OUR SEED, OUR RIGHTS

Training Manual on

Agrobiodiversity and Farmers' Rights

Reference material for development practitioners, academicians and extension workers.

Swedish International Agricultural Network Initiative
SIANI
Sida
SDHS Sowing Diversity = Harvesting Security
OXFAM
LI-BIRD

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Training Manual on Agrobiodiversity and Farmers' Rights

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Authors

FOREWORD

Agricultural biodiversity, a subset of biological diversity, is the foundation of food and nutritional security. Smallholder farmers in developing countries are considered custodians of local agrobiodiversity who conserve, utilize, and maintain crop genetic diversity along with associated traditional knowledge and use cases. Changing climate coupled with other socio-economic shifts have put serious threat to traditional farming system hampering livelihoods of smallholder farmers globally. Climate change has increased the frequency and intensity of climate-induced hazards and disasters compelling smallholder farmers to suffer from productivity and diversity loss thereby impacting on their livelihoods, food and, nutritional security negatively. At this time, it is important to help people understand the crucial role agricultural biodiversity can and should play in adaptation to climate change and sustainable improvement of food and nutrition security.

In Nