subsistence level. ABS can have a stark effect on resources poor communities in harsh and versatile ecosystems. Therefore this thesis has a case-study of mountain agriculture, which is intrinsically versatile.

This thesis will look at the genetic resources and the traditional knowledge on growing and using these resources, as well as the Access and Benefit-Sharing (ABS) deriving from their use. It concerns the genetic resources in the shape of the seeds of crops that are part of traditional agricultural systems. ABS comes into play when resources and the associated traditional knowledge are used for research or commercial purposes. ABS mechanisms fall within a worldwide structure of international treaties and agreements, and are implemented all over the world in different ways. What these mechanisms have in common is that they aim to protect local natural and genetic resources. The goal is to ensure that these resources and the knowledge related to their management, use and maintenance are available and benefit the local farmers that develop them (Vernooy and Ruiz, 2013: 97). ABS is in this understanding not limited to just access and use, or utilization of genetic resources and associated knowledge for commercial purposes, but furthermore includes conservation, sustainable use of biological resources, research, plant breeding and seed conservation (Andersen 2012: 349,

Vernooy and Ruiz, 2013). ABS is a broad, almost container-concept that is made to include a diverse set of activities and objectives, and is therefore considered as such. The version of ABS this thesis considers takes place on community level. Starting by identifying access and benefit-sharing mechanisms for genetic resources and traditional knowledge for local and indigenous smallholder farmer communities in Nepal, this thesis specifically investigates whether these mechanisms can be executed as part of a wider implementation of international legal agreements, contributing to both rights and resilience of farming communities.

The hypothesis this thesis will test is whether ABS mechanisms for traditional food crops can be part of a resilience-focused approach to biodiversity in agriculture, and in that understanding fit in the international legal framework guiding it. The basis for this interpretation exists in international law on the subject, but these laws are not particularly harmonized, not on international or on national levels. Due to the confusing nature of these international agreements, an ABS approach in practice must be grounded in the rights of local and indigenous communities (ILCs) to their resources and traditional practices, farmers' rights as producers and developers of agricultural resources, and distributive justice. In order to reach a conclusion on its place in these frameworks, and fully test the hypothesis above there are several sub-questions to be explored:

1. To what extent does international law provide for farming communities to implement and use ABS systems?
2. Do ABS mechanisms increase resilience of smallholder farmer communities?
3. How is ABS beneficial for both people and ecosystems?

The premise of ABS is, as will be expanded on in the following chapters, that its mechanisms act to both improve the lives of people as well as the ecosystems people reside in. Farmers and ecosystems are inextricably linked, and one of the main reasons that ABS measures are said to improve and sustain ecosystems is that it is based on the understanding that farmers that save and plant local crops are custodians of the biodiversity prevalent in their direct environment. The relevance

of biodiversity in small-scale agriculture is many-fold, with many of its benefits related to resilience against social, political and climate change induced vulnerabilities. This is why together with international law resilience is one of the pillars of this thesis.

The rights of farmers to their seeds and the ability to benefit from their investment and other inputs into these seeds have a direct relationship to a myriad of problems, which directly connect to the concept of resilience. By this logic, resilience explains ABS in several ways. First of all, it positively affects the straightforward sustaining of livelihoods, and feeding the rural poor (Bebbington, 1999: 2039). The access and exchange of seeds and benefits deriving from those is interpreted as a direct driver of food security. ABS is positioned as strengthening communities' positions by decreasing losses in case of emergencies like climatic hazards and disappointing harvests. In addition, increasing awareness of the value of their resources may strengthen farmers socially, and increases participation in democratic processes (Raymond and Fowler 2001: 7, Winge et al., 2013c: 119). The Nepali example clarifies whether it does.

1.1 Nepali case-study

The theoretical investigation of ABS would be rather broad if not focused on a specific case-study, which is why the discussion is supplemented by data obtained through field research in Nepal. Nepal, for a variety of reasons, makes an excellent test-site for the hypothesis this thesis puts forward. The Himalayan state is incredibly rich in biodiversity both in wild and agricultural plants, but these riches are declining rapidly in a process known as genetic erosion. Scientists from the Nepal Agricultural Research Council (NARC) estimate that the country is home to around 2000 local varieties of rice and 600 varieties of finger millet alone, but that 50% of the country's crop variety has already disappeared due to environmental change (Winge et al., 2013a: 182). Nepal is also a developing nation, currently ranking number 144 on the global economic performance index (Yale Center for Environmental Law & Policy, 2016). The country is largely dependent on agriculture, and about 70% of its citizens are employed in this sector (Indexmundi, 2016). That 70% consists mainly of the nation's poorer citizens, who are dependent

on agriculture for their livelihoods. Agriculture in Nepal can be divided into three geographical zones corresponding with the different climatic conditions in the country: the Terai, the foothills, and the high Himalaya.



Figure 2: Agroecological zones of Nepal (Pariyar, 2016)

Economically the southern zone, the Terai region, is most important and hosts large-scale commercial agriculture on its fertile tropical plains. The middle ribbon of the country is home to small-scale subsistence farming in the Himalayan foothills, and the extreme environment of the high-altitude environment in the area along the Chinese border make up the third category. Due to these ecological differences within the country, a high ethnic diversity and the prevalence of high-altitude extreme environments, unique species of globally important crops that are adapted to high mountain conditions are prevalent. As a result Nepal's agriculture is incredibly heterogeneous and fragmented (Vernooy and Ruiz, 2013: 9)

The vast majority of the agriculture in Nepal relies on informal seed-systems. Informal seed-systems are fundamentally different from formal seed-systems as they are largely self-contained. The majority of Nepal's farmers are almost

entirely disconnected from the formal seed-system, but instead rely on seed-saving and seed-sharing. 90% of the seed transactions in Nepal are farmer-to-farmer, with no involvement of other parties (Winge et al., 2013a: 182). The diversity not only in agriculture but also in peoples adds the dimension of indigenous and local people's rights to the legal framework of ABS, contributing to the multifaceted nature of this case-study. Moreover, at the domestic plane ABS has been developed and implemented in several communities and projects by a disparate collection of NGOs, which means that there is precedent to investigate and compare. Nepal is also party to most of the existing agreements regulating genetic resources and traditional knowledge. The process of signing these international treaties and devising adhering national policies shows the debate and standpoints of the stakeholders.

1.2 Research objectives

The answers to the questions posed by this thesis matter for two reasons. Firstly, the international framework as such already exists, but as this thesis will continue to explain, it is haphazard at best and conflicting in many instances. By showing how practical approaches fit in with resilience thinking, common ground to inform future action can be found. This in turn can give government officials considering national policy a better understanding of the needs they will need to address. Secondly the analysis shows that activities already being undertaken have their roots in a broad, extensive, and popular discourse, which helps for further understanding of the interventions and also in finding shared objectives to mend a fragmented system. Lastly, a solid understanding of the links between rights, resilience and local agriculture may aid in taking biodiversity-focused projects on local crops out of the purely 'environmentalist' bracket and hence increases support for development from other angles. Especially considering the global attention for resilience (which will be considered in depth later in this thesis), this is a significant possible gain.

These closely related questions are answered by a combination of theoretical discussion, legal research and the experiences of four months living and working in Nepal. This months were spent working at Bioversity International, which is an

international organization that promotes biodiversity in agriculture. In Nepal Bioersivity International works in cooperation with a local NGO and implementing agency called Li-Bird (which stands for Local Initiatives for Biodiversity, Research, and Development). Because of this close cooperation my data is based on both of these organizations' work. A more thorough introduction to these organizations and their work can be found in Chapter 3.

First however, Chapter 2 will elaborate on the methodology used for this research project, elaborating on data gathering choices and the field-site. Chapters 3, 4, and 5 together make up the theoretical framework of the thesis. Chapter 3 introduces the fundamentals of ABS. It considers its place in the understanding of community-based methods to realize benefits to farmers for the use of their genetic resources, and explain the current state of affairs along with examples of implementation. Chapter 4 entails the bulk of the legal argumentation and will introduce the several regimes of international law that affect and influence ABS. This chapter introduces the implications of the Convention on Biological Diversity (CBD) and International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) as developed by Bioersivity International policy researchers as well as the involvement of local and indigenous peoples' rights in community based resource management (Winge et al., 2013a). It furthermore sets out the basis of ABS in adjacent regimes of international law such as intellectual property, environment, and distributive justice. It focuses on the work on farmers' rights as introduced in the ITPGRFA and most prevalently developed by Regine Andersen and Tone Winge, and locally by the National Agricultural Research Council (NARC). Chapter 5 is constructed in the same manner, and will deal with the topic of resilience, as first introduced by Crawford Stanley Holling in 1973, and consider this on the topic of farmer participation in genetic resource management (Winge et al., 2013a). After providing the theoretical framework Chapter 6 introduces the results of the field-study in Nepal. Although analysis will naturally be prevalent throughout, Chapters 7 and 8 test the results of the desk and field-research most extensively. Chapter 7 does so in the context of international law, and investigate interaction between law and ABS. Chapter 8 does the same for resilience, providing the bridge that this concept is between practice and theory. The last

chapter of this thesis, Chapter 9, consists of the conclusions and answers to the guiding questions introduced in this introductory chapter.

Chapter 2: Methodology

This thesis is based on a combination of literature research and a four-month internship and fieldwork stay in Nepal. In Nepal, I was working at Bioversity International's regional country office in Pokhara, which is located in the Western Development Region, about 200 kilometres from Kathmandu. This chapter will first address the methodology used, to continue to provide the introduction to the country setting of the ABS argument this thesis is making. Lastly the ethics of the data collection process are discussed. The practical data-collection for the thesis consist of participant observation, semi-structured interviews, a short e-mail questionnaire and general communication. The combination of participant observation with interviews is a classic and widely used approach to research (Watt Boolsen, 2005: 157). The basis of participant observation informed the choices made for the more specified surveys and interviews that I conducted after having been in the field for several weeks. The choice to work with interview guides but in a mostly structured order was informed by the idea that in this way interviews could remain fairly conversational but still create comparability in the response, as the respondents are guided back to the main topic if straying too far (Watt Boolsen, 2005: 171, Bernard, 2011: 210).

2.1 Working within Bioversity International

All of the research done in Nepal was conducted in conjunction with my position at Bioversity International. Bioversity International is an organization that 'delivers scientific evidence, management practices and policy options to use and safeguard agricultural and tree biodiversity to attain sustainable global food and nutrition security' (Bioversity International, 2016). The organization has chosen this approach based on the notion that ensuring agricultural biodiversity is not just important as a conservation effort in itself, but that it also improves ecosystem resilience, ecosystem services and decreases climate-change vulnerability (Pandey 2013: 202, United Nations Environmental United Nations Environmental Programme, 2013: 202, United Nations Environmental Programme 2013: 9). Agricultural biodiversity is posed as a buffer against pests, diseases, and environmental stresses.

This thesis is part of the project Bioversity International is currently driving to implement in Nepal: the United Nations Environmental Programme (UNEP) 'Integrating Traditional Crop Genetic Diversity into Technology: Using a Biodiversity Portfolio Approach to Buffer against Unpredictable Environmental Change in the Nepal Himalayas' project, also known as the GEF or Local Crops Project. This project is based on the specific nature of the Himalayan ecosystem, which stretches across six countries but has the longest division in Nepal, this ecosystem is extremely varied in topography and therewith contains a multitude of micro-environments. Because of this high level of variation high-mountain agriculture is easily affected by climate change, even more so than other more stable ecosystems (Gentle and Maraseni, 2012: 25). Small changes in climate translate to extensive changes in circumstances, and high-mountain crops are specialist organisms, with small ranges of viability (Körner, 2003: 2, UNEP, 2013: 10). Climate change brings unpredictable precipitation patterns, temperature extremes and as a consequence severity of pests and pathogens in the Himalayan mountains. Farmers must cope with the level variation in these marginal environments, as well as the significant threat that climate change poses. Diversity acts as a buffer. As extreme environments mean that the circumstances in which crops perform well are extremely limited, diversity becomes essential. When in a diverse system certain varieties can no longer cope with the changes in the ecosystem, other varieties are still available for farmers. When diversity is lacking there will be no alternative food-crops to fill the gap left by a badly performing variety, which is a vulnerability that can lead to food insecurity.

Traditional crops are key in this diversity, as such crops are often climate-resilient, nutritious and therefore of vital importance (Winge et al., 2013a: 182). In this thesis when considering traditional crops it means varieties of crops that have been cultivated by communities in a certain place for generations. Farmers create local varieties by use and selection in their fields.¹ In addition, with these crops being traditional they are already available in farming communities, not just as seeds but also the knowledge on utilization and ecosystem services. Bioversity

¹ For this reason traditional varieties are in literature also often referred to as 'farmers' varieties'.

International recognizes this importance as its premise, and noted a definite lack of research on this subject, and is therefore implementing the GEF project. Due to the extreme environments that these crops have developed in, traditional varieties are unique varieties of globally important crops that are adapted to high mountain conditions (Winge et al., 2013a: 183) The project works in several districts (Dolakha, Humla, Jumla, Lamjung and Kaski) with eight neglected and under-utilized mountain crops: buckwheat (*Fagopyrum esculentum* and *F. tararicum*), cold tolerant rice (*Oryza sativa*), common bean (*Phaseolus vulgaris*), finger millet (*Eleusine coracana*), foxtail millet (*Setaria italica*), grain amaranth (*Amaranthus caudatus* and *A. leucocarpus*), naked barley (*Hordeum vulgare* var. *nudum*), and proso millet (*Panicum miliaceum*) (Bioversity International, 2014: 2).

Working at Bioversity International on topics such as ABS, Diversity Field Schools (DFS), seed banks, policy change and community protocols also contributed to the answering the research question of this thesis. In the capacity of an intern I conducted interviews and interacted with my colleagues who are experts in their fields. I participated in conferences, field visits and conducted interviews with farmers on one of the project-sites. Most helpful for the theoretical research on location were the two Bioversity International Nepal country officers, one of which was based in the Pokhara office and the other in Kathmandu. The latter I mostly contacted via e-mail and Skype, but he also visited in Pokhara regularly. The global Bioversity International network contributed to my understanding of the material per e-mail correspondence. Bioversity International's local NGO partner, Li-Bird is also located in Pokhara, and cooperation with its scientists and staff, both in its headquarters in Pokhara, and remotely with those based on research locations around Nepal took place through extensive communication, including a questionnaire send to LCP officers in all project areas via e-mail, which was later followed up in person at a workshop. Within Bioversity International I gathered data by means of participant observation and informal correspondence and communication.

2.2 Begnas-Rupa field site

A notable event in my time at Bioversity International was the conference on Diversifying Availability of Diverse Seeds (DADS), which has the project goal of improving seed-systems for smallholder farmers' food security world-wide. This event deserves an independent mention as it was an international project-wide workshop. At this event practitioners and farmers from Nepal, Uzbekistan, Burkina Faso, Bolivia, Uganda, Benin and the Bioversity International headquarters in Italy participated to share their progress and create a roadmap for the next phase of the DADS project. The focus of several presentations by the country representatives were ABS and policy development, which proved an excellent source of understanding ABS in practice. I gathered data at this event by attending and talking to the participants, adding to my understanding of people working on the grassroots and policy levels in several countries besides Nepal. Furthermore, many of the conference attendees are practitioners moving between project-sites and have a holistic understanding of the structural issues the project and seed-systems as a whole face. Attending the workshop as well were independent experts from Nepal, including officials of the Seed Quality Control Center, National Agricultural Research Council (NARC), and the seed production company Anmolbiu.² This was especially useful in light of the related field visit to the Begnas-Rupa Watershed Area. In Begnas, Li-Bird has been using Community-based Biodiversity Management (CBM) to restore the Rupa and Begnas lakes watershed areas, in cooperation with several international and national research organizations.

The Begnas-Rupa site has been active for almost two decades, and therefore shows the progress of an agricultural development program implementing participatory action research projects on the long term (Sthapit et al., 2015: 1). Li-Bird has been working to realize CBM here, and an organization of locally existing cooperatives, development committees and women's groups were set up. The focus of project officials is to ensure that profits reach those farmers contributing to conservation

² Anmolbiu is a seed production company with links to the NGO activity in these sites, and a research and development focus. Its promoters include community based organisations such as seed producer groups.

activities, and to increase visibility of CBM measures and establish links with private actors. The visit included the Sundaridanda Information Center, where farmers and project officers explained their activities, and discussion between all participants took place. ABS was discussed extensively, here. The information center is the newest addition to the project activities, it was built to display local diversity and generate income by attracting visitors. Here I took part in participatory research methods, including group discussions guided by tools meant to generate data on farmer and practitioner opinions on ABS. A discussion involved all participants writing down negative and positive aspects of the field visit s on small cards and sharing these with the group. We furthermore visited the Saha fish fingerling center, in which upstream and downstream communities have organized themselves in cooperatives to stop overfishing in upstream areas and share the benefits of fishing in downstream areas.³ This model, of organizing in cooperatives to share benefits was being evaluated at the time of the workshop, and was therefore discussed extensively. In addition, a Taro (*Colocasia esculenta*) diversity block and medicinal plant diversity block were visited, and the custodial farmer who takes care of activities joined the discussion and explained his position. Additionally, a progressive farmer, who very successfully has singlehandedly marketed a local variety of rice called *Anadi*, explained this setup.

³ This is the Payment for Ecosystem Services (PES) project that will be elaborated on later in this thesis.



Figure 3: View over Rupa Lake from the Sundaridanda Information Center

Another major event in my time at Bioversity was the GEF writeshop, which is a weeklong residential workshop with all Nepali GEF project members working on the LCP attending. The aim was to present research and papers, and stimulate cooperation and review. As part of my internship I conducted research for papers, brochures and flyers, and finalising these together with peer-reviewing was the main goal of this week. However it also presented the perfect opportunity to talk to experts. Participating was BI staff, Li-Bird staff including those project officers that normally work and live on-site, National Agricultural Research Council (NARC) staff, Seed Quality Control Center (SOCC) staff and other scientists, including Nepal's community seed bank experts. I had already spoken to many of the attendees extensively either at earlier events, on field-sites, or digitally, and the timing of the writeshop at the end of my stay in Nepal meant I could use the event as a last opportunity to align my findings with their understanding.

2.3 Ghanpokhara

The bulk of the farmer interviews was conducted in Ghanpokhara Village Development Committee (VDC), which is situated in the Lamjung District, Mid-

Western Region of Nepal.⁴ Ghanpokhara VDC consists of 9 wards and is scattered on the north and south facing slopes of a hill, ranging from 800 to 2170 meters above sea level (masl).⁵ The Midim river hillside is where wards 2, 3, 4, and 9 are situated, while the Khudi river hillside is home to wards 1, 5, 6, and 7. Ward 9 is isolated on another hillside. The VDC contains 700 households, and its people are predominantly of the Gurung (65%), Dalit (25%) and Tamang, Brahmin and Chetri castes and ethnic groups. The Gurung dominance is to be kept in mind as it directly informs the idea that Ghanpokhara could benefit from specific legislation on indigenous and local communities (ILCs). Ghanpokhara lies in the Annapurna Conservation Area Project (ACAP) region, and therefore has a Conservation Area Management Committee (CAMC) VDC level working committee, which is represented in every ward.⁶ The ACAP was established by the National Trust for Nature Conservation with the objective of balancing environmental conservation and socio-economic development, through a participatory approach (National Trust for Nature Conservation, 2013). CAMCs are committees consisting of a board with a chair and general members, who within the community manage the Annapurna ecosystem and benefits deriving from there (Singh, 2014: 1). CAMCs for instance issue permits for use of timber and forest products, of which the revenue is used for community development activities like distributing saplings, and conservation (Singh, 2014: 1).

2.4 The Local Crop Project

Ghanpokhara's farmers cultivate wheat, maize, vegetables and rice in the lowland areas, and cold tolerant rice, potatoes, maize, finger millet, foxtail millet, beans, barley and soybean in the upland areas. The Local Crop Project is based in ward #1, where it shares a newly built office with the CAMC. This office is used for storage and as a location for group discussions.

⁴ VDCs are similar to what municipalities are in other countries, but with more public-government interaction.

⁵ Wards are the smallest administrative units in Nepal.

⁶ Annapurna is the name of the mountain range in this part of the Himalaya.



Figure 4: The newly built LCP office in ward #1

Ward #1 is furthermore the location of the diversity block, bean trial and vegetable nursery. As a result, households in ward #1 and those closest are most involved with the LCP, while wards that are situated further away have less exposure to the project activities. Extensive interviews were conducted with 13 farmers in Ghanpokhara VDC, additionally three local key informants were interviewed, two of which, namely the LCP Project Officer and the Chair of the Conservation Area Management Committee (CAMC) are also located in Ghanpokhara VDC. The third key informant, the District Agriculture Development Office (DADO) Extension officer, is located in Besisahar VDC. Informal interaction with Bioversity International and Li-Bird staff on-site and in Pokhara also added to the understanding of the issues investigated. During the field visit to Ghanpokhara and Besisahar, multiple farmers were interviewed per day. The regular interviews took place in respondents' homes, fields, other workplaces and in one instance at the LCP/CAMC office. Quite often an interview would take place in the company of relatives and neighbors of the prime interviewee, who at times would contribute to the conversation, which is taken into the analysis noted as such. Respondents were selected on basis of their location, availability and degree of involvement with the LCP project. The primary selection was done in consultation with the LCP field officer. All interviews were conducted in Nepali, with instant translation by

the field officer who acted as interpreter, so that questions could be adapted to the conversation. All interviews started with together filling out a table on information on seed sources and utilization, and progressed from here, the interview guide providing structure throughout. Because of the cooperation with an interpreter the decision was made to have an extensive interview guide, but in practice we deviated, leading to semi-structured interviews.

As mentioned the GEF project is active in several districts, namely Humla, Kaski, Jumla, Dolakha and Lamjung. The interviews took place in the Lamjung field-site, which was chosen on the basis of travel arrangements and availability of the site officers. However, I worked with the field officers of the other sites and general staff responsible for more than one district, so the experiences at those locations are also included in this research. The Begnas-Rupa lake field site visited is situated in the Kaski district. Time and geographical constraints led to these restrictions, but the data gathered, supplemented by remote research functions as a case study for communities in similar circumstances.

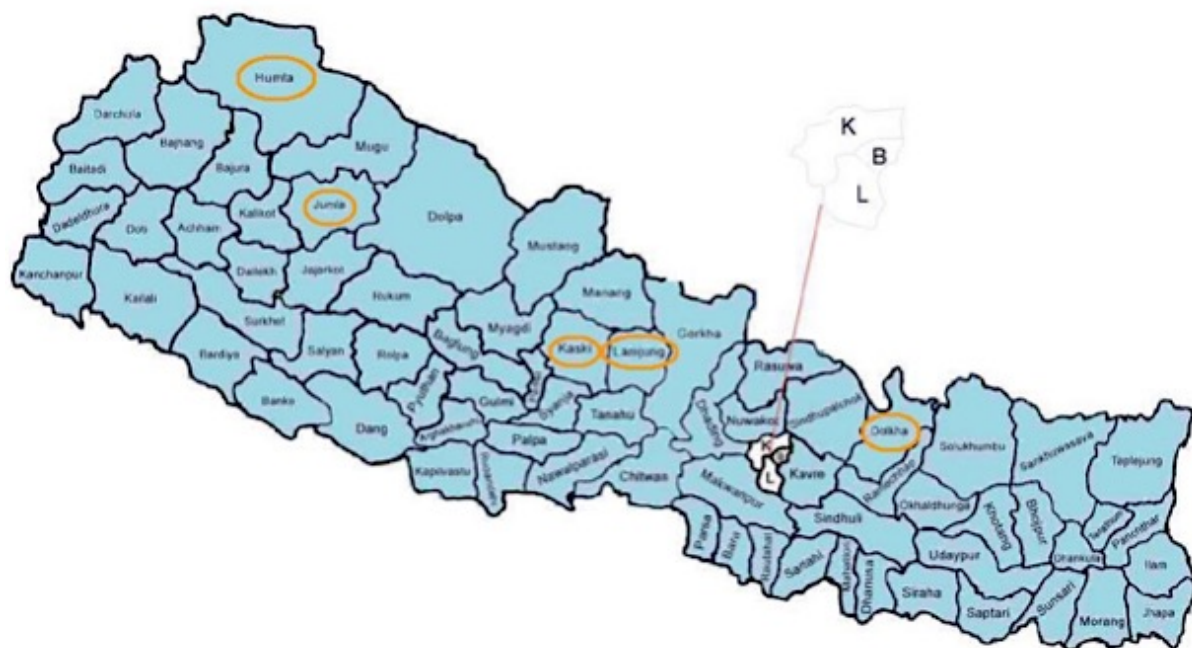


Figure 5: Map of the LCP project sites in Nepal (Nepal, 2015)

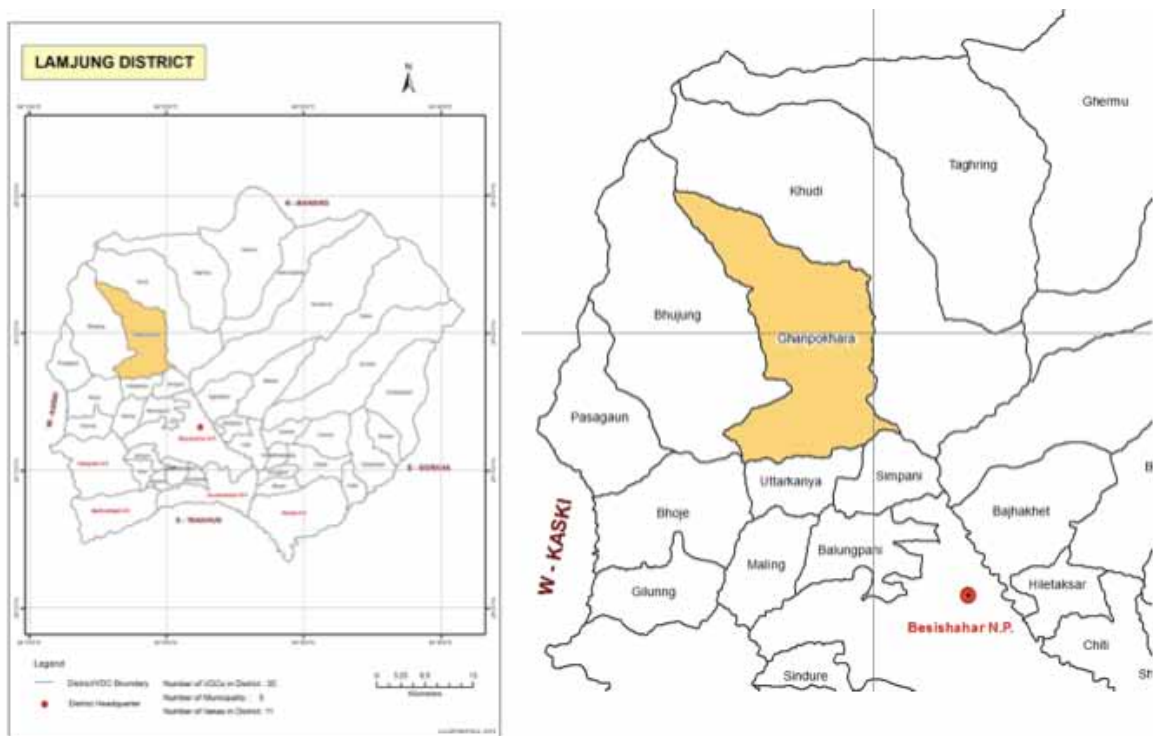


Figure 6: Map of Ghanpokhara VDC in Lamjung District (LGCDP, 2016)

2.5 Profile of the respondents

The respondents of this section of the thesis research stand out as they are all farmers from within one community, which is why further specification is due: 13 farmers were interviewed, of whom 7 women and 6 men. 9 were part of the Gurung ethnic group, while the other 4 were identified as Dalit. Most respondents, namely 9 out of 13 live in ward #1, 3 live in ward #6, and 1 respondent is from ward #3. The LCP office is located in ward #1, and the Li-Bird officers and technical assistant are also located here. At the time of my visit there were three Li-bird staff-members living in Ghanpokhara: the LCP project officer, the technical assistant, and a project officer for climate smart agriculture. The CAMC chair is located in ward #6. Generally, the farmers interviewed are the head of their households and in charge of agricultural decisions, and if not this was a topic considered in the interviews. With one exception all respondents are long-term residents and community members. Of the 13 respondents three mentioned that they are active members of the Himalayan Mothers Group. Two farmers mentioned other occupations, namely running the local mill and furniture making. Several

other respondents have ancillary roles in the community, such as social motivator, CAMC member, Mother's group chair, and lama.⁷

	Ward	Gender	Approximate age	Caste	Received agricultural training previously
1	1	M	60+	Dalit	
2	1	F	60+	Gurung	
3	1	M	50+	Dalit	yes
4	1	F	40-50	Gurung	yes
5	1	M	30-40	Dalit	yes
6	6	F	25-35	Gurung	yes
7	6	F	15-25	Gurung	yes
8	6	F	15-25	Gurung	
9	1	M	55-65	Gurung	
10	1	M	50-60	Dalit	yes
11	1	M	50-60	Gurung	yes
12	3	F	35-50	Gurung	
13	1	F	60+	Gurung	

Table 1: Socioeconomic profile of the sample respondents (without key-informants)

Among the respondents are several progressive farmers, and the level of their involvement in the LCP is high. Progressive farmers, also in some of the literature referred to as custodial or custodian farmers, are farmers with a progressive uptake to agriculture (Meldrum and Grunberg, 2014). This can mean that they have a leadership position, or are particularly assertive and creative. One of the farmers deemed progressive in Ghanpokhara, for example, goes beyond the regular seed-network to find varieties. She saves and plants more diverse seeds than her neighbours, and is called upon by others if they are looking for a new strand. Another farmer who is progressive has been trying out several different kinds of cash-crops, even though others in the community are not yet. Many agricultural development projects recognise the outlier-position of these progressive farmers and actively seek to engage them in project implementation. In Ghanpokhara it

⁷ Lamas, also known as gurus, are teachers of the Dharma in buddhism.

was confirmed that the progressive farmers are considerably more vocal on the benefits of biodiversity and the constraints and challenges to the community.

Of the respondents 7 had taken part in some kind of training or workshop on seeds, seed exchange or general agriculture before. In Ghanpokhara itself there have been no long-term agriculture focused NGO or other government projects, but a few general development projects have reached some of the respondents. The development programs mentioned by farmers were most often the Local Government Community Development Program (LGCDP), which has the objective to link upper and lower levels of government, and which appointed a social mobiliser in every VDC for person to person to person links to overall planning. The aim was to increase the awareness of local peoples of their rights and to enhance their livelihoods, agricultural training and exposure visits to cash crops like coffee were part of this and participants received vegetable training (LGCDP). Some of the farmers in Ghanpokhara participated in these activities. Another project that has been offering training and vegetable seeds to the farmers is the SUSAHARA project (US AID). One farmer mentions attending an introductory meeting organized as part of the Hariyo Ban program, which is a climate change on agriculture project being piloted in the Marsyangdi water basin (WWF Nepal).

2.6 Ethics



Figure 7: Farm with terraces on the Khudi hillside

Important to all methods employed in this research are the privacy and the consent of the informants (Wilson, 1992: 179). As most data-collection outside of the farming communities was done in group-settings, the inclusion of names is not needed here, although sometimes the national or organizational affiliation will be noted. The farmers are introduced with their location and possibly interesting ancillary functions, and in rare cases with their name. All of those that are connected to the institution I worked within have been formally introduced to me and my project either via e-mail or in person, and they are all aware of my research and I have been approaching them in their official capacities. The same procedure of explanation and cooperation to ensure consent was undertaken on field visits. These are communities that are already actively cooperating with the Bioversity International project and project partners, and I explained my position as affiliated with Bioversity International both generally and as an introduction to every interview conducted. In addition for the majority of the farmers interviewed I was not the first external actor they talked to about their farming practices, and they understood that I would record and use what they told me. As I had a while to find my bearings in the office and project, and get familiar with the

subjects, topics and phrasing employed by the project partners, this aided in my sensitivity towards the subjects as I approached them personally later. In addition, the questions were phrased as neutrally as possible, even though complete neutrality is never attainable. I tried to mitigate my extreme outsider's identity by adopting Bioversity International's methods. However, I attempted to also remain cautious and critical for the duration of my stay, also towards Bioversity International and project partners. This includes keeping in mind how developmental projects are always about power relations between the organization and the communities (Li, 2007: 5). This aspect I mainly covered by actively taking notes as part of my participant observation position within Bioversity International, remaining aware of my role.

All access to actors was given to me by my affiliation with Bioversity International. It must be noted that this does raise the issue of the objectivity of the interviews, especially considering that the focal person for the LCP was acting as translator in the field. This is potentially problematic as it might change the answers the farmers give, as they could consider aiming to please. However not all interviews have been overly positive of the LCP, so it can be concluded that farmers are not afraid to express criticism to the project officer. Secondly, it is inherent to translation that some degree of interpretation might take place in the process of interpretation. I attempted to mitigate this problem by having an explicit interview guide and asking for clarifications in situations of uncertainty. Nevertheless having the project officer at my side was very beneficial to the data collection. The project officer is very informed, knows which farmers to approach and also helped to give context where farmers' answers were unclear. In the wider perspective on my fieldwork Bioversity International and for Ghanpokhara in particular the project officers acted as gatekeepers to get access to sites and informants that otherwise would have been unavailable to me. That gatekeepers are instrumental in many anthropological research projects is well established (Bryman, 2012: 401). The importance of a gatekeeper and also flexibility in my research approach became clear during data collection. I initially intended to draw up a comprehensive account of customary laws and rules pertaining to the sharing of seeds, and to compare those to international rules. With the help of the gatekeeper I however came to the conclusion that there are no such rules, and

access is open. Because of the semi-structured interview guides the conversations hereafter focused increasingly on access and actors in the seed-system. By 'learning through misunderstanding' I managed to alter my questions to reflect the realities of the field (Olivier de Sardan, 2015: 24).

Chapter 3: Access and Benefit-Sharing (ABS)

Before delving into the theoretical basis of Access and Benefit-Sharing and its opportunities it is important to fully understand what exactly ABS methods, or "the fair and equitable sharing of the benefits arising out of the utilization of genetic resources", consist of (Brogiato et al., 2015: 1). Very rudimentarily it comes down to genetic resources, ownership of these resources and what happens when profit is being made from use of these resources by a third party. ABS is the adaptation of mechanisms that ensure that those that own and develop the resources receive credit and if possible remuneration for their work. In this case, because the subject is genetic resources for agriculture and associated traditional knowledge, it means that farmers or communities that have been at the origin of a variety see the benefits if it is used for commercial purposes.⁸ So if the seeds of a traditional variety of finger millet that has been grown in a Nepali village gets sold to others outside of the community, the farmers need to see returns. ABS is not a novel concept, and has already been developed in both literature and law. There are however two major differences between its discussion in most literature and this thesis. Firstly, most of theoretical groundwork as well as international regulations focus on fair ABS between states, so between a supplier and a user state. This thesis however looks at ABS domestically, so between a providing farmer or community and the user, which can be a private party or research institution, approaching the provider within their own locale. Moreover, generally most focus has been on resources used in the pharmaceutical industry and not that much on food crops, which is what this thesis focusses on.

ABS is per definition a complicated process as it involves a multitude of stakeholders: farmers; plant breeders and scientists; communities and their leaders; local, domestic and international politicians and lawmakers; often development workers; vendors of agricultural products; and customers. ABS on the ground means to observe customary practices and local benefit-sharing options, and to use these practices as the basis for a grassroots development of domestic

⁸ Saying that a particular farmer or group is at the origin of a variety is for these traditional varieties not a straightforward process, and that will be discussed later in Chapter 7.

and international policy and legal frameworks (Vernooy and Muller 2013: 325, Bioversity Bioversity Bioversity International, 2014).

3.1 Benefits deriving from ABS

While conservation of biodiversity and the improvement of livelihoods are the long-term overarching goals of ABS, a main focus of regulators and practitioners alike is on the ability of ABS to provide monetary benefits for participating farmers and their communities. These monetary benefits of ABS include payments for samples of varieties of all kinds like royalties, licensing fees, salaries, but also ownership of varieties (Secretariat of the Convention on Biological Diversity, 2011: Annex). Examples of non-monetary benefits are participation in product development, cooperation in education and training, capacity development of institutions, administration, other genetic resources but also contributions to local food and livelihood security (Secretariat of the Convention on Biological Diversity, 2011: Annex). ABS deals with access, exchange and benefit-sharing on all levels, nationally and internationally. The purpose of a solid ABS regime is to protect the rights of local farmers and communities over their genetic resources and knowledge when these are shared with other regions or countries.

The benefits of ABS as just put forward are listed in the annex of the Nagoya Protocol to the CBD, and monetary and non-monetary benefits are given equal importance. For any analysis of ABS, it is important to consider both direct and indirect benefits. According to the concepts rationale ABS creates more access to and availability of genetic resources, promotes local exchanges of these resources, empowers local communities in conservation and use of their resources all while fortifying the regime by raising awareness of the opportunities of ABS. This last point is important as ABS activities are, because of their social nature, intended to build up local capacity to support a formal ABS system and monetary and non-monetary benefits in the long term. For this reason some scholars are very much emphasizing the recognition of the non-monetary and indirect facets of ABS, and this thesis underwrites this focus (Ruiz and Vernooy, 2012: 6). This argument is based on the reasoning that it is relevant to develop ABS activities in communities

where ABS is relatively new, so the marketing specific varieties, or other kinds of commercialization are not present yet. In these situations, the ABS mechanism act as a precursor to smooth engagement of the community with external actors, and for other benefits that are possible at this moment in time. Other benefits are focused on the enhancement of the social ecological system that ABS is implemented in, including conservation, sustainable use of biological resources, research, and plant breeding and seed conservation (Ruiz and Vernooy, 2012: 6). It is because of these positive effects on the seed-system, communities, and ecosystems taken together that the benefits result in ABS creating a buffer from external forces and shocks, which is also known as improving the resilience of a community. This link to resilience is particularly interesting for the argument that this thesis puts forward, and Chapter 5 will investigate the notion in a detailed manner.

The relationship between project participation, success, and direct benefits to the participants is a vital one, as one of the project officers of the LCP explained in an interview.⁹ She emphasised that expectation management for participants is key in building up a regime like ABS, as much as it is for any project. She referred to her experiences in another biodiversity focused agriculture project she was looking to implement, where this became obvious. Once understanding of the objectives, so in this case ABS, is created, farmer involvement and effectivity hinge on the perceived benefits to participants. As the actors in the ABS project discussed in this thesis are generally impoverished and for their livelihood almost entirely dependent on agriculture, their investment of time and energy in ABS needs to pay off. Efficiency and short-term profits are big drivers in decision making, trumping long-term goals especially if those are environmental or conservational (Jackson et al., 2010: 81).¹⁰ Even though biodiversity and ecological complexity have ample real benefits for farmers, these are not a main deciding factor in their everyday lives (Jackson et al., 2010: 81).¹¹ ABS banks on being a way to realize these wider

⁹ Interview with the LCP Project Officer, Ghanpokhara, 2 November 2015.

¹⁰ Also supported by the interviews in Ghanpokhara, especially with the progressive farmer and lama, ward #1, Ghanpokhara VDC, 5 November 2015.

¹¹ This is supplemented by the motivations as explained by farmers themselves in Ghanpokhara, in the series of interviews in November 2015.

benefits by building social capital while also generating an economic return. Relations of trust, exchange, and connectedness are created that aid ecosystem management at a later stage. It must however be noted that the recent shift of authors to focus on the non-monetary benefits can indeed be attributed to an understanding of the value of these. It also needs to be considered that a lack of tangible examples of monetary benefits plays a role in this.

3.2 A typology of methods

To understand the possibilities and limitations of ABS its place in the larger structure of social-ecological governance by communities in developing countries needs to be explored. ABS methods fall under the wider chapeau of community management of resources and biodiversity. At the core of this set of tools is the interaction between nature and society, and the value of ecosystems and natural resources to the people living it (Nkhata et al., 2012: 17). There are many ways in which the realization of benefit-sharing of resources within a community can be realized, and ABS is just one of them. In order to understand the decision for this particular approach it is necessary to introduce other methods within benefit-sharing in community based ecological governance.

Helpful in this regard is the typology as created by Nkhata et al. in 2012 between benefit-sharing of a co-management, a market-oriented, or an egalitarian nature. ABS is part of the third category. Co-management entails those methods that are based in providing communities with the means to share power with governmental actors. Examples of this are Community-Based Natural Resource Management (CBNRM) as already explained above, as well as Community-Based Wildlife Conservation and other kinds of programs where communities are integrated in the bureaucratic system governing ecology. Secondly there are the market-oriented mechanisms that originate in creating economic incentives for good ecological governance. An example of this is the payment for ecosystem services (PES) approach, where voluntary participants are rewarded financially for ecological services they provide. This can be local and small-scale like the Begnas lake fish cooperative, but illustrative is also the probably most well-known example of a market-oriented mechanism: the Reducing Emissions from Deforestation and Forest Degradation (REDD) program. REDD is an initiative of the

United Nations Framework Convention on Climate Change (UNFCCC). REDD attempts to reduce greenhouse gasses by financially rewarding developing countries for enhancing forest management (UNFCCC, 2015). Either way PES is an approach based on placing ecosystem benefits in the market system. The authors of this typology lastly introduce the egalitarian approach, which is where ABS would be categorized, distinct from the other methods considered. ABS is different as it is specifically designed to deal with the social injustices deriving from unequal access to and sharing of benefits from ecosystem services. It seeks to repair social injustices by creating appropriate access, appropriate transfer of technologies and appropriate funding of ecosystem services. Besides this separate intent the governance arrangements of ABS differ from the first two categories of social ecosystem management, as that it is not as much driven by strong institutionalization and bureaucracy but more on social participation and peer pressure (Nkhata et al., 2012: 20). It is maybe the most community-based out of the community management methods. This means that successful ABS is both strongly dependent on social cohesion and involvement, as well as that a successful ABS project will improve said social cohesion and involvement.

Important to note is that as with many of these cases the clean theoretical distinction between the different methods is less apparent in practice. In no small part this is due to the overlap in implementation of the different methods as described above. In practice one community might be home to a PES project, an ABS project as well as being located in a community forest management zone, as is the case for one of the Nepali field sites where data was collected for this thesis. The interrelated nature of the concepts has both negative and positive aspects. Negative is that the muddled boundaries can lead to conceptual confusion amongst practitioners, especially considering that it is often the same people working on very similar but conceptually different projects. This is a problem that will be more thoroughly discussed in Chapter 6. A potential benefit however is that these methods may reinforce each other, as both the setup and objectives overlap. ABS can provide the financing and social capital to help protect areas or forests within the care of communities (The ABS Capacity Development Initiative, 2013). The reason, however, that trying to create a typology of community based ecological

governance is not just an academic exercise, is that it further clarifies the objectives that are at the core of these approaches. This means that by choosing to implement ABS, actors are either making a conscious decision to work from an egalitarian mindset, or the objectives of the project fit within this approach. This is the case both for governmental and non-governmental actors.

Chapter 4: International legal framework

International law on ABS
UPOV
- 1978 Act of the Convention
- 1991 Act of the Convention
1992 Convention on Biological Diversity
- 2003 Bonn Guidelines
- 2010 Nagoya Protocol
2001 ITPGRFA
WTO
TRIPS

Table 2: International agreements pertaining to ABS

ABS, as explained in the chapter above, is a set of methods. As it is currently understood, ABS methods are deeply rooted in the international legal framework. This chapter therefore explains how the international legal framework is organized, introducing the several treaties and agreements on plant genetic resources for food and agriculture, and presenting the place of ABS herein (Andersen and Winge, 2011, Santilli 2012). First this chapter will consider the treaties of which ABS is a direct subject, such as the Convention on Biological Diversity, the Nagoya Protocol and the International Treaty on Plant Genetic Resources for Food and Agriculture. At the core of the understanding of ABS and its link to resilience however are also those treaties and agreements that do not directly include ABS but which are still very crucial to the framework. ABS is situated in several regimes of international law. Most important are International Environmental Law, International Intellectual Property Law, International Trade Law, and Human Rights (Christian Prip and Rosendal, 2015: vii). Concepts such as food security and farmers' rights are deeply ingrained in the international legal framework that ABS directly relates to and they affect its implementation. Many of these agreements have changed drastically over the last few years, and the rules regarding genetic resources have changed rather dramatically. Especially for ABS

practices there has been a general tendency towards less open systems of sharing genetic resources (López Noriega et al., 2013: 246).

4.1 International law

The most simple reading of ABS is that it is based in international law, as it is directly regulated by several binding multilateral treaties. Most important herein are the International Treaty on Plant and Genetic Resources for Food and Agriculture (ITGRPFA), the Convention on Biological Diversity (CBD) and the latter's supplementary protocol of 2012, the Nagoya Protocol.¹² The CBD is where the international attention for ABS originated, as this is what its third objective consists of: 'the fair and equitable sharing of the benefits arising out of the utilization of genetic resources' (United Nations Environmental Programme, 1992). Since then it has taken a long time to define exactly what 'fair and equitable sharing' entails and how it should be regulated. The Nagoya Protocol was the turning point, almost 20 years after ABS was first conceived. The Protocol was developed by an *ad hoc* working group that was set up in 1992 to address the details of ABS and focus on strengthening the ABS function of the convention. The working group predominantly focused on the question of actors: which actors are entitled to consent to others gaining access to genetic resources and knowledge. The group considered whether those actors would be national governments, private owners or local communities. Another major issue is whether consent can be granted only to individuals or also to communities. The question of stakeholders is an issue of some significance, and the CBD emphasizes the wide and effective participation of all relevant ABS stakeholders, including indigenous and local communities (ILCs), and non-governmental organizations (NGOs), amongst others (Secretariat of the Convention on Biological Diversity, 2011: Article 80(j)). Before the Nagoya Protocol was realized the working group established the 2003 Bonn guidelines. The fact that these are just guidelines is not to be overlooked. Even though they are a useful tool in understanding perspectives on ABS, they only hold a soft-law nature and are not binding and established principles of law. The Bonn guidelines call upon states to realize:

¹² The ITPGRFA known as the Plant Treaty, due to the rather unwieldy acronym.

- (1) Legal certainty and clarity;
- (2) Facilitation of access to genetic resources at minimum cost;
- (3) Restrictions on access to genetic resources that are transparent, based on legal grounds, and that do not run counter to the objectives of the Convention; and
- (4) Consent of relevant competent national authorities in the provider country, *and also consent of relevant stakeholders, such as indigenous and local communities*, as appropriate to the circumstances and subject to domestic law (Secretariat of the Convention on Biological Diversity, 2002: §26. Emphasis author's).

The starting point of any legal inquiry is determining what is regulated in the treaties that are binding law. The Nagoya Protocol offers the substantial articles on how states should work to achieve ABS. It regulates that in order to create fair and equitable sharing it must take measures to ensure Prior Informed Consent (PIC) and the approval and involvement of indigenous and local communities (ILCs) to the access of genetic resources (Secretariat of the Convention on Biological Diversity, 2011: Article 6(2)). The Protocol also stipulates that customary laws and procedures must be considered, providers of knowledge and resources must be informed and community protocols and mutually agreed terms (MATs) must be developed (Secretariat of the Convention on Biological Diversity, 2011: Article 6). PIC and MATs are related government responsibilities created by Nagoya. In order to realize PIC the parties to the treaty must provide for legal certainty, clarity, and transparency of their domestic legislation and regulations, they need to determine competent national authorities and clear rules on application. In the case of ILCs they will have to formulate specific criteria for obtaining approval in the shape of PICs from these communities. Parties will have to establish clear rules on MATS including terms on intellectual property rights and terms on benefit-sharing, a dispute settlement clause and the possibility of third-party use (Morgera et al., 2014: 290). Furthermore, the Protocol emphasizes the compilation of voluntary codes of conduct, guidelines and best practices, and urges for awareness raising and capacity building (Secretariat of the Convention on Biological Diversity, 2011:

Articles 20-22). What the Nagoya Protocol effectively has done is make explicit the link between conservation and sustainable use on the one hand, and fairness and equity on the other (Secretariat of the Convention on Biological Diversity, 2011: Article 1: Objective, Prip and Rosendal, 2015: 29).

4.2 Trade and intellectual property law

A different set of international instruments relevant for ABS, small-scale farmers and their resources is membership of the World Trade Organization (WTO) and the International Union for the Protection of New Varieties of Plants (UPOV). These two international organizations are closely linked, as in order to become a member of the WTO its secretariat may ask a state to join UPOV in order to fulfil obligations under The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). This is exactly the process Nepal found itself in, in 2003. Very organized action by NGOs solidly rooted in farmers' needs strengthened Nepal's position to such an extent that it managed to negotiate the right to design its own *sui generis* system of intellectual property rights, based on UPOV and TRIPS. This system is discussed more extensively in Chapter 7. To understand the implications of these agreements for developing countries and their farmers, it is important to be familiar with TRIPS and UPOV as these entail the intellectual property minimum standards agreement of the WTO. As Rosendal puts it, the TRIPS is only one of many 'contentious and unresolved North-South issues' (Rosendal, 2006: 436). Nepal is not a party to UPOV, but its provisions apply to many other states and furthermore reflect the position of developing countries and its farmers.

UPOV necessitates strong domestic legislation of its member-states on plant breeder's rights (Winge et al., 2013bb: 181). An example of this is the 1991 Act of the UPOV Convention that basically kills informal seed markets by banning farmers' exchange and selling of seed of protected varieties amongst themselves. Even more extreme it that under this Act farmers are not even allowed to save and use personally saved seed of protected varieties for their next harvest, or mix their own varieties. UPOV Article 15.5 prohibits the development of varieties that are classified as essentially derived from protected varieties (International Union for the Protection of New Varieties of Plants, 1961). Governments of parties to UPOV

have to domestically regulate exceptions to these rules to protect their small-scale subsistence farmers, for example by creating an exemption of using farm-saved seed on personal land holdings. Although plant breeders' rights are related to new varieties of plants, and not directly to traditional varieties as maintained and developed by farmers that are the focus of the ABS mechanisms this thesis investigates, legislation on this topic still affects farmer's access to seeds and propagating of their resources. It must also be noted that in the cases of small informal seed-systems the distinction between breeders and farmers is not a clear one. Traditional varieties are under continuous development, *in situ*, if you will.

Plant breeding is not just something that occurs in laboratories. For ABS it is also relevant to consider project activities such as participatory variety selection and participatory plant breeding (PPB), in which researchers and farmers together create preferred varieties. Another example from UPOV are the requirements of distinction, uniformity, and stability and novelty for varieties. These are the bases on which UPOV awards rights to plant breeders, the novelty criterion traditionally being included in the 1978 Act of the UPOV Convention. The newer 1991 Act however amended this criterion, stipulating that it is sufficient to discover and develop a plant variety. In practice that means that a plant breeder may 'discover' a farmer's variety of a crop and develop it, and by this process receiving variety protection. This protection can then affect the use of the original variety by farmers. There are safe-guards to oppose this development, but the burden of proof is located with the farmer, not the plant breeder. Even if farmers are aware of these criteria, it is a highly administrative and difficult process that is not within the means and options of a subsistence farmer (Winge et al., 2013aa: 183). The *sui generis* system in Nepal is still in the making, but is based on the same rules.

The framework as introduced above contains a series of quite extensive requirements for state parties, but it is important to note that they are mainly aimed at regulation between states. At the core of the principles of international law is the sovereignty of states, meaning that the only actor regulating benefit-sharing domestically is the state itself. There is a sharp distinction between the

needs of so-called 'provider states' and 'user states'. Provider states are generally developing nations with a high level of biodiversity, as opposed to the more developed states where the utilization and/or research occurs. The international ABS regime deals with the fair and equitable sharing with provider states, but this provides no guarantees for those communities or farmers within the country. Furthermore the international legal framework is focused solely on the genetic resources, and does not consider the aspects of sustainability, conservation, scientific research, plant breeding and the general, often dire, state of rural livelihoods (Ruiz and Vernooy, 2012: 97). This is where other protection, which will be considered under the umbrella of the rights-based approach, comes into play. This approach derives from customary law, the protection of indigenous and local communities (ILCs), food security, human and especially farmers' rights and distributive justice. The link between the rights-based and property-based frames is one based in practice and resilience.

4.3 Justice through farmers' rights

The agreements directly relating to ABS paint a picture concentrated on property and ownership. In addition, they are predominantly focused on transboundary relations, and not that extensively on agricultural resources and ABS domestically. As mentioned before, these agreements do not show the entire situation. In addition, the basis of a human rights perspective on ABS, farmers' rights, ILCs and food security are of relevance. It is useful to take an example from practice, in order to translate the legal talk to tangible steps taken by communities. An area to turn to for practical illustration is South-America. A prime example is the Peruvian Potato park, which shows the crystallisation of indigenous and local rights into an agreement between a community and external actors on how to engage with the genetic resources and traditional knowledge present (ANDES (Peru) et al., 2012). The Potato Park is the result of a community protocol being developed in order to regulate the sales of traditional varieties and the associated knowledge. A community protocol is a document written by a community itself (most likely assisted by an external actor such as an NGO), which puts forward the rights and duties of the community for engagement with external interested parties. The

notion that indigenous peoples and communities should be allowed a special voice regarding their concerns about access to their resources goes beyond straightforward property rights. The special position of ILCs is based on the assumption that genetic resources in these communities, and the associated traditional knowledge are integral components of traditional life and culture (Jeffery, 2002: 791, Ni 2009: 232). Because of this link between biodiversity and ILC livelihoods the standing of ILCs in for instance the CBD is much higher than under other environmental agreements (Prip and Rosendal, 2015: 15). The Potato Park has regulated and structured ABS for the rich biodiversity available locally. ILC rights can be instrumental in this manner.

However, communities do not need to be officially recognised as ILCs for a rights interpretation to take place. For the two linked objectives of conservation and development, farmers are being cast in the role of stewards of biodiversity (Martin et al., 2013: 126). Community-based conservation, of which ABS is a type, is rooted in this view of farmers as essential actors. The ITPGRFA illustrates this; it is of great relevance for farmers' rights. Farmers' rights are understood as they are included in ITPGRFA and the Nagoya Protocol, which both most predominantly set these out as farmers are the custodians of biodiversity (Food and Agriculture Organization of the United Nations, 2009: Article 9, Secretariat of the Convention on Biological Diversity, 2011: Introduction). Farmers' rights entail seeing farmers not as obstacles to conservation but as actors that protect biodiversity, and by guaranteeing their rights to their seeds and crops the larger goals of biodiversity and conservation are achieved. This relates to very many 'small' practical concerns that something very straightforward sounding like PIC create in implementation. A concern is for example who exactly it is that is entitled to give their consent, is this one farmer or an entire community (Andersen, 2012b: 348). The questions arising from what the exact rights and obligations in an ABS agreement should be, and can be answered from a national point of view (Li-Bird, 2012).

The development of the legal framework of ABS is ongoing and seeks to reconcile the needs of stakeholders with widely varying agendas. As a whole it can be concluded that it is the intellectual property rights, ownership, and commercialization perspective that has most momentum (Rosendal, 2006: 442).

The buzz around ABS (and to a degree PES) as opposed to the other community biodiversity management methods as introduced in the previous chapter is also due to the more easily recognised economic potential here. It is a rather paradoxical situation, on the one hand typical user-countries tend to argue that there is no money in bioprospecting, on the other hand ABS legislation in typical provider countries is attacked for 'undermining access and innovation efforts' (Rosendal, 2006: 422). Another major trend in the international legislation is the focus on benefit-sharing, the danger is that this undermines the objectives of access and innovation (Rosendal, 2006: 438). In order for ABS to be beneficial to communities, these parts of the method need to be balanced. As the data from the field-sites show access is a major theme for farmers involved. These divides are noticeable in the international legislation but also in the analysis on the local level, as this thesis shows. Nevertheless, ABS is inextricably linked to the notions of environmental and distributive justice, and should be interpreted as a means to ensure and improve justice for communities practicing it. It is therefore that to fully understand the process, objectives and rationale of ABS have to be understood not only within the framework of law, but also that of justice.

Chapter 5: Resilience-thinking

Major research gaps appear when linking biodiversity conservation to ABS, and benefit-sharing beyond direct genetic resources (Prip and Rosendal, 2015: 31). This thesis builds on the notion that resilience can be the link between discussions of biodiversity conservation and benefit-sharing. Before such a coupling can be achieved, understanding of resilience as a framework is necessary. At this time resilience has been a global buzzword for several decades, but at present it is particularly ubiquitous in international development narratives. Especially in the area of climate change adaptation it is difficult to find projects for which resilience is not a main objective (FAO, 2016). Resilience has also become a major theme in food security discussions with the rising number of food crises over the past decades: whereas during the 1990s there were 25-45 food emergencies a year, from the 2000s this number has risen to between 50-65 (Amaral et al., 2012: 157). Resilience is a prevalent theme, and just as ABS it is furthermore rooted in sustainability and sustainable development. Because of its effects on food security and development the Millennium Development Goals (MDGs) are an example in the global community where ABS also has its place (The ABS Capacity Development Initiative, 2013). Resilience also takes center stage at the MDGs follow-up, the Sustainable Development Goals (SDGs) (Toledo and Manzella, 2012).

The concept of resilience originated in the 1970s, when C.S. Holling in his research on ecosystems coined the concept of ecological resilience as how much disturbance and change a system can take, organized in adaptive cycles (Holling, 1973). He introduced three defining characteristics: 1) the amount of stress a system can sustain and still retain the same controls on function and structure, 2) the degree to which the system is capable of self-organization and has less need for feedback, and 3) the degree to which the system expresses capacity for learning and adapting (Walker et al., 2002: 5). The concept does not merely apply to ecological systems, but also to social ecological systems such as the agricultural communities this thesis considers. A social ecological system is not just one system in a cycle by itself (as will be explained below), but consists of different processes in different subsystems at different scales.

Resilience-thinking is based on a double understanding of social ecological systems, firstly the distance of a system to a threshold and the likelihood of crossing it, and secondly the metaphor of adaptive cycling (Salt and Walker, 2006: 54). Both of these are ways of comprehending the capacity of a system to deal with disturbances and change and still retain the same identity, consisting of its essential functions, structure, and feedback (Salt and Walker, 2006: 62). The first interpretation comes down to the question of how much change can occur in a system, in external and internal variables, before it crosses a threshold into a new regime. The base-assumption here is that a system is always looking for the perfect conditions, an equilibrium, but that such a perfect state is never reached. When a system crosses a threshold into a new regime it starts looking for a different, new, equilibrium. This new regime has consequences for those in the system, and some regimes are more desirable to its human residents than others. Crossing a threshold almost always leads to unforeseen and unwanted surprises. The distance to the threshold is decided by two factors: the state of the system, or where it is moving, and the space it has to do so, because if conditions leave less space for fluctuations it takes a smaller disturbance or shock to move a system over the threshold (Salt and Walker, 2006: 55).

In this perception of resilience, it comes down to knowing the regime, the variables influencing the course of the system and the location of the thresholds in order to be able to increase resilience. Although that might seem like an impossible feat, as social ecological systems are complicated and there are many variables and unknowns involved, systems are mostly being driven by just a handful of controlling variables (Salt and Walker, 2006: 63). These key variables, often slow-moving, are the ones to be reckoned with. Examples of slow-moving variables relevant to agriculture are rainfall levels, temperature, and nutrient input. For all of these slow-moving variables there is a threshold level, and when the system passes this threshold it will start behaving in a different way. Although this change is not automatically irreversible, it sometimes is, and in most cases transforming back is a very difficult process.

It is the above understanding of thresholds that further informs the metaphor of adaptive cycling. Because of their multifaceted nature social ecological systems

are dynamic, and the adaptive cycle explains that related to the phase a cycle is in, different variables will have different effects (Salt and Walker, 2006: 75). In the metaphor of the adaptive cycle there are four phases: the rapid growth phase (r), the conservation phase (k), the release phase (or omega phase), and the reorganization phase (or alpha phase). The r-phase is the phase of early pioneers; examples of pioneers in ecosystems are weeds, and in economic systems this would be entrepreneurs and innovators. This is where species and people alike explore opportunities and resources. This mellows out into the conservation phase, where connectedness increases and growth rates decline. The system gets more efficient but less flexible, because of all the links between actors. A system in the k-phase is stable, but the range of conditions in which it can function well declines. Following this phase is the release phase, where a disturbance shocks a system out of stability. This means that this can happen in a very short time-span, for example in the case of a natural hazard. Some scholars, notably Joseph Schumpeter emphasize that this is a time of 'creative destruction': energy tightly stored in the k-phase is now freed up and a source of renewal (Salt and Walker, 2006: 78). The last phase is the reorganization phase, where the chaos that ensues in the release phase is organized into new structures, quite possibly with the involvement of novel actors that were not involved in the last k-phase.

Types of risk	Potentially influenced by climatic factors	Potential economic consequences on farmers	Potential long-term consequences
Input price increase	Yes	Yes, reduced income for farmers	When it affects investment (seeds)
Output price decrease	Yes	Yes, reduced income for farmers	Reduce incentive for investment
Weather shocks	Yes	Yes	Depending on type of shocks and productions

Table 3: Examples of potential climate change induced risks for farmers, and their long-term consequences, that permeate onto the alpha phase. (Gitz and Meybeck, 2012: 23)

5.1 Local seed-systems and resilience

The understanding of thresholds and the adaptive cycle can be applied to a whole range of systems: ecosystems, social systems, and economies. In this case it is the socio-ecological system of a farming community, and the local seed-system that are considered through these lenses. The importance of local seed-systems is one of the main arguments for realizing ABS from a resilience point of view. In a resilience perspective the link between genetic diversity and food security is a direct one. As the FAO has put it: 'the broader the genetic base our civilization can rely on, the better equipped it will be to adapt to changing climate conditions and to guarantee global food security' (Toledo and Manzella, 2012: 175). On a local scale the genetic base is organized in farmer seed-systems. This means that one of the ways ABS creates resilience is by improving local seed-systems.

Earlier field research in West and Central Africa has shown that farmers' seed-systems in cases of shocks usually remain in operation (Jackson et al., 2010: 83). This research was conducted in the aftermath of such shocks, mainly major weather events. It was found that aid coordination generally assumes that in these instances local seed systems will have collapsed, and base their relief strategy on this assumption (Jackson et al., 2010: 83). The data however indicated that this is not the case, which is why such aid should not disregard local seed systems but make those the focus of rebuilding. The main aim of resilience oriented projects should therefore be seed-systems, taking into account the strength of the systems and increasing their adaptability to changing conditions. In addition there is the definition of resilience for food security, which depends on available livelihood options and on how well households are able to handle risks. The framework considers the ability of a household to be food secure by withstanding shocks and stresses. This includes methods that reduce the risk of households becoming food insecure, as well as tools that help households cope after a crisis occurs (Karfakis et al., 2012: 141).

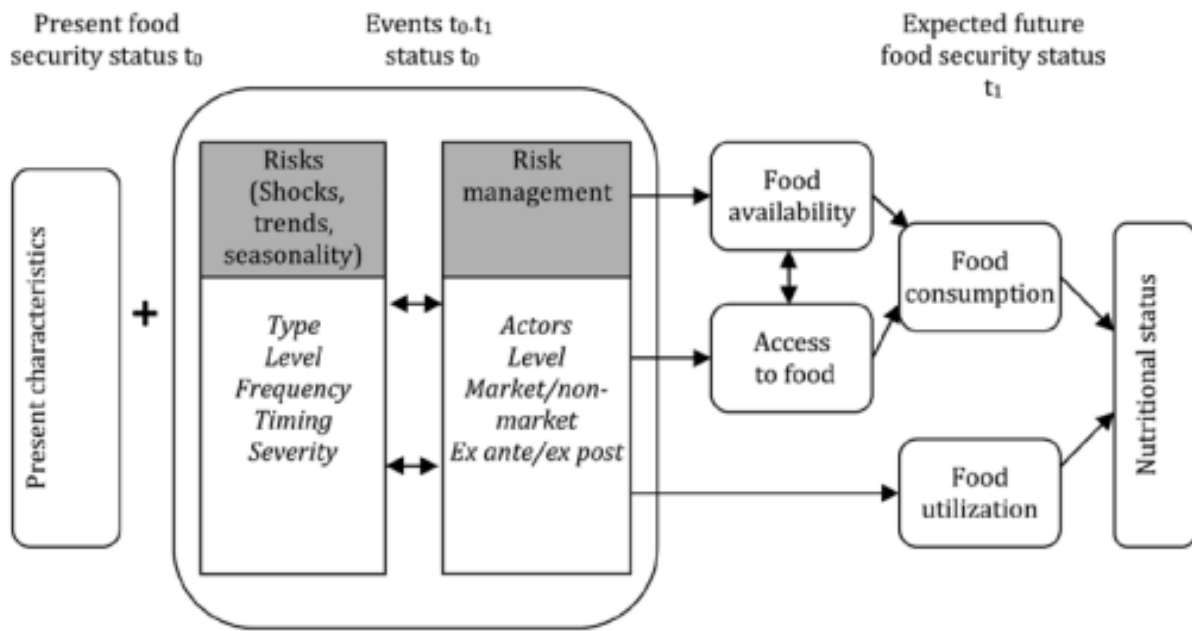


Figure 8: Vulnerabilities and their relation to food security (Karfakis et al., 2012: 141).

5.2 The farmer as the main referent

This is where resilience and community management of social-ecological systems (including ABS) intersect. Maintaining certain elements of the system that are needed to renew and reorganize after a shock radically affects its structure and function. The project objective of the overarching UNEP project in Nepal is a good example of the links made, it is to 'mainstream the conservation and use of agricultural biodiversity in the mountain agricultural production landscapes of Nepal to improve ecosystem resilience, ecosystem services and access and benefit-sharing capacity in the mountain communities' (Bioversity International, 2014).

The main realization here is that the actors that manage the system are actually right within it, they are farmers in the seed-system (Walker et al., 2002: 1). ABS is a way to enable these actors to make their own systems more resilient. It is this focus on enabling actors, and the direct approach to the individual farmers that has to be kept in mind - farmers here are the custodians and stewards of resilience in their systems. This is a perfect fit with the farmers' rights actor identification, as it is based on the need for the participants, the farmers, to drive natural resource management in order to realize resilience. One of the factors in

creating more options for farmers in case of stress is to increase farmers' awareness of the greater spatial scales they are located in. This means moving beyond individual farms, the local surroundings and the direct neighbors and communities, towards also integrating the landscape and watershed scales (Jackson et al., 2010: 81). This integration is not just with the surroundings, but also the actors herein. For instance, it includes institutional integration (Barnett, 2001b: 112).

Another interesting theory on how resilience thinking ties in with ABS and benefit-sharing is the idea of 'sustainagility'. This proposed system is a play on sustainability, which the authors say uses 'current trajectories and resilience to return to current baselines', and instead seeks to sustain the ability (agility) to adapt (Jackson et al., 2010: 80). While the overall merits of introducing yet another concept to the already meddled mix are open for discussion, the argumentation put forward is one that also endorses resilience thinking in relation to ABS. It ties in to the necessity of keeping open options for communities and actors in uncertain future situations. This means focusing on adaptive capacity and transformability besides the pure resilience of a system to return to normal after experiencing a shock (Jackson et al., 2010: 80). ABS in this regard is intended to do just that. Firstly to sustain the traditional crop varieties in a community that increase resilience in climate change induced hazard situations, and furthermore to let the benefits in itself strengthen communities and their position to make choices that improve their situation. An example of this could be deciding to use the income generated by commercialization of varieties after a shock to the system. Agility following from non-monetary benefits could be using increased political clout in local governance to improve situations. To what extent resilience is really a result of ABS will be thoroughly discussed in Chapter 8. First however a deeper insight into daily farming practices in Nepal is indispensable.

Chapter 6: The Nepali case

The previous chapters have predominantly dealt with the larger framework of the discussion of ABS for rights and resilience, both theoretically and legally. This chapter will depart from that more general line of thinking and discuss the situation in Nepal and the implementation of ABS there. Chapters 1 and 2 have already introduced Ghanpokhara and Begnas-Rupa field-sites and its respondents, but this chapter situates them in the state of Nepal itself. Nepal is a country that is highly dependent on agriculture, and agriculture and food habits within the country are incredibly diverse. The country is home to more than 90 different ethnic groups and each of these groups has distinctive food habits (Pandey, 2013: 202). Agriculture is also incredibly heterogeneous and fragmented. Rural farmers actively manage a wide range of crop plants for their livelihoods and conserve species by maintaining specific agro-ecosystems (Pandey, 2013: 202). In this section of the thesis the interaction between the different levels that stakeholders act on will be discussed, starting from the government at the top and all the way down to what farmers themselves say is important.

6.1 Domestic legislation and policy

Domestic legislation and policy
1997 Seed Regulation (revised 2013)
2005 AGRBS Bill (draft)
2005 Plant Variety Protection and Farmers' Rights Bill (draft)
2007 Agrobiodiversity policy
2013 National Seed Vision 2025

Table 4: Domestic legislation pertaining to ABS

Just as the international legislation is varied, there is a myriad of policies and legislation in Nepal covering or at least partly addressing ABS. Nepal is a party to both the ITPGRFA and the CBD, and the national framework for ABS mainly flows from attempts at implementing these international treaties. Nepal committed to fair and equitable benefit-sharing by signing these main instruments, and one of the current shared objectives of government and non-government actors is to

create policies aiming to make the Nagoya protocol operational. While this is still being developed, it is important to note what Nepal has already committed to. The 1992 CBD itself expressly recognizes the importance of local and indigenous communities in its preamble and several articles (United Nations Environmental Programme, 1992: (United Nations Environmental Programme, 1992: preamble par. 12, Art 8(j), Art 10(c), Art 17(2)). It furthermore has several substantive provisions on ABS, namely access to genetic resources and technology that makes use of these resources and participation on biotechnological research on genetic resources and benefits deriving from such technologies (Art 15, 16(3), 19(1) and (2)). In addition, Nepal has committed to *in-situ* and *ex-situ* conservation and sustainable use of plant genetic resources for food and agriculture by becoming a party to ITGPRFA, and to pooling and sharing those resources for agricultural research, breeding and the promotion of farmers' rights. ITPGRFA in Article 9 acknowledges the importance of farmers and indigenous and local communities as custodians of biodiversity: this article places the responsibility of ensuring such Farmers' Rights with the national government (Food and Agriculture Organization of the United Nations, 2009: Art 9, Andersen and Winge, 2011: 5).

There are several national documents that focus on conservation of agrobiodiversity, and ABS specifically. In 1997 a Seed Regulation (revised in 2013) was prepared that allows farmers to register local landraces according to some basic criteria. This Regulation also argues for the promotion of local varieties which have been improved by farmers or by farmers and scientists. The 2013 National Seed Vision 2025 includes clear statements on genebanks, community seed banks, community based seed production and capacity building among seed producers. The 1999 Seed Policy emphasizes the formation of farmers' groups. In order to fulfil the obligations of the CBD the National Biodiversity Strategy and Action Plan (NBSAP) was revised in 2014 from the 2002 National Biodiversity Strategy and an Access to Genetic Resources and Benefit-Sharing Law was drafted in 2005 (Ministry of Forest and Soil Conservation, 2014a, Ministry of Forest and Soil Conservation, 2014b). However, since then little progress has been made, due to political reluctance on the provision relating to indigenous and local communities (P. Chaudhary et al., 2015: 245).



Figure 9: Traditional methods of rice-straw processing being practiced in Ghanpokhara

The ABS Draft Law for instance includes a monetary benefit-sharing system for equitably sharing proceedings of new varieties between the government and communities. The 2005 Plant Variety Protection and Farmers' Rights Draft Act was drafted as part of WTO TRIPS obligations. This Draft Act again recognizes the efforts, knowledge and resources used by both breeders and farmers in the development of new varieties. It also allows farmers to register, control, reproduce and market their own varieties if they meet the requirements of distinctness, uniformity and stability. In addition, the Draft Act promotes the import and export of farmer released varieties, and allows farmers to secure remuneration from the sale of seeds. In this framework there is room for community seed banks to release varieties in their own name, which is of vital importance for community ABS efforts (P. Chaudhary et al., 2015: 245).

The 2009 Strategy of National Agricultural Genetic Resources Centre has as one of its objectives to build a network of community seed banks, which can be linked to ABS efforts as hubs. The Agrobiodiversity Policy written in 2007 and revised in 2014 focuses on conserving, promoting and sustainably using agrobiodiversity. It also includes securing and promoting farming communities' welfare, and their rights to their traditional knowledge, skills and techniques. It furthermore stipulates the development of options for fair and equitable sharing of

benefits arising from access and use of agricultural genetic resources and materials. Even though this broad guiding policy framework exists and legal framework is yet to be organized, ABS is currently in Nepal, as in many other countries, mainly developing through practice, which is why examples from the field are necessary. More importantly, farmers and community practices are inherent to ABS, and taking into account local practices, but also beliefs and cultural traditions is imperative for developing any kind of legal or policy framework (Jeffery, 2002: 791). This is why the activities of the stakeholders in the field are just as important as what is happening on institutional level for understanding the status and needs of an ABS system.

6.2 Project activity



Figure 10: Vegetable nursery set up in Ghanpokhara by Li-Bird.

The prevalence of NGO activity on ABS is a major influence on its status in Nepal. At least partly due to the stagnation in political and government efforts ABS is right now mainly being developed by non-governmental organizations. This is not unfamiliar in countries with less stable government structures. Central actors in Nepal are The International Centre for Integrated Mountain Development (ICIMOD), South Asia Watch on Trade, Economics and Environment (SAWTEE), Li-Bird and

Bioversity International. The first two are especially significant in the policy environment and for international development. Li-Bird and Bioversity International share this focus but it is mainly their practical work that formed the basis for this thesis. The work of Bioversity International and Li-Bird are good examples of NGOs taking on the ABS challenge. Both the field sites in Begnas and Ghanpokhara are illustrative of the prevalence of NGO activity in (indirectly) developing ABS practices at the grassroots level. The project sites are at very different stages, with Begnas being the recipient of ongoing and very extensive NGO activity on a myriad of subjects, while in Ghanpokhara this is still fairly limited due to the remote positioning of these communities.

The Begnas-Rupa lake area has been the focal point of a plethora of development projects, including over 30 projects focused on agriculture, and several of those incorporate benefits and benefit-sharing (Winge et al., 2013aa: 117; 130). Begnas VDC has established farmers' cooperatives and *in-situ* conservation projects. Furthermore there is a community biodiversity registry and incentive creation of cultivating local varieties by means of a revolving fund (Winge et al., 2013aa: 120). Li-Bird is also currently evaluating the effectiveness of a Payment for Ecosystems (PES) project linked to fish conservation in the community lakes. There is also a Participatory Plant Breeding (PPB) project that has been active for some time. This is notable as a particular progressive farmer labeled this project as successful even though there are no monetary benefits yet, as it has created 'social recognition' (Pandey, 2013: 207). Most interesting for ABS at this site however is the example of *Anadi*, a local rice variety. This variety has been publicly lauded as a success story of the supported commercialization of a local variety (Palikhey et al., 2015: 25). *Anadi* is sold for a higher price per kilogram because of its specific desired qualities, and the farmers' cooperative in Begnas is selling it to urban population, that was already aware of the variety, even though it was not readily available on city markets (Winge et al., 2013bb: 121). Li-Bird assisted the cooperative in contacting traders, and by providing technical and financial support for packaging and labeling. Even though there were some hurdles of mutual discontent between farmers and traders, with the support of Li-Bird a trade was realized. The NGO's aim here was to provide indirect support, as to not make any

of the parts of the value chain too dependent on its continued presence. This support is important as it shows the hurdles on the road to the successful commercialization of a local variety. It is for instance difficult to reach standards of uniformity and consistent output when traders are dealing with individual farmers, showing the value of cooperatives. The reason why this is interesting besides the obvious exciting success in consistently selling a local variety, is that it is now mainly one specific farmer that is benefitting. This is an innovative and progressive farmer who realized she did not need the entire cooperative to make the relationship successful.

In Ghanpokhara the GEF team has been active for about two years, as the LCP team (employed by the implementing local NGO) is realizing the Diversity Field School as part of its activities. The project is still in its initial phase, but aims to introduce ABS eventually. In the first year the focus has been on getting to know the local context and introducing the project to the VDC. To realize this there have been multiple group discussions introducing the diversity mandate and identifying the crops and varieties that should be focused on in the VDC. This inventory of the available varieties and knowledge in the area have aided in the start of implementing a more specific set of activities, organizing meetings and workshops and discussions with farmers on their preferences. Previously several tools were already put into practice. A diversity fair was organized in the VDC and was attended by 300 people. Project staff took this opportunity to document the varieties in the VDC, as the communities filled out forms and brought their seeds to the fair. This inventory was later digitalized.

In 2015 the main LCP activity was the diversity block, of which the aim is multipurpose. The objective is to serve as a stepping stone for next year's activities, as it helps to identify the options in varieties available. The block includes varieties from Humla, Jumla, Dolakha, the National Gene bank and other sources selected by NARC. Due to time constraints the block was planted by the LCP team, but farmers are involved in the selection of varieties. Farmers are also directly involved as they are around for planting, even if this is while working in their own adjacent fields. When I spoke to the LCP officer she stated that the following year the responsibility of the block would be completely transferred to

the farmers.¹³ In addition, farmers select varieties by scoring phenotypes, and naked barley field trials included farmers in selection of preferred varieties and exposure visits. There has been no creation of new varieties in this area (yet) and participatory plant breeding activities are being considered but are not in place. This is important as it means that in contrast to the Begnas field site there are no new varieties which would spur the discussion of joint ownership over such varieties. There are community consultations to fill out a Community Biodiversity Register (CBR). The CBR is the first step for any ABS project. A CBR is literally a list kept in the community of what varieties of what crops are available, where these originated from and who grows them. Furthermore in Ghanpokhara there are discussions organised by Li-Bird for farmers to decide on which tools should be implemented in the future.



Figure 11: Potential positive effects of the Diversity Field School on ABS. The DFS is one of the Bioversity International/Li-Bird CBM Projects that are being implemented as a possible precursor or vessel for ABS.

Even though some of these activities might not seem directly related to ABS, there are long-term connections. They signify the start of taking stock of the unique

¹³ Interview with LCP Project Officer, Ghanpokhara, 3 November 2015.

local varieties of a particular locale. Moreover, activities focusing on traditional varieties create awareness of the value of the resources that the farmers possess (The ABS Capacity Development Initiative, 2013). The implementing organizations have ABS mechanisms on their immediate agenda and are looking for the desired way to implement them within the existing structures of the communities. As with the DFS, the ABS agenda of the implementing agencies is clear. A large part of my work at Bioversity International was finding out what opportunities current methods may have for ABS.

6.3 Farming in the foothills

Critical for evaluating ABS mechanisms and their value are the needs and opinions of the people they are supposed to help: the farmers and their communities. An issue that is fundamental to the ABS question is how the current system of seed and variety sharing works, and how ownership is regulated. To gain understanding on this subject the interview approach, as described in Chapter 2, was used. All farmers who were interviewed for this thesis save and store their own seeds, and mention this as their primary source of seeds.¹⁴ They all supplement this with exchanges with their neighbors, which they explain as being regular or traditional practice. Farmers cite the benefits of more people growing varieties for the seed-system in the community as a whole. Exchange with relatives is the main and in most interviews the only way in which seed is exchanged with other communities. This happens as part of social visits. Farmers do not actively seek out relatives in other localities with the objective of collecting seeds for alternative varieties, but they do exchange when meeting for other reasons. When they return home bearing new varieties they often share these with their neighbors, per community practice. A distinction here is made between cereal crops and vegetables, as while for cereal crops seed saving is always mentioned as primary seed source, the origin of vegetables is more diverse. Vegetable seeds come from private sources, as they are bought from the Agricultural Service Center (ASC) and saplings come from

¹⁴ This is supplemented by the motivations as explained by farmers themselves in Ghanpokhara, in the series of interviews in November 2015. The results as used in this chapter are all general conclusions after analysing the answers given by all of the respondents. Chapter 8 offers a more specified farmer-by-farmer analysis of personal views.

nurseries and neighbors or relatives. It is important to keep these sources in mind, and in Chapter 8 the meaning of these seed-systems for ABS will be elaborated on.

It is interesting that although most farmers elaborate on the importance and value of exchanging seeds to increase yields, this is not connected to a practice of exchange beyond the small circle of neighbors. Often after a respondent spent considerable time listing the perks of new varieties, they would illustrate this with an example of exchange that happened several years ago. In the same conversation they would state that new varieties of their local varieties are needed at least every 2-3 years. This regular change was the most often cited argument for exchange. Also often discussed was the capacity to deal with scarcity after natural disasters and the general desire for well-performing varieties with high yield. Almost all interviewees elaborated on the importance of access to different varieties to achieve these perks. This gap between needs and acts is frequently explained by farmers as that although exchange is good, they believe it is not a possibility due to the specific characteristics of their fields. On discussing the exchange between project sites that takes place as part of the LCP, several farmers mention that there is no international sharing happening, as 'other countries have other geography and climate, so they do not grow the same varieties, and what they grow will not work for us'.¹⁵ In addition, almost all farmers interviewed do not know what varieties farmers in other VDCs than Ghanpokhara are growing, but still assume that whatever it is it will not work in their fields. This shows that on any kind of scale farmers do not know the value of their varieties. Awareness building on the potential of crops from similar regions would therefore be of vital importance for any kind of extension on the seed network.

Of the greatest weight is also the willingness of farmers to share their resources with others. As part of the interviews farmers on the field sites were asked who they would be comfortable to be or are already sharing seeds and information with. The most striking result here is not that none of the respondents excluded any (potential) recipients, but that they needed active prompting for

¹⁵ Interview with the female farmer who is not directly involved with the LCP activities, but does host project visitors (including the author) on her farm when they come to Ghanpokhara. Interview, ward #1 Bhache (Ghanpokhara), 3 November 2015.

every category. Most have not considered options beyond traditional exchange partners like neighbors and relatives. Respondents provide several reasons for this. Some of the interviewees are satisfied with their options right now and therefore do not look any further. However, when asked what kind of change they would like to see in their seed-system, many interviewees mentioned that they want increased access to seed sources. Lack of interest is apparently not the only reason. When asked why they were not looking for other varieties in other VDCs, several farmers replied that distance and time constraints prevent them from looking for varieties elsewhere, or that it would be no use going somewhere else, as they do not know anyone in these places. Even though farmers when asked say they would share their own seeds with anyone who asks, they do not feel comfortable putting that to the test in other areas. As the informal network of exchange is based on personal relations, its scale is limited per definition.

6.4 Issues of perspective, awareness, and value

Issues of scale are related to the nature of the crops that are considered in this thesis. The interest in local crops rarely goes beyond regular practice. Farmers are more interested in potential cash crops or modern seeds and methods than in the familiar crops they are growing traditionally. The inability of farmers to see the local varieties as a resource is illustrated by a story told by one of the respondents. When discussing with whom she shares varieties, she mentioned how a former research visit had involved a foreign visitor asking her for finger millet seeds, which she happily shared. She however does not understand what value or use these seeds from Lamjung could have for the recipient.¹⁶ Although this is just an example, it resonates with the understanding of traditional crops that most respondents put forward. A concept that is even less familiar for most respondents is that of (traditional) knowledge related to local crops. In interviews this concept had to be introduced extensively before discussion on it was possible. Consensus is that all community members know the same things, so that sharing within the community is of no use. The customs regarding ABS observed in Ghanpokhara consist of practices rather than rules per se. Even though the farmers do not

¹⁶ Interview with the female farmer that hosts LCP visitors, ward #1 Bhache (Ghanpokhara), 3 November 2015.

perceive it as such, the system of regular exchange of seeds with neighbors is the social norm in the community. In addition, access to varieties and knowledge is open, even though actual exchange is limited to a small circle of neighbors and relatives. This lines up with earlier research on communities' perceptions on ABS in Nepal in relation to traditional knowledge, where it was found that for major cereal crops, neglected and underused crops and other crops for communal use access is relatively open, and that restrictions exist mainly for medicinal plants and selected forest products (Winge et al., 2013a: 187). The underlying cause is that farmers and communities are generally not aware of opportunities for benefit-sharing that their knowledge brings, and do not perceive their knowledge and skills as a resource, or often even interesting. This knowledge-gap makes that education has to be integral to any ABS development. It can be hard to reconcile the two opposing interests of sharing genetic resources and associated knowledge. On the one hand biodiversity is of paramount importance for food security, and enhancing agricultural biodiversity enhances livelihoods. On the other hand, communities and farmers should get credit and benefits where it is due when its varieties are adapted and used by external actors. This is a perspective that seems to resonate with the general position of the farmers interviewed as part of projects as described above, and that of a certain progressive farmer in the Begnas field-site. He mentions that the time and efforts that he invests in developing new rice varieties should be recognized and rewarded. He states that the recognition is even more important than monetary benefits, citing the development of Nepal as a goal. In line with this thought he says that other farmers should be able to freely use the variety, but that he should be entitled to a share of the profits if the variety gets used for commercial purposes such as selling seed (Winge et al., 2013bb: 125).

6.5 Rural flight

Other issues that were voiced many times by the respondents can also be related to ABS. Nepal's remote farming communities, as is the case almost everywhere in the world, are being drained of their young people. This means that the people who stayed home and work the land are the elderly and the children. Almost all respondents mentioned lack of labor as their greatest problem. Furthermore, the

knowledge of and trust in private seed traders is often limited, while many other stakeholders such as NGOs are looking for ways to integrate the private sector into development efforts. 'Rural flight' as it is called, is part of a vicious cycle identified by the FAO. National neglect of agriculture squeezes out the smallholder farmers. There is increased urbanisation, farms are abandoned, and not just communities but also regions and eventually countries lose their food self-sufficiency. Governments are then forced to import low priced food, which gets dumped on the markets, making smallholder farming more difficult, leading to neglect (International Institute for Environment and Development, 2011). This is why the focus on increasing food security entails not just farmers as smallholders producing self-sufficiently, but also on increasing household income. Olivier de Schutter, former UN Special Rapporteur on the Right to Food has formulated it as 'hunger is more the result of a lack of purchasing power of the poor than the high prices of food in themselves' (International Institute for Environment and Development, 2011). ABS might be the key in establishing connections of trust between communities and markets, as the Begnas Anadi rice example already points at (Sthapit et al., 2015: 5).



Figures 12 and 13: A farmer near Khudi is growing marigold flowers to be used for puja. These cash crops are sold in the cities.

Related to both of these issues is the shift to cash crops that some farmers are making. Progressive farmers have already invested in, for example, big cardamom, which they plant alongside the local food crops. Big cardamom however takes 3 years before it becomes profitable, which for economically vulnerable farmers is a long time to wait for returns. Such an investment is furthermore not for everyone to make, and farmers that do not have the cash, or landless farmers, who are some of the poorer community members do not have this option. Progressive farmers mention that there is a lack of education amongst their community members, but also an unwillingness to change. Generating profits from local crops already in the community could be the key to solving these issues.

Chapter 7: The interaction between international law and ABS

The questions raised in this chapter unravel the meaning of the international legal framework for ABS. This is a chapter that analyzes this relationship in both directions. It therefore seeks to position ABS practice within the legal framework, building on the theory as introduced in Chapter 4 but using the Nepali example. The issue here is how ABS fits in, and to what extent it is supported not just by the treaties and agreements directly addressing it, but furthermore by the constellation of related international regimes and distributive justice. Such an analysis is rather pointless without addressing the use and justification of ABS from a bottom-up perspective. By situating the actual practices and experiences in a developing country like Nepal within this abstract legal frame the position of ABS becomes clear.

7.1 International agreements

It must be noted that the approach taken in this chapter of using principles of several 'corners' of international law is not uncontroversial. There is an ongoing discussion in international law regarding to what extent the several fields it contains are unified or fragmented. International Intellectual Property Law, International Trade Law, Human Rights Law, and Environmental Law, which are all the fields ABS interacts with in the legal framework as put forward in this thesis, are all separate regimes of law. Although there are some principles that are argued to be universal in all fields, of which state sovereignty is a prime example, in general one cannot directly apply principles of one regime to another (Shaw, 2002: 12). The degree to which there is unity in international law or fragmentation between the fields is contested, and very much depends on which scholar you ask. The rule of thumb however is that you cannot haphazardly reach into another regime and import very specific elements to aid your interpretation in a different regime. So, you could not use a certain principle of International Trade Law and use it for interpretation of a human rights treaty, which is also what this thesis actively avoids. On the other hand the regimes do not stand alone. They interact and influence each other even though they are guided by separate rules (Pulkowski, 2006: 483). Therefore, arguing a degree of complementarity is not creating legal fiction. Instances of 'copy-pasting' the several regimes are useful in

their parallels, and relevant sections of the one regime can aid in interpreting and understanding the other. The baseline here is that this is done in accordance with the Vienna Convention on the Law of Treaties (VCLT) and its Article 31 on the interpretation of treaties:

1. *A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.*
2. *The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:*
 - (a) *any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty;*
 - (b) *any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty.*
3. *There shall be taken into account, together with the context:*
 - (a) *any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;*
 - (b) *any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;*
 - (c) *any relevant rules of international law applicable in the relations between the parties.*
4. *A special meaning shall be given to a term if it is established that the parties so intended. (1969: Article 31) emphasis author)*

The CBD itself provides that its provisions shall not affect the rights and obligations that derive from existing agreements, unless exercising these rights would cause serious damage to biological diversity (Brogiato et al., 2015: 4). It also recognizes the importance of the ITPGRFFA. The ITPGRFA however also stays vague on interpretation and refrains from offering clear definitions even of new concepts it introduces. Farmers' rights for instance are only explicitly a part of the preamble, even though their working is mentioned throughout the convention (Jeffery, 2002:

791, Winge et al., 2013b: 6). As the VCLT shows this creates uncertainty, as the preamble does not carry the same weight as actual articles of a convention. It is therefore that as long as interpretation of ABS and related concepts is done within the boundaries of the VCLT, and is supported by the other systems in place, that should also be recognized in national interpretation.



Figure 14: Terraced paddies that have fallen out of use, lack of young people to work the lands is one of the reasons for this development.

7.2 The realization of international law on ABS

Knowing there is quite an extensive array of treaties available leads to the understanding that the most straightforward road to realizing ABS is the international agreements as discussed above. Indeed, ideally the Nagoya Protocol, CBD and ITPGRFA create the legal certainty for not just provider-states but also provider-peoples. In reality this is not (yet) the case. Because of the rapid development of ABS and the diverse and changing nature of the activities within the scope of these agreements, there is ample room for interpretation (Laird and Wynberg, 2012: 2). Therefore, the direct sources are not sufficient to understand ABS, but there is room to discuss the agreements not just separately but also as offering an understanding as a whole. Here the VCLT is of much less use, and it is necessary to know the legal justification for going beyond the specific ABS

treaties. It all comes down to the very core of international law. The sources of international law between states and other international actors are three-fold. As written down in the Statute of the International Court of Justice these consist of international treaties, customary law, and international legal principles:

(a) international conventions, whether general or particular, establishing rules expressly recognised by the contesting states; (b) international custom, as evidence of a general practice accepted as law; (c) the general principles of law recognised by civilised nations; (d) subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law (United Nations, 1946: Article 38(1)).

The CBD, ITPGRFA and Nagoya create a solid basis, but in addition other principles flowing from adjacent conventions, soft law such as the Bonn guidelines, decisions and work towards creating customary law. Important here is to distinguish international customary law from national customary law. The national variety is addressed throughout this thesis as it encompasses the way that people have an informal alternative system of norms and customs to the national rules. This system is informal not because it is of lesser importance but because it is generally not written down. For example the custom of the people of Ghanpokhara to share their resources freely with neighbors qualifies. If people within the community were to break this rule, even though unwritten, it would lead to repercussions and consequences within the community. International custom as a source of law is not the same, although it works in a similar manner. International customs might seem a more informal source of law than international conventions, but in practice they are not open for discussion. The definition of international customs that is widely accepted also stems from the International Court of Justice. Following the ruling in the *Continental Shelf Case* between Libya and Malta in 1985 international customary law consists of state practice and *opinio juris* (*International Court of Justice, 1985: 239*). The first part of this is reasonably straightforward. It means that international customary law is created by what states actually do. The second part however is somewhat more abstract, but comes down to the reasoning that a

state acts in a certain way because it is believed that it was under a legal obligation to do so. This excludes reasons both positively as negatively informed. In short if a state acts a certain way just to create goodwill or alternatively because it is under duress to do so, this does not qualify as *opinio juris*. These are situations where even if it is not expressly provided for in a treaty, a country will still act as it perceives international law to already stipulate that it must. The provisions of the respective treaties are applicable in their own right, but also create further international norms that are relevant to ABS. This second part of international custom is a psychological element of sorts.

As the above sections set up it is a legitimate approach to use the adjacent regimes of law and concepts to make sense of ABS where the directly applicable law falls short. The main justification for approaching ABS as framed in the larger international structure besides just the specific treaties is that benefit-sharing is a concept that long predated the discussion on ABS within the CBD framework. Before ABS as a set of mechanisms became specifically rooted and adopted within the biodiversity treaty, it existed purely in the interaction between multiple regimes of international law. It was laws on development and trade, the environment and intellectual property that defined and regulated ABS (Brogiato et al., 2015: 1). Building on this understanding it is possible to roughly categorize the objectives of ABS. Specifically fighting against the misappropriation of natural resources falls within the scope of trade and intellectual property regimes, whereas the more ethical duty to conserve the earth is at home in the environmental law 'box'. This thesis includes this original widened perspective, by foregoing such strict compartmentalization. It relinks conserving the earth and specifically biodiversity by means of increased resilience with human security, farmers' right and food security. Traditionally the value of biodiversity has been measured by its use for people (Brennan and Lon, 2015: 416). Within human security the environmental domain, in which biodiversity sits, is considered by means of how this affects the main referent, the individual (Chenoy and Tadjbakhsh, 2007: 18). This link to human security and Farmers' Rights is what the resilience analysis in the next chapter will make abundantly clear: Farmers' Rights

and social and distributive justice too have become appropriate means of interpretation.

7.3 The merits of parallel international frameworks

One of the rights based regimwa that carries a lot of gravitas and is internationally pursued are the rights of indigenous and local communities (ILCs). Protection on the basis of indigenous and local rights would be significant for the Ghanpokhara respondents interviewed for this thesis: the Gurung people belong to the 'adivashi janajatis', the indigenous nationalities group in Nepal (Hachhethu, 2013: 121). The interviewees were predominantly Gurung and the region is part of the Gurung homeland (Hachhethu, 2013: 124).¹⁷ If the ABS Draft Bill as it stands now becomes law the people of Ghanpokhara could qualify under the Indigenous and Local Peoples protection. A Nepali Gurung UN officer trained within the Office of the High Commissioner of Human Rights spoke out on the way that 'indigenous peoples are being dispossessed of their lands and ways of life. Extractive industries, often in collusion with governments, have flagrantly violated their rights,' (UN Office of the High Commissioner for Human Rights 2015). In light of the developments in the Terai and the tensions with the Madhesi, which are a people that also identify as 'adivashi janajatis' there are reasons why a sudden change in the government's reluctance to accept an ABS bill with explicit recognition of the rights of indigenous and local communities is rather unlikely.¹⁸ It must be noted that some argue that there has been an increase of ethnicity formation in Nepal, which the current tensions fit into (Pfaff-Czarnecka, 2003: 149). Regardless of current developments Nepal is a hierarchal society and caste-division is important in daily life and interactions (Pfaff-Czarnecka, 2003: 138).

Furthermore, the connection between traditional values and agricultural crops was a difficult topic to breach and then discuss with the respondents. In one of the interviews a very extensive discussion emerged between the local CAMC

¹⁷ As well as emphasized in the interview with the CAMC chairperson, ward #6 Ghimrang (Ghanpokhara VDC), 4 November 2015.

¹⁸ There has been protracted unrest and violence in the Terai region of Nepal, at which the Madhesi and their rights as an ethnic peoples are at the center. Chapter 7.5 gives a brief overview of the situation in late 2015, the time of the data collection for this thesis.

chairperson, who is a community leader, his wife, the LCP project officer and several other people that drifted in and out of the room. My initial question had been whether he would consider protection for the traditional knowledge on the seeds he was planting and sharing, on the basis of his Gurung identity. There was a double negative answer to this statement. First of all, the group could not come up with what traditional knowledge regarding their crops would consist of.¹⁹ The conversation moved towards medical uses of the food crops under discussion, of which they denied any specific uses existing, followed by a listing of the uses they were aware of. This seemed to be a clear example of how this knowledge is simply not recognized as something of potential value or significance. The second part of the answer was that of all of the parts of his life, the traditional knowledge regarding these crops did not qualify as something he would deem in need of special preservation. Instead he explained how something as special as the Gurung dance would be a traditional element he would protect.²⁰ This furthermore illustrates that respect for rights and benefit-sharing is not impossible in cases where knowledge is not the property of a clearly identified individual or group. On the contrary, some argue that intangible benefits are the most sustainable: recognition, and improvement of the knowledge on use are long-lasting (Willcox et al., 2015: 281). The entire concept of genetic resources and their value was developed in the 1960s and 70s to support the strategic social and economic value of genetic information contained in crops, and the new framework in which the Nagoya and the likes fit is meant to negate the underestimation of cultural and identity value for farmers and local communities that these crops have (Santilli, 2012: 105).

Arguments about social and distributive justice are rarely made without having property rights at their essence (Roberts and Sutch, 2016: 230). There has been a criticism of promoting justice with ABS, mainly focusing on the issue that efforts of promoting justice with ABS reduces benefits to monetary payments (Martin et al.,

¹⁹ Interview with the CAMC Chairperson, ward #6 Ghimrang (Ghanpokhara VDC), 4 November 2015.

²⁰ Based on the same interview.

2013: 125). Often this critique is paired with a call for rights-based approaches that consider local values and realities instead of reducing farmers' decision-making to external structures (Martin et al., 2013: 125). Framing ABS as creating justice has this exact reasoning at its core: by realizing property rights for the rightful owners of genetic resources justice is enhanced. This is an important notion, and a reason why it is important to look beyond just the monetary benefits and consider the benefits for the community as a whole. By doing so, the justice-paradigm does add meaning, directly linked to food security and resilience. Besides interpreting the legislation that is in place, the applicable law and concepts also help policy makers and legislators to connect ABS with the wider narratives of politics but furthermore funding.

7.4 National policy focus and efforts

The elephant in the room when it comes to international agreements is however just as prevalent here as in all of international relations: the principle of state sovereignty. State sovereignty is the main safeguard against abuse of power from richer, persuasive states as well as from actors within a given country. What the treaties regulate is, most often, considering the fair and equitable sharing of benefits between states. The agreements considered above ensure fairness in the ABS relationship between developed and developing nations. What the nations then do within their country is the territory of guidelines and recommendations. It must be noted that the Bonn-guidelines were written when it became obvious that ABS was the one of the three goals of the CBD of which implementation seemed to be lacking. Many industrialized parties to the CBD showed reluctance in adopting national measures supporting ABS, while megadiverse countries like India adopted restrictive legislation to guard against biopiracy (Morgera et al., 2014: 6). As all of international law rests on state consent it is the interpretation and actions of the nation-state that determine how all of this framework makes its way into practice. State sovereignty is the ultimate safeguard against foreign interference, but it also allows states to a very large extent to pick and choose what parts of international law they wish to implement. In addition, regardless of the goodwill and interest of the state and the members of government tasked with interpretation, translating international frameworks into actual practical is never a straightforward process.

To some degree deviation should be taken in stride, but it is an observation that the more aligned, holistic and well-developed the international level is, the more convincing and easier it will be for a country to implement. Another benefit of a diverse system is that there is opportunity for 'mixing and matching'. Although on principle this is not the most desirable practice, it does mean that some elements of such agreements that have most resonance in society make it to the implementation stage.

There is one major pitfall to this approach, which is one that Nepal is also presently facing. Ideally, all the separate conventions and rules reinforce one another, creating a comprehensive legal space for in this instance ABS. However, in practice the multiple treaties and decisions are hardly a holistic framework enabling implementation, but rather a big pile of at best confusing and at worst conflicting rules, that states are supposed to make sense of. Guiding here is again the VCLT and its Article 31, pursuant to which '(a) any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty; (b) any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty' are sources of interpretation (1969: Article 31(1)).

7.5 Domestic constraints

This constellation of international agreements within international legal regimes leads to conflicts within the management of PGRFA. Not only are the different agreements located in their separate regimes of law, but the range of difference also extends to the stakeholders involved. ABS is applicable to a broad range of different actors with widely varying objectives, in widely different sectors (Laird and Wynberg, 2012: 2). Regine Andersen even goes as far as to state that due to regime interaction the all-over end-result is a negative one (Andersen, 2012b: 339). What it certainly does is create a lot of time-consuming bureaucratic effort. The government parties in Nepal are no different, and are trying to find out what the multi-lateral system means for ABS in Nepal. NAARC, in cooperation with international efforts from Bioversity International is trying to make sense of the

multiple treaties regulating ABS and positioning Nepal here within. For a country with limited economic and political resources this is a challenge. ICIMOD has noted that even though there has been a draft law and stakeholder engagement, ABS is low priority in the Nepali political landscape (Oli, 2015).

Additionally the situation of these problems in less developed countries in the Global South further complicates the process. There is this potential issue of political disinclination, but moreover there might just be a simple lack of capacity, funding, or interest. Regrettably, political resistance too is prevalent to a certain degree. It cannot be ignored that an international actor like Transparency International awards Nepal lower than 30% on both perceptions of and control of corruption (Transparency International, 2016). As mentioned, an ABS Draft Bill has been drawn up since several years, but this has been on hold since, due to controversy over its provisions on indigenous and local peoples.

A lack in capacity and governance is most definitely an issue in Nepal. As more thoroughly discussed in Chapter 6, Nepal has one of the lowest GDPs in the world. Nepal has been a signatory to a wide range of the agreements in question for a long time, and even though these might have stipulated a certain level of implementation it is far from establishing such a practice. There is not sufficient capital or expertise to create these systems and institutions. Within the field it is agreed upon that when the Nepali government signed the ABS treaties there was not a full understanding of the depth of obligations these treaties entailed.²¹ In addition, Nepal is just emerging from decades of civil war and conflict, and the political landscape is still incredibly volatile. While I undertook the fieldwork for this thesis in the fall of 2015 Nepal promulgated its constitution, after being in the process of drafting it for eight years. This led to incredible celebration, and the formation of a relatively stable cabinet since the abolishment of monarchy in 2007. The new constitution however also spurred the escalation of conflicts in the Southern Terai region of the country, where approximately 40% of Nepal's population lives. This left the country reeling under violent protests, a political blockade by the Madhesi people and an ensuing informal trade-embargo by their

²¹ Understanding based on ongoing participation and observation at Bioversity International.

main trading-partner India. These in turn created a nation-wide deficiency of gasoline, cooking gas and basic necessities such as salt or medical supplies. All the while the country is still dealing with the aftermath of the two massive earthquakes that shook the nation in April 2015, which at the end of that calendar year still left an large group of people displaced, as well as entire villages inhabitable.



Figures 15 and 16: Cars lining up for fuel and flasks lined up for cooking gas at the height of the border blockades, in Pokhara, Kaski, Western Development Region.



What this brief situation report illustrates is that even if ABS is a priority and there is a complete desire to make sure appropriate systems are put in place, it cannot be expected to be happening swiftly. As far as political interest goes it must be noted that ABS is in fashion right now, and attaching the right buzzwords to your activities is of vital importance to generate funding for current and new projects. This is just as true for the non-governmental actors in play. It can certainly be questioned whether this is a healthy system of development, - a question for which there is insufficient space in this thesis to fully engage with. It is however a reality for international organizations and NGOs such as Bioversity and Li-Bird that must

be kept in mind when analyzing a framework such as ABS. Despite its possible negative effects, it also means that such an alignment of interests caused by international development trends puts non-governmental organizations in a position to form advocacy coalitions to support or pressure bureaucrats in a state with weak institutional government structures (Andersen, 2012b: 360).

7.6 Advocacy and NGO activity

A solid example of NGO efforts turning out to be incredibly effective are the achievements by a focused campaign on Nepal's position in the WTO. In 1998 Nepal applied for membership to the WTO after having had observer status, and entered into negotiations simultaneously with China, Vietnam and Cambodia. It was communicated that joining UPOV was a requirement for membership. In Nepal however the National Alliance for Food Security (NAFOS), which as a loose network had been dormant launched a massive 'No to UPOV' campaign, fearing for major infringement on farmers' rights (Winge et al., 2013aa: 181). NAFOS consisted of a range of actors: ActionAid, SAWTEE, Caritas Nepal, Pro Public, Green Energy Mission Nepal, Li-Bird, Nepal Permaculture Group, USC Canada and Care Nepal (Winge et al., 2013aa: 187). NAFOS developed a unified stance against UPOV membership by campaigning, contacting farmer organizations facilitating workshops with farmer groups, and consulting with private stakeholders (Santilli, 2012: 105). As a result Nepal officially rejected UPOV membership, but agreed to develop a *sui generis* system by the end of 2005, after becoming a WTO member in 2004. The Ministry of Agriculture and Cooperatives drafted a law to fulfil this alternative obligation: the Plant Variety Protection and Farmers' Rights Law. The three other countries that applied for membership together with Nepal, China, Vietnam and Cambodia, joined in September 2003 and adhered to the UPOV requirement. This example from Nepali history within the field of seed laws illustrates the importance of effective partners, clout and aligned goals of government and non-governmental actors, and provides a success story to inspire a similar timeline regarding ABS. As several of the organizations involved at that time are still involved at present, this is not too high a leap.

A parallel between the UPOV situation in 2008 and the ABS situation now is that prior to launching the campaign NAFOS and the member organization had already been working on UPOV on district, community and farmer levels (Winge et al., 2013aa: 189). For ABS this is the case too. SAWTEE has incorporated the topic in its advocacy work and the government is involved by means of NARC. Important institutions such as the Seed Quality Control Center are present at meetings and workshops where ABS is on the agenda. For Li-Bird and Bioversity International specifically ABS is a focal point in their Logical Framework Approach to improving seed-systems in Nepal. There is however one big stumbling block, and that is to create consensus and collective action there has to be a broad agreement on definitions and goals. While working with several organizations in Nepal it became clear that there was ongoing discussion on the definition of ABS for the project and friction between implementing and funding agencies on its meaning within the LCP. Senior members of both teams and implementing officers who had been closely cooperating on the subject for a considerable time needed to realign their understanding of ABS for the project at the workshop. Regardless all were eager to integrate ABS in the project and the theoretical focus incorporated such measures from the initiation of the project onwards.

7.7 Local practices: project officers and customs

Even more telling than what is happening at the national and regional levels, is what is happening on project sites. As has been noted before one has to keep in mind that those sites visited as part of the LCP were all quite recently established, and ABS was more of a long-term objective not yet dealt with in the daily practices. Nevertheless, those officers are part of the wider organization, and exposed to ABS and the objectives of implementing ABS mechanisms in the respective field-sites on a regular basis. The contrast between the first field visit in connection to the DADS conference and the response of the field officers in Ghanpokhara in the reception of the mention of ABS was stark. The DADS conference took place at the very start of my field stay, and I was basically introduced with the statement that 'this student will take on outcome 3 of the

project: ABS'.²² This statement was met with slight disbelief, which showed the degree of understanding: the listeners understood the size of this project.²³ When I introduced my question about ABS to the project officers at the field-sites however they all, as had everyone before them, agreed that this was an important matter. However, they also had a very limited understanding, and for all of them ABS was a mechanism that required action in the future.²⁴ When asked specifically which measures they had already implemented as part of ABS the answer was an unequivocal 'we're in the initial phase, ABS will come later'.²⁵ Interesting however is that when the interviews expanded upon what other measures they had been focusing on, several of these measures fitted into those introduced as 'soft' ABS measures: creating registers, diversity fairs, identifying progressive farmers. Even though it might have been unclear at times for the implementing officers, ABS was already on the agenda.

7.8 Relating local customs to the international framework.

Notions of justice permeate debates regarding environmental issues and ABS is no different. Access rights, deliberative processes shaping decision making and sharing of economic benefits are all part of the justice debate (Martin et al., 2013: 122). ABS is not just economic, since it also has a right-fulfilling function. ABS's place on the nexus of norms of human rights, environmental protection, peace and security is where its power lies. Distributional justice is at the same place. Distribution and fair access to natural resources means shielding those worse off from potential exploitation by those better off, which is the ultimate goal of ABS. It must however be noted that for seed-systems to be distributionally just they do not necessarily need to fit within global paradigms of commodification and

²² Or, officially: 'Promoting an enabling environment for access and benefit-sharing', leading to outcome of 'communities and other stakeholders gain from benefit-sharing mechanisms that support diversification of varieties' (Bioversity International 2014).

²³ Even more so than I did at that point in time – I might add. The complexity and scale was not completely clear to me when setting off to focus on one small sub-objective in a 400-page project description.

²⁴ Based on the interview with the LCP Project Officer, Ghanpokhara, 2 November 2015, and e-mail correspondence with LCP Project Officers for the other sites in Dolakha, Humla, and Jumla, November 2015.

²⁵ Based on the same interviews.

market-inclusion. It is important not to put claims of distributional fairness central to the idea of justice but rather realize the existence and reinforcing systems that are distributionally just in their own right (Roberts and Sutch, 2016: 237). The final verdict on whether ABS can do both is the final verdict on whether ABS can be argued by means of distributive justice, and if ABS creates and reinforces distributive justice. The CBD to a very large extent builds on the right to exploit, as its Article 3 shows, and at its core has been the exchange of monetary resources as an incentive for conservation, which is also what ABS in its strictest interpretation boils down to (United Nations Environmental Programme, 1992: Article 3, Morgera et al., 2014: 20). What the Bonn Guidelines changed and the Nagoya protocol consolidated is that there should also be benefits for the conservation of biological diversity in itself. It is only when interpreting ABS to mean both of these things that it aligns with both local practice and international law. Andersen and Winge identify incentive structures by means of grants, loans and facilitation of marketing, direct support, and rewards to farmers as success in benefit-sharing (Winge et al., 2013cc: 17). As Ronnie Vernooy however argues, and as discussed in Chapter 3 and further built upon, it is here that the recent focus on the 'softer' benefits of resource sharing, moving away from purely monetary benefits helps. That the ABS system already structures resource-sharing is explained by the project officer, who has implemented the PIC practice. She explains that when she shares seeds with the community, they need to know what it is and where it is from, and they need to sign for this. This creates a record and transparency, otherwise staff would just have brought a lot of seeds and given them away however they wanted. Instead there is structure.²⁶

But how, in a system of communities that have been traditionally farming slightly different varieties of the same crops for centuries, exchanging those freely, would you be able to determine the rightful owner or owner community of a variety that leads to ABS benefits? The worst-case scenario is that attaching monetary value to a specific variety would stop the unrestrained sharing that is currently the case. It could lead to 'abusing the rights of people who have long been involved in the

²⁶ Interview with the LCP Project Officer, Ghanpokhara VDC, 2-3 November 2015.

common pool of genetic resources, but find themselves arbitrarily excluded in contracting' (Brush, 2004: 255). Regine Andersen takes this even further and phrases it like the 'tragedy of the anti-commons': she is worried that benefit-sharing arrangements based on bio-prospecting lead to situations in which multiple owners have the right to exclude others for utilizing resources, ending up with no one getting the effective privilege of use (Andersen, 2012b: 352, Winge et al., 2013aa: 181). Farmers interviewed also emphasized that there should not be any prohibitions regarding the exchange of seeds.²⁷ This is not just the case in Ghanpokhara, as data-collection by Andersen and Winge has shown: 'seeds are common to the whole nation and its areas' (Winge et al., 2013aaa: 187).

This rather pessimistic view leads to the question whether such a scenario could be negated by just nominating very specific varieties as biocultural heritage, and bio-prospecting these as such. This would create access to local markets for farmers without completely changing the open access seed-systems. This approach would remedy the problem with the dual nature of ABS and its impact on the communities in question. All respondents interviewed were looking for direct benefits, and this could be a way to create those, while conserving open access. At present, the farmers who are progressive in their choices and have the financial reserves to do so, are switching to classic cash crops such as big cardamom. Were these farmers to invest in traditional varieties, it would boost the continued presence of these varieties in participating communities. In addition, by involving specific communities and farmers in for instance participatory breeding programmes for just these specific varieties the anti-commons scenario could be avoided. The interviewees often earmarked certain local varieties of millet as potential crops for such efforts.

As will be thoroughly answered in the conclusion chapter of this thesis the analysis of ABS in international law is not straightforward. It certainly has its merits but rather from a top down perspective than from a bottom-up. This is however also the crux of connection between ABS and international law, and this is why the next chapter is important. Seeds, as stated, are equal to the life of plants and are the

²⁷ Interview with with the social mobiliser in ward #1, Bhache (Ghanpokhara VDC), 4 November 2015.

basis for biodiversity in agriculture and beyond. As Juliana Santilli says, the 'impact of legal systems on agricultural biodiversity cannot be understood without an analysis of regulations on production, marketing, and utilization of seeds' (Santilli, 2012: 43). This chapter has shown that by integration of several regimes and importing elements like farmers' rights and community protocols, flaws in the ABS legal regime can be corrected, to a certain degree. However for putting a global legal concept into practice through local initiatives, resilience can be the missing link between ABS and the legal framework.

Chapter 8: Supporting ABS with resilience

The second question put forward in the introduction of this thesis is whether ABS increases the resilience of smallholder farmer communities. Besides the fact that this is a reasonable question in itself, it is worth revisiting how it acts as a bridge between the extensive body of legislation discussed above and the final overarching question of whether ABS is beneficial for both people and ecosystems. The conclusion to be reached from Chapter 7 is that the place ABS has in the international legal framework is uncertain, predominantly due to the wide array of very different legal regimes regulating its use. Chapter 8 continues in this vacuum, and investigates whether resilience is the concept that can make the necessary connections. The hypothesis this thesis has put forward comes down to whether resilience can act as the core underpinning of ABS or not. And if so, by what arguments it succeeds in this. It hinges on an understanding of what ABS as part of resilience means, and consequently how to make ABS work as part of the resilience question. By successfully achieving this it would also provide a useful reframing of ABS in the international legal development arena, arguing for continued focus on the concept.

‘Local communities possess the traditional knowledge about best practices in managing and enhancing the resilience of fragile mountain ecosystems, but their voices often go unheard’ (Mountain Partnership, 2015). Mountain peoples, especially in developing countries are among the world’s hungriest and poorest, and mountain ecosystems are extremely vulnerable to climate change with far-reaching and devastating consequences (Gentle and Maraseni, 2012: 32). It is for this reason that specific advocacy organizations like the international Network of Indigenous Mountain Peoples, the Mountain Partnership and ICIMOD, exists. Resilience is high on the agenda for organizations like these, and the issues at hand are being actively phrased through the prism of resilience. In both the narrative of mountain ecosystems, as well as the general call for food security in developing countries traditional knowledge and seed-systems have a central role: ‘Indigenous, local, and traditional knowledge and practices are central to resilient seed-systems’ (The Global Alliance for the Future of Food, 2016: 1). This chapter will identify those elements of the local seed-system in which ABS and resilience meet.

Resilience is a framework that considers phases: the stable phase of a system, a shock, and the alpha-phase of recuperation back to situation before the event. Therefore this chapter will consider the strength and weaknesses of the community and its seed-system both in stable times and in times of (climate change induced) hazards.

8.2 Making ABS work as resilient mechanism

Chapter 5 introduced the concept of sustainability, which focuses on the adaptive capacity and transformability of systems. Sustainability and resilience are connected to ABS in several ways, but most important are biodiversity, the protection against hazards and the ability to recover from shocks, the wider problems of agriculture in small subsistence farming communities and institutional and market integration. Positioning these points of interaction in the resilience frame, connects ABS to the international institutional and legal sphere. ABS is both about access, and the possible improvement of this, and about benefits, hence the analysis in this chapter follows the same two major themes.

Biodiversity in the crops that local subsistence farmers chose is directly related to their daily choices and decisions regarding their farming. For this reason, many of the interviews conducted in Ghanpokhara focused on the kind of varieties and crops farmers were growing, which ones they knew and how they decided what to plant. The major issue these conversations ended up revolving around is access, and the options the seed-system which the farmers work in provide them with. Right now the informal seed-systems are effective, but limited in scale, which all interviewees address. It is an open system based on familiarity. When farmers return from visits and bring back a variety they will share these with their neighbors; this is community practice. Farmers are always expected to let this be community level decisions - if you have something new you share it.²⁸ When discussing seeds exchange and its economics the Ghanpokhara project officer gave the example of a progressive farmer named Dhan Khumari, from whom a neighbor requested a small amount of seed and planted it in that same season. The next

²⁸ As confirmed by all farmers in all interviews in Ghanpokhara, november 2015.

season she increased the seed by herself and returned it 1:1. Only big amounts of seeds need to be returned. These are the custom ways of introducing new varieties into the community and then sharing these with fellow farmers. The big limitation here is that it is very subjective what farmers share, to what extent, and how far the circles reach. Most prevalent problems are quite simply the result of geography, and a lack of time and funds. It is the very location and basic reality of these farming communities that impede on their choices. Moreover, it is an issue of lack of interest or awareness of possibilities. One of the farmers interviewed in ward #1 explains that it is not so easy to exchange, even within the wards, as people are not aware of the varieties that are present in other wards, and that this mainly due to the distance. The VDC is very scattered and people do not visit often, only when they have immediate business in visiting relatives. This is also why this farmer explains that the diversity block is his favorite LCP activity until now: it has started to raise awareness about seeds, even though very minimally and in very small circles. As the first farmer that was interviewed in Ghanpokhara explained, it is exposure to alternatives that people need.²⁹ If farmers are simply not aware that there are more options of varieties in crops available, there will be no adaptation whatsoever.

²⁹ As explained by the older Dalit farmer in ward #1, Bhache (Ghanpokhara VDC), 3 november 2015.

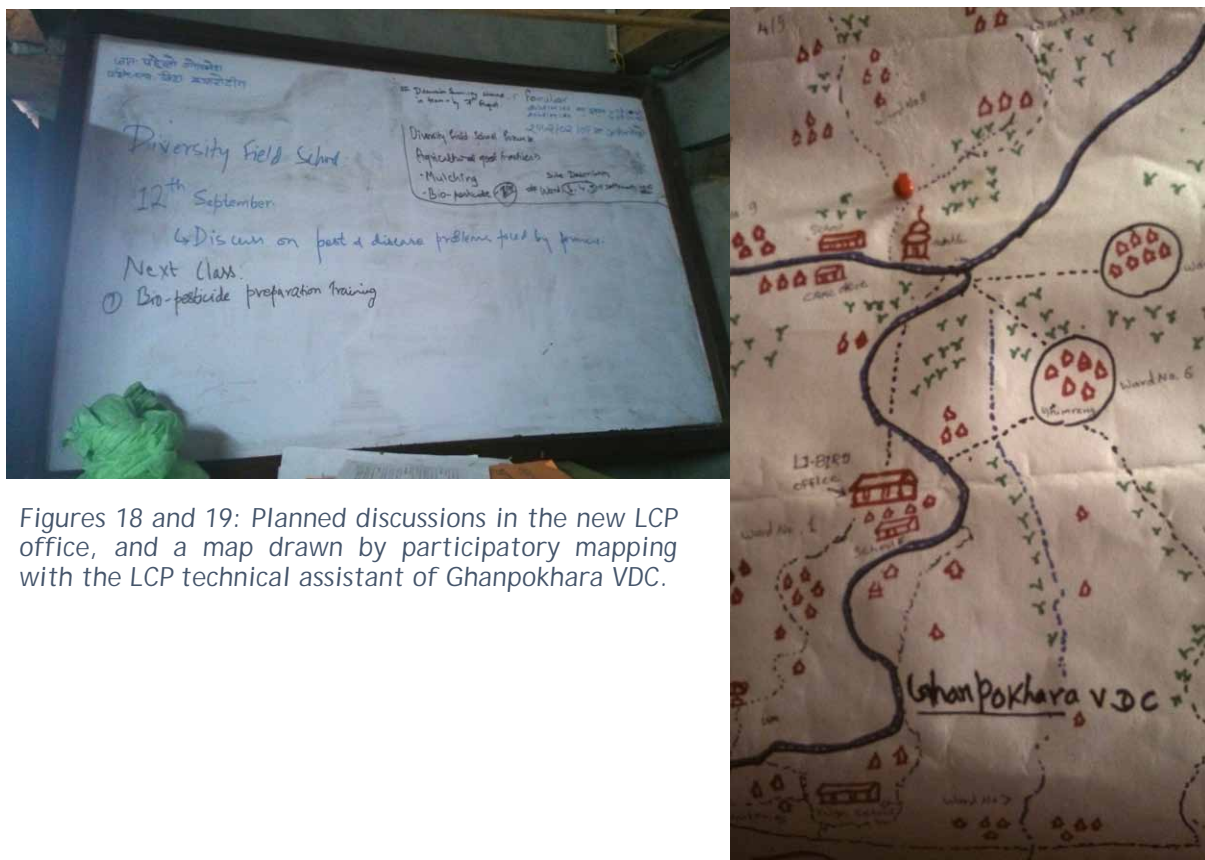
8.3 Limitations of the seed-system



Figure 17: A welcome flat stretch before the real climb from Khudi to Ghanpokhara. This farmer has prime real estate, as his fields are flat and at a low altitude.

This lack of awareness is especially poignant considering that often when the farmers interviewed were asked how they felt about their agricultural options, they said their current sources of seeds were not sufficient, not just because of the limited network of sharing, but also because of other structural social problems. The informal seed-system as explained in Chapter 6 is limited in actors and in variation. Although most farmers express to be quite satisfied about their regular exchange, many also noted that if they knew what other options there were, they would be interested, and it was mainly a lack of knowledge restraining them. Nevertheless, among the interviewees there was a wide separation between the answers of those farmers more progressive and curious, and those satisfied with the way things are organized right now. The informal familiar network is not without friction. For instance a farmer who was less unequivocally positive, and although she did acknowledge the use of exchanging seeds, was very adamant about this exchange having to be a two-way relationship. She said it is personal relations that dictate whether the other farmer will want to give seeds, and that

this is just the 'regular business'.³⁰ Because ABS adds structure of conversation and communication about seeds and their availability to a community, it would potentially open the eyes of currently unaware farmers to not just external options, but also the availability within their network. Whereas interviews focused on other LCP activities that increased exposure, a methodological approach to ABS stands apart as it crystallizes a community's attachment to an extensive seed-network. Be this either PPB that involves groups of farmers in trial plots in the community to create local varieties to sell, or just a register of local varieties for PIC reasons.



Figures 18 and 19: Planned discussions in the new LCP office, and a map drawn by participatory mapping with the LCP technical assistant of Ghanpokhara VDC.

It is not just farmer-to-farmer relationships that ABS possibly enhances. There is a certain degree of connection with wider seed-systems beyond neighbors and relatives, most dominantly the government-supported seed outlets ASC and DADO in nearby towns. For Ghanpokhara these outlets are located in Khudi and

³⁰ This is the interview with a female farmer who has just married and moved to Ghanpokhara, she is not familiar with the LCP at all, ward #6, Ghimrang (Ghanpokhara VDC), 4 November 2015.

Besisahar, with Besisahar, as it is the Lamjung district headquarters, housing the DADO office. Nowhere near all farmers interviewed however made use of these options, and those who did were not unequivocally enthusiastic. The first farmer I spoke to in ward #1, which is closer to Besisahar and the ASC than other wards in Ghanpokhara, expressed his discontent with the seed-extension service.³¹ The distance to the ASC and DADO creates a problem of time as well as money. Collecting seeds is a costly enterprise, and the economic condition of many farmers does not allow them to go down to the larger villages where the seed-outlets are located.³² Again, of all farmers interviewed this particular farmer in ward #1 had the shortest distance to cover to the official outlets. It is telling that even with a week-long stay in Ghanpokhara other farmers were not accessible to me because of distance and time-restraints, and I traveled from the villages where seed-outlets are located. Farmers also mention age as a limiting factor. As new seeds are only available in market areas its access depends on the movement of people. Older people have restricted access to new vegetable saplings because they are physically unable to make the journey.³³ Due to the general exodus of young people from villages such as Ghanpokhara, as young able people either move to cities or go work abroad to send remittances home, this factor cannot be understated. Farms already have a general lack of laborers to work their fields, and the long hikes to the seed outlets are an extra burden that cannot be carried. Even one of the farmers who was most skeptical of the LCP and the project's attempts to add local seed outlets to the seed-system in Ghanpokhara, also notes that the markets in Khudi and Besisahar are very far away, so that even though she does not completely believe in the vegetable nursery LCP initiated yet, she sees how it could work in the farmer's favor just for reasons of geography.³⁴ It is not just distance that is the issue, it is also supply. The inability of the formal seed

³¹ Interview with the older Dalit farmer, ward #1, Bhache (Ghanpokhara VDC), 3 November 2015.

³² Based on the interview with the social mobiliser in ward #1, Bhache (Ghanpokhara VDC), 4 November 2015.

³³ Interviews with LCP Project Officer, Ghanpokhara VDC, 2-3 November 2015.

³⁴ Interview with the new female farmer, ward #6, Ghimrang (Ghanpokhara VDC), 4 November 2015.

outlets to deal with farmers' demands is a problem even in stable times: one progressive farmer requested 10000 large cardamom saplings from the ASC but they only provided him with 1000-2000 saplings. This meant he had to request the rest of the saplings from private organizations, which is significantly more expensive.³⁵ Another farmer was looking for maize seeds so he sent his daughter to the Agrovet to purchase some. Agrovet however did not provide the technical assistance needed on the specifics of the variety, and it did not perform well in the farmers' fields. Since then the farmer has returned to using a variety he recently got from his neighbor.³⁶

8.4 Access in case of disaster

Geneticists, plant breeders, and local farmers depend on the heterogeneity of local crops in order to face the challenges brought on by climate change, especially in agriculture (Santilli, 2012: 31). Scientists are trying to tap into the genetic diversity of local and wild varieties to create adaptations that would defend agricultural systems against extreme climate events (Santilli, 2012: 30). Farmers locally have the same opportunities and *in-situ* conservation is the key to these opportunities. The farmers I spoke to in Ghanpokhara mentioned the flexibility that sharing of seeds rewarded them as the main argument to exchange what they had. When asked to list their reasons for exchanging seeds, they distinguished between regular exchange, and exchange in special circumstances. The need for regular exchange is because of the necessary change in seed lots every three plantings in order to keep generally healthy crops, whereas the instances of extreme weather events such as hailstorms are the special circumstances mentioned. This is as mentioned in the introduction to this chapter where ABS is relevant both for prevalent structural issues, but for resilience even more pressing is what happens to the seed-network in case of shocks, when a system moves into the omega phase. When a natural disaster strikes the capacity of the seed-system to recuperate is largely dependent on the links between the

³⁵ Information from the interview with farmer and general CAMC member in ward #1, Ghanpokhara VDC, 4 November 2015.

³⁶ Interview with a progressive farmer and lama, ward #1, Ghanpokhara VDC, 5 November 2015.

actors. From a governmental point of view, it would make sense for the formal outlets to jump in and provide options when farmers amongst themselves are incapable of sustaining their exchange. However, trust in these outlets is fairly limited. One of the farmers interviewed said that even though the ASC had the technical knowledge and capacity to assist, they did not help him when blight hit his crops.³⁷ After this interview however the LCP officer that accompanied the conversation mentioned that it might be that the official institutions were not aware at all.³⁸ Even though it is unsure whether this was caused by the ASC not being aware, actively refusing or not having the funds, it is telling for the troubled relationship between the farmers and the formal seed outlets, especially in case of shocks to their seed-systems. It is when disaster strikes that the interviewed farmers will go looking for seeds beyond their immediate surroundings.³⁹



Figure 20: Used and unused terraced fields, and an area with lasting damage resulting from past monsoons' landslides

³⁷ Interview with the older Dalit farmer, ward #1, Bhache (Ghanpokhara VDC), 3 November 2015.

³⁸ Interviews with LCP Project Officer, ward #1 Bhache (Ghanpokhara VDC), 2-3 November 2015.

³⁹ Information from the interview with farmer and general CAMC-member in ward #1, Ghanpokhara VDC, 4 November 2015.

Another farmer is discontent with the help the ASC and DADO provide in case of seed shortages caused by disaster. He says it is problematic to be dependent on neighbors if there is a shortage caused by hazards, as they might not have the desired seeds, or high-quality seeds. He adds that even though he is aware that the ASC and DADO should be the options in this case, he calls them inefficient and slow. This is why he wants more systematic access points.⁴⁰ Another farmer on the topic of natural disasters recalls how when a hailstorm damaged his crops, he went to a neighboring VDC to get new seeds, not down to the formal seed outlets.⁴¹ The insufficiency of stocks to fulfil farmer demands negates the quality of the service that DADO offer by providing seeds at half the rate of market prices. DADOs role to play in instances of disaster is however formalized. The seed service has distributed seeds free of cost to earthquake affected areas in Lamjung: they shared 7 metric tons of maize and rice.⁴² One of the other LCP sites in the North-Eastern region of Dolakha is a prime example of how Bioversity International has taken on direct relief tasks, predominantly restoring seed caches individual farmers lost when their houses collapsed.⁴³ Li-Bird too in the Lamjung region has taken upon similar tasks. Institutions, NGO and seed extension play a serious role in the resilience of a community, more institutional integrating and a more diverse and extensive seed collection of farmers would increase this.

⁴⁰ Based on the interview with the social mobiliser in ward #1, Bhache (Ghanpokhara VDC), 4 November 2015.

⁴¹ Interview with a farmer and lama, ward #1, Ghanpokhara VDC, 5 November 2015.

⁴² Information from the interview with the DADO Extension Officer, DADO office Besisahar, 8 November 2015.

⁴³ Information from the Dolakha LCP Project officer, 18 November 2015.

8.5 Constraints on access to seed diversity and how ABS addresses them

The application of ABS systems has to be analyzed in terms of creation of benefits, but also the question of access to not just current genetic resources but also to improved breeding materials. ABS has the potential to be a game changer here in two ways, namely the communal development of improved varieties, as well as the introduction of seeds from other locations way beyond the geographical scope of the current seed network. LCP has started to open the eyes of local community members to options of seed from beyond the direct locale, and as ABS would do this even more extensively, it is worth looking at the farmers' perceptions of these slighter increases of exposure. Particularly interesting is one of the interviewees who is also a social mobilizer in the Ghanpokhara VDC, so well-acquainted with the LCP. He wishes there would be a government agency that could organize the exchange of seeds between VDCs.⁴⁴ This is significant as it is quite an outlier opinion in the interviews conducted. The agricultural extension officer explains that the seeds of Ghanpokhara VDC are already traveling, 2 or 3 years back DADO collected local landraces and sent these to NARC.⁴⁵ The interviewees that are to a certain degree familiar with the LCP project are aware that there is exchange going on between their communities, NARC, and other places, and consent to this. Several furthermore mention that seeds have been taken by other officials before and were shared, and do not object to this. On the other hand, they also are very vocal about the fact that their locale is unique, and varieties very specific.

Specific to the extent that in their understanding exchange with other actors outside of their direct network would be futile, as they do not believe their local varieties to be effective elsewhere and vice versa. It is interesting that there seems to be no connection between the exchange they are already aware of and personal possibilities. Within one interview farmers could have rather extensively explained how LCP or 'another party' came into their community, collected their seeds, and quite often even a scientific testing part was mentioned. They would also explain that the seeds LCP brought must have come from elsewhere. But then,

⁴⁴ Interview with the social mobiliser in ward #1, Bhache (Ghanpokhara VDC), 4 November 2015.

⁴⁵ Explained in the interview with the DADO Extension Officer, DADO office Besisahar, 8 November 2015.

almost in the same breath they would be adamant that their personal agricultural circumstances are too specific for exchange with other locations to be worthwhile. They also, as explained above, often had bad experiences with outside varieties from for example the ASC, which, due to lack of technical knowledge, performed poorly in their fields.

ABS would bridge this gap, specifically if both monetary and non-monetary support leads to participatory breeding projects. All farmers interviewed who had a basic understanding of the LCP project noted that it was awareness and education that was missing. Awareness about the possibilities but also the creation of confidence to engage with formal seed sources. The social mobilizer in ward #1 explained that even when local leaders make farmers aware of DADO or ASC they still request these leaders to go to the outlets instead of going themselves, herewith not becoming more independent.⁴⁶ This means that some of the interviewees that mentioned they had to a certain extent engaged with a formal seed-outlet and received saplings or seeds, had not done so on a personal first-hand basis. Farmers are not only restricted by physical boundaries, but also lack the confidence to engage with the formal outlets. Regrettably, there was not enough time during both the data-collection or this written thesis to fully expand on this issue, but it is a major constraint for access. If ABS indeed increases the trust in the value of their resources for farmers, it is bound to have some degree of a positive effect on farmers' confidence to engage with external actors.

8.6 Institutional integration

The issue of engagement with external parties and the attitude of a community towards private businesses and institutions, are of great relevance to resilience, and is directly influenced by ABS. In the interview farmers were also asked about their needs from the seed outlets, the LCP, and the government, and their responses were telling. Although, again here, many farmers just answered with a refusal to give 'advice', mostly saying that 'they did not know enough to give

⁴⁶ Based on the interview with the social mobiliser in ward #1, Bhache (Ghanpokhara VDC), 4 November 2015.

advice'.⁴⁷ One of the older farmers in Ghanpokhara is however very clear and outspoken on his wishes: he wants the government to realize structural sharing of seeds, as everybody, especially poor farmers should get seeds, on a community-wide basis.⁴⁸ Another farmer also points out that the government should provide for more diversity in the vegetables available.⁴⁹ This wish is prevalent throughout the community. Another farmer says that the government should 'organize training on planting, pest and disease management, and make available planting materials and pesticides'.⁵⁰ The farmers also acknowledge the need for education and awareness in order to make more connections to DADO but also to farmers in other regions. Only then can local information be shared, both with other locals as well as with 'people with authority'.⁵¹ The role of people with authority within the VDC is mentioned more often. Another farmer notes that local leaders are the ones that have information on alternative seed sources such as DADO, and that they need to share this information with the other farmers and literally say 'go there and get seeds'.⁵² The DADO extension officer has however observed that there has been an increase in farmers registering and coming to the ASC, according to him this is a direct result of awareness raising projects such as the LCP.⁵³

The LCP project officer also notes that besides awareness raising there needs to be a shift in the relationship between DADO and the farmers, if there are ABS

⁴⁷ This example is one of many, and comes from an interview with the female farmer that was initiated at a mother's group meeting in ward #1, Bhache (Ghanpokhara VDC), 6 November 2015.

⁴⁸ From the interview with the older Dalit farmer in ward #1, Bhache (Ghanpokhara VDC), 3 November 2015.

⁴⁹ Based on the interview with the new female farmer, ward #6 Ghimrang (Ghanpokhara VDC), 4 November 2015.

⁵⁰ In an interview with the farmer who is also CAMC chairperson, and a key-informant in this research, ward #6 Ghimrang (Ghanpokhara VDC), 4 November 2015.

⁵¹ Interview with the farmer who also runs the local mill, ward #1, Bhache (Ghanpokhara VDC), 3 November 2015.

⁵² Interview with social mobiliser, ward #1, Bhache (Ghanpokhara VDC), 4 November 2015.

⁵³ Interview with the DADO Extension Officer, DADO office Besisahar, 8 November 2015.

ambitions.⁵⁴ This means that local community and local institutions need enhancement of seed related activities and realize the value of their resources, but also that DADO needs to move from just 'regular activities' to seeing information as worthy of sharing in wider fora.⁵⁵ Within the LCP there is only unofficial cooperation with DADO at the moment because of political reasons.⁵⁶ Nationwide it is a Li-Bird objective to negotiate with local government, as well as closely coordinate with DSDCs (District Seed Coordination Committees), DADO, and the CSB (Community Seed Bank) network.⁵⁷ It is illustrative that the Agrovets and DADO offices all have a well-established network throughout the country, which would be incredibly useful for the sale of local varieties. Resilience means that structures, both socially and in terms of ecosystems, retain their structures following shocks. The diversity of people, society and ecology in the cyclical perception of time is integral to the understanding of resilience as used in this thesis. Rethinking the role of institutions is an integral part of that. Jon Barnett argues that institutions need to be heterogeneous and that interdependence is key for actors as much as it is for biodiversity (Barnett, 2001a: 112). The Global Alliance for the Future of Food identifies it as one of their key objectives: 'There is great potential in farmers and the more formal seed establishment coming together to co-create solutions where they have a common agenda' (The Global Alliance for the Future of Food, 2016: 1). Engagement is at the heart of this matter: integration by connecting farmers to other farmers to local leaders to formal seed outlets, to government.

8.7 Awareness and motivation

ABS is also used as a mechanism to motivate farmers to conserve biodiversity. Not just for the intrinsic value of biodiversity, but also because one of the main

⁵⁴ Interviews with LCP Project Officer, ward #1 Bhache (Ghanpokhara VDC), 2-3 November 2015.

⁵⁵ Interview with the progressive farmer in ward #1, Bhache (Ghanpokhara VDC), 3 November 2015.

⁵⁶ Interview with the progressive farmer in ward #1, Bhache (Ghanpokhara VDC), 3 November 2015.

⁵⁷ Proceedings from DADS workshop day 2, 29 September 2015, Pokhara.

observations in Ghanpokhara was the shared frustration of the field officer and the progressive farmers to motivate other farmers to take the initial step to get involved with traditional crops. A means to do this is by creating direct benefits. The field officer explained that this is already a problem in choosing field sites. Communities will work hard to get a project to their locale, assuming that in some way it will create benefits, but the kinds they are looking for (schools, roads, funds) do not materialize when the project 'lands'. The field officer explains that this, combined with a lack of understanding of the actual objectives of the LCP, made starting implementation considerably harder.⁵⁸ ABS, as it is intended to work, as a means of creating direct benefits, would negate this motivation problem. But even if monetary direct benefits are unavailable, there are other direct effects. A benefit already prevalent in the start-up phase of an ABS system is the agricultural assistant and his technical assistance. By placing him in the community, farmers get more value out of their resources already available, and he is mentioned most often as favorite part of the LCP by the respondents in Ghanpokhara. Where problems with new or traditional seed are a lack of understanding on how to plant and cultivate them, the benefits of having direct assistance within the community cannot be overstated.

Access and exchange	Rights and responsibilities
Lack of interest in local crops	Not aware of (inter)national rights and responsibilities
Exchange dependent on personal relationships	Farmers believe they have no role in policymaking
Lack of confidence	Customs and rules regarding ownership and exchange not collected in one place

Table 4: Constraints on expanding seed-systems farmers face

8.8 Insertion into the market

Researchers have found a trend among larger and socially responsible companies that the principle of equitable sharing of benefits derived from genetic resources is increasingly accepted (Rosendal, 2006: 440). Whether there are benefits to be

⁵⁸ Interview with a progressive farmer in ward #1, Bhache (Ghanpokhara VDC), 3 November 2015.

shared also depends on how great the interest for the resource is. This means that expectation management as well as balancing the benefits and disadvantages of setting up an ABS regime have to be considered extensively. Designing efficient ABS mechanisms is incredibly complex as has been expanded on in the past chapters, because it includes a multitude of actors and tasks. The question whether the economic benefits that will flow from the exploitation of genetic resources will suffice to fund the preservation of biodiversity is a vital one (Siebenhüner et al., 2005: 439). Moreover, it is uncertain whether the proceeds will be sufficient to lead to benefits for the involved communities.

This however does not mean that market access cannot be a means of ABS. ABS does not need be based on large scale national market insertion. On the contrary, the local level might be a perfect testing ground for establishing if a community thrives and increases its resilience, by engaging with markets and external seed-networks. Li-Bird mentions the identification of niche specific varieties as one of their key objectives of the LCP projects at this point (Li-Bird, 2015aaa). Marketing of local crops is also something that the DADO official has been considering.⁵⁹ He suggests finger millet for gentle slopes as a crop to be promoted, as it is drought-tolerant and does not need irrigation. Because of the high altitude of Ghanpokhara he also suggests maize and vegetables. Another option he considers is tea because it can be directly linked to agro-tourism.⁶⁰ The LCP project officer as well has considered the marketing of foxtail millet.⁶¹ She notes that there is a market for the millet and that Li-Bird has promoted local recipes as was also displayed in the diversity fair. In addition the LCP served haluwa (a traditional lunch dish) of finger millet at the local school to illustrate its uses.⁶² There are ample other possibilities noted: Anga rice, finger millet for its

⁵⁹ Interview with the DADO Extension Officer, DADO office Besisahar, 8 November 2015.

⁶⁰ Interview with the DADO Extension Officer, DADO office Besisahar, 8 November 2015.

⁶¹ Interviews with the LCP Project Officer, ward #1 Bhache (Ghanpokhara VDC), 2-3 November 2015.

⁶² Interviews with the LCP Project Officer, ward #1 Bhache (Ghanpokhara VDC), 2-3 November 2015.

cultural value used for rakshi,⁶³ amaranth, which is traditionally used for puja,⁶⁴ (naked) barley, and the red variety of foxtail millet, of which 'old people say that it has value for they made it into a paste that they used to cure skin disease'.⁶⁵

8.8 Marketing specific varieties

Selling crops, even if just on a local or regional scale, needs a certain skill-set and understanding of the processes and value chains. In Ghanpokhara these have already been subjects of discussion, to a certain extent. The question of ownership rights is directly related to market integration. The agricultural extension officer is not aware of any concerns, customary rules or norms on ownership of the resources and knowledge, but he discusses the possibilities of certification of local crops.⁶⁶ Neither does the LCP project officer, and she identifies the DADO extension department as the partner on genetic resources and intellectual property of local varieties.⁶⁷ The extension officer's general conclusions are that a multi-locational trial has to be conducted and the certification process of local varieties should be facilitated to make economic transactions possible. He also suggests seed production of varieties with economic importance, which should be identified and taken into production. He bases this outlook on the knowledge that the varieties that are being developed in Ghanpokhara are very location specific due to the microclimates.⁶⁸

The benefit of using community grown crops like millet is that its value chains is very short and simple: from a community, maybe organized as a

⁶³ Rakhsi is hard liquor, brewed by farmers at home for personal use, as well as for traditional and cultural occasions. It is an integral part of Gurung mountain culture, originating from Mongolian traditions.

⁶⁴ Puja is the act of worship, which consists of several successive rituals including the offering of food, flowers and colored powder.

⁶⁵ Interview with a progressive farmer in ward #1, Bhache (Ghanpokhara VDC), 3 November 2015.

⁶⁶ Interview with the DADO Extension Officer, DADO office Besisahar, 8 November 2015.

⁶⁷ Interviews with the LCP Project Officer, ward #1 Bhache (Ghanpokhara VDC), 2-3 November 2015.

⁶⁸ Interview with the DADO Extension Officer, DADO office Besisahar, 8 November 2015.

cooperative, to a vendor, to the buyer. This is how it has been organized with finger millet in the Begnas field site. It makes the risk of lack of coordination causing an end to the operation significantly smaller. However, the marketing of local varieties is however not without its problems, as a practical example illustrates. There is one shop in Besisahar that sells local varieties and there has been an attempt to link the farmers of Ghanpokhara to this shop to market local foxtail millet. This did not work out due to disagreement between the vendor and the farmer. The vendor wanted the farmer to deliver to Besisahar, and the farmer expected the vendor to collect the millet at the farm, all due to the high altitude of the area.⁶⁹ This story is very similar to what happened in the Begnas-Rupa field site, where friction between vendors and farmers also led to disintegration of a marketing-scheme for a local variety. The LCP project officer in Ghanpokhara also notes how the marketing of specific varieties is dependent on the wellbeing ranking of the households involved. In the case described above the household was a highly ranked one, and they did not need the extra income from selling the millet.⁷⁰

In Nepal, engagement with the private sector exists at a basic level. It was not until the 1990s that the private sector got involved in the seed business (Li-Bird, 2015bbb). It is now expanding and the seed quality causes some concern as there are many actors in the chain. Li-Bird is active in studying the actors, relationships and particular constraints. It is this local interpretation of ABS that makes most sense for communities like Ghanpokhara. Here a perspective that goes beyond the strictly monetary benefits comes into play. Because 'the value of resilient and diverse seed-systems goes far beyond any economic measure. Community based seed-systems are connected to diverse cultural and culinary traditions, health and wellness, resilient agroecological landscapes, and sustainable local economies' (The Global Alliance for the Future of Food, 2016: 1). The link between resilience, food security and human security is a direct one.

⁶⁹ Interviews with the LCP Project Officer, ward #1 Bhache (Ghanpokhara VDC), 2-3 November 2015.

⁷⁰ Interviews with the LCP Project Officer, ward #1 Bhache (Ghanpokhara VDC), 2-3 November 2015.

As demonstrated there are already a fair amount of hurdles for local integration, but it is a realistic way to find direct benefits that do increase resilience. Internationally there are a few examples where through the set-up of a community protocol communities as a whole communicate their rights, duties, and position towards external actors in a comprehensive document. Famous is the Potato Park case in Peru that has been described earlier, where after the creation of a community protocol local varieties are being sold and benefits are shared equitably in the community (ANDES (Peru) et al., 2012). The International Institute for Environment and Development has been considering the labelling of biocultural heritage and specific marketing for a long time. It is interesting that they are moving away from benefit-sharing as constructed by the CBD and other agreements and instead are looking for 'full benefit capture' for indigenous and local people (Dutfield, 2015). However, as has been a conclusion throughout this paper, it is the non-monetary benefits that often have most potential in an ABS approach. These are also the most concrete manifestations of benefit-sharing related to plant genetic resources in the various projects for conservation and sustainable use (Andersen, 2012a: 347).

A few of the most prevalent risks related to ABS and consequently the main objections to creating ABS mechanisms should be addressed. Rosendal identifies excessive harvesting as a potential problem, but in a community like Ghanpokhara with a small-scale setup and in-situ conservation, this might not be a direct serious risk (Rosendal, 2006: 438). Especially when it is the genetic knowledge of the seeds being sold, this is not extremely relevant. Excessive harvesting is a bigger problem with for example foraged forest products. The loss of access through patents however has to be considered (Rosendal, 2006: 438). Rigorous implementation of an ABS system especially if not fully understood or not fully considerate of the individual farmers would singlehandedly destroy the open access nature of the existing seed-system. Access to the resources present in a local system is the main requisite both for innovation and for ensuring benefits of sharing. It is therefore that opportunities on a smaller scale, involving marketing very specific crops as biocultural heritage on local markets is preferred. In that case a solid access regime will instead be an incentive for conservation (Rosendal, 2006: 438).

The framing in resilience is internationally sound also for political reasons. It is also an issue of pure pragmatism as resilience, even more so than ABS, has a lot of clout in international development. It is a concept that has been in the international spotlight in recent years. For projects dependent on external funding it is of vital importance to frame the project in line with global trends. This thesis has put forward a similar argument in the last chapter for ABS. As one of the participants put it very clearly in a country presentation at the DADS conference: national laws for diversity are argued for in their value for improving livelihoods instead of conservation, even though both of these are clear and valid goals in themselves. The reason is because otherwise 'we would never get funding for that'.⁷¹

⁷¹ Proceedings from DADS Workshop day 2, 29 September 2015, Pokhara, Nepal.

Chapter 9: Conclusions

This thesis has created an understanding of ABS in the international sphere, its potential value for local communities and the possibility of resilience acting as a bridge between the two. Regarding the international legal framework, it can be concluded that this framework is, quite frankly, a mess. Even though there is a plethora of agreements on the subject, clear guidelines are lacking. It is mainly due to the interaction of the several regimes of international law that confusion is created and sustained. International environmental, trade, intellectual property and human rights law are essentially different, with different referents and different main objectives. For developing countries specifically, this creates significant confusion and extra work. The conclusion recently reached in a Nagoya Protocol review article in the Law, Environment and Development Journal is telling: 'It is suggested that states that introduce their own ABS regimes without waiting any longer' (Yale Center for Environmental Law Policy, 2016). But all this does not imply that the international framework is entirely without merit.

Resilience in this instance is a useful prism through which to study ABS in order to address it in a manner that makes sense in regards to the international framework. Mountain communities such as those in Ghanpokhara VDC are in need of improved resilience and ABS and the benefits derived from its mechanisms have potential. By widening the scope of traditional seed-systems, increasing awareness and driving institutional integration, ABS would positively impact resilience. Several caveats immediately present themselves though. First of all there is the conclusion that the 'softer' benefits, the indirect ones, are the easiest to achieve and would be the most effective. Direct benefits from purely ABS at a level significant for a community would require a professional and rather large scale operation that might not be feasible. Benefits that are proven to be welcome and necessary such as an improved understanding and awareness might also be attainable without ABS mechanisms but through other local crop projects and community ecosystem management. This does not mean that the focus on 'soft benefits' should lead to the denying of 'hard' or monetary ones, but they do deserve balanced attention. ABS schemes in this way change the seed system in a way that creates more access, and biocultural marketing also opens the door for monetary-benefit sharing

in the future. As mentioned before decreasing vulnerability of farming communities is about resilient ecosystems, and more access to more traditional varieties means they get planted more, decreasing vulnerabilities to climate induced hazards. Additionally in case of shocks to the system a small scale market insertion means that farmers are more confident, and have more income to deal with the aftermath of the shock.

The marketing of specific varieties as biocultural heritage on a regional or maybe local scale is the most promising shape that ABS mechanisms could be implemented in. In this case the benefits of ABS can be realized. Begnas-Rupa lake offered two examples of success stories, and Ghanpokhara has several potential crops for a venture like this. Even though there are still hurdles to overcome a more extensive ABS plan would provide even more challenges. It would be an equal distribution of benefits especially when this is taken on by a community as a whole, for instance by registering varieties that come out of participatory breeding programs.

'Farmers should not be limited in their ability to access, exchange and improve the seeds they use, whether they are locally managed, government produced or commercial seed varieties from other regions of the world' (The Global Alliance for the Future of Food, 2016). A big constraint and argument against ABS is the fear that an ABS approach would erode the current open nature of local resource-networks. It is a serious question whether *potential* benefits from an ABS approach are worth the essential change in the way that farmers now share their genetic resources. ABS is meant to realize fair sharing with providers of genetic resources and this is at the very core of the concept. For a community that has limited contact with external actors this is a difficult question. It must however be noted that the communities for which ABS is interesting are struggling to sustain livelihoods, and the extra dimension of climate change and imminent shocks to their systems only add to their issues. Marketization of specific resources that they already own, combined with increased conservation of these same valuable varieties would be a way to secure the livelihoods of the farmers involved. Although considering the risks of commodification is of great importance, it is also

in favor of distributive justice to utilize resources available in a way that benefits all. The FAO and predominantly Olivier de Schutter, the former UN Special rapporteur on food security, have also been adamant about the dichotomy between rights-based and market-based development being a false one (International Institute for Environment and Development, 2011). This thesis supports that point of view. The rights-based approach entails the need to focus on the most vulnerable, on entitlements, on remedies and accountability, as well as non-discrimination and participation. The market-approach or insertion does not preclude these needs. On the contrary these are at the basis of a reimagined market that is inclusive of farmers and traditional varieties, and which is more resilient. This insertion, however, needs to be in line with community needs and customs, and at an appropriate scale. In these circumstances ABS is an enhancer of resilience as it increases the exchange between communities and acts as a link to markets in a way that organizes farmers.

The framing of ABS in resilience is worthwhile as it makes sense in the arena of international law and funding. It further fits within the paradigm of farmers' rights, which in terms of the relevant agreements is important, but resilience does carry that extra weight, giving ABS gravitas internationally. It is also an actual effect felt by communities and not a fabricated connection just for political reasons. In conclusion it is the case that ABS is conducive to conservation, biodiversity and resilience if shaped in a manner in line with local needs, and with a focus on biocultural heritage and local marketing.

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Appendices

Appendix I: Interviewguide Ghanpokhara

1. Where do you get your seeds from?

Seed Sources	Specify	Remarks
Neighbour		
Relative		
Agrovet		
Haat Bazaar		
Li-Bird Project		
CSB		
Cooperatives		
Other villages		
DADO		
Other, namely:		

2. Where do you learn how to grow and use these seeds?

Seed Sources	Specify	Remarks
Neighbour		
Relative		
Agrovet		
Haat Bazaar		
Li-Bird Project		
CSB		
Cooperatives		
Outside of the village		
DADO		
Other, namely:		

3. Do you grow seeds of different crops and varieties from other farmers in Ghanpokhara VDC?
If yes, which?
4. Do you grow seeds of different crops and varieties from other farmers coming from other VDCs/ locations?
If yes, which crops and varieties ?
5. Do you share your crop seeds and information on use with others?

	Seeds	Information
Neighbours		
Relatives		
Other farmers in community		
Other farmers in project		
Other farmers outside community		
Scientists in DFS		
Others		

6. Do you think exchange of seeds of crops and varieties with farmers in other VDCs is/would be useful for you?
7. Do you think exchange of seeds of crops and varieties with other VDCs would be useful for other farmers?
8. Why do you look for seeds of different crops and varieties from other farmers within and outside the villages?
9. Are there any crops, varieties /seeds that you do not share with others? If yes, which and with whom?
10. Is there any information on use of crops that you do not share with others? If yes, what?
11. How did you become a participant in the Local Crop Project?
12. Have you participated in the field activities/meetings so far?
If yes, which?
13. What activities will you prefer to be part of and why ?
14. What are the current practices followed by the local crop project in sharing seeds and exchanging knowledge with the communities?

15. Do you think this project will change who you exchange seeds and knowledge with?
16. Has anything already changed since the start of this project?
17. Do current field trials, meetings and interaction fora created by the project activities help access, exchange and availability of seeds to local communities?
18. Which of the current activities of the project has been most useful in sharing seeds, information and knowledge among local communities?
19. Do you know what the scientists in the Local Crop Project will do with seeds and knowledge that you share with them?
19. Do you know where the seeds and information you will get from the Local Crop Project come from?
20. Do you know the National Genebank?
If yes, what do they do?
21. Have you ever participated in a similar project?
 - a. NGO
 - b. Government
 - c. Other
22. Who decides who you will share your seeds and knowledge with?
23. Are there any rules in the Ghanpokhara VDC on sharing seeds and knowledge?
What are they?
24. How did these rules come into being?
25. Are there any rules or practices on conserving diversity of varieties besides the Local Crop Project within your community?
 - a. If yes, what are they?
26. Are there any constraints that you think are hindering easy access and exchange of genetic resources among local communities?
27. Do you know of any national rules on sharing seeds and knowledge?
28. If there is one advice you could give national lawmakers on a law on sharing seeds and knowledge, what would it be?
29. Anything important on access and availability of seeds that you want to add?

Appendix II: Survey as shared with LCP Project Officers

1. What activities (specifically DFS) have already been implemented?
2. What activities are you planning to implement?
3. Do you feel that field trials/other activities (the ones that have been implemented) may enhance sharing information/knowledge/genetic resources?
4. Does most exchange of seeds and knowledge in your site happen on ward, VDC or another level?
5. What is the most important benefit of the project so far?
6. What do you feel would give the most benefits to the community, what kind of project, and what kind of benefit?
 - a. Access
 - b. Availability
 - c. Monetary benefits
7. Has the realisation of component 3, or ABS in general, informed any activities so far?
8. To what extent is there cooperation with other institutions, and which institutions would this be?
9. To what extent have FFS by DADO have been realised in the area?
10. Is there interaction with the other institutions about ABS?
11. To what extent is there cooperation with community groups, and which community groups would this be?
12. Is there interaction with any of the community groups about ABS?
13. Is there engagement with the private sector?
14. Has the Nepal Food Corporation been active in the area buying local products?
15. Any crops that would be suggested for this?
16. Are there any opportunities for marketing specific varieties as biocultural heritage, has this been considered?
17. Has and if so how has the connection between the farmers and the market changed since your presence?
 - a. As buyers:
 - b. As sellers:

18. Can you identify ABS good practices in the community (even though these might not be explicitly tagged as such)?
19. Are there any constraints on easy ABS of genetic resources and knowledge within and among local communities?
20. Do issues of ownership of seeds and knowledge ever come up, and if so are they raised by community members or LIBIRD officials?
21. Are farmers aware of the exchange between the project and the other field sites as well as the National Genebank?
22. Are you aware of any customary rules or norms on sharing of genetic resources and information in the community?
23. Do all farmers decide on the access to their seeds individually or collectively?
24. Anything important you think I am missing?

Appendix III: Fieldwork timeline

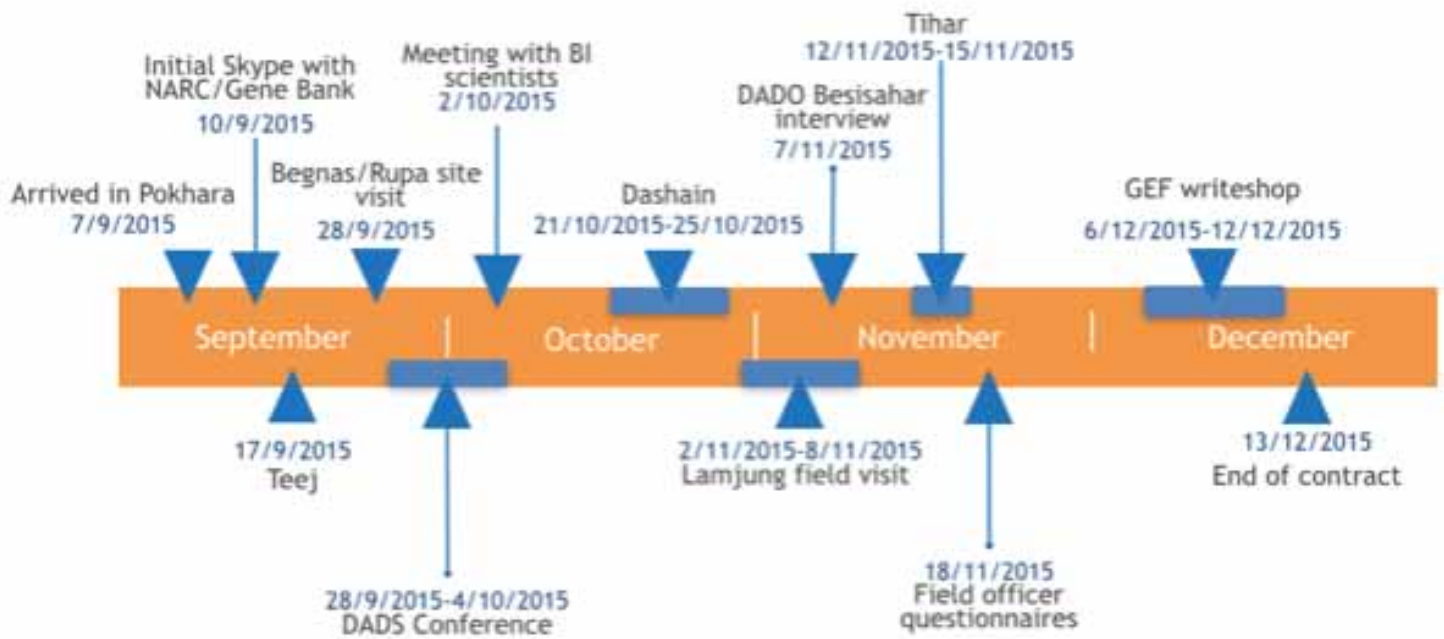


Figure 21: Fieldwork timeline

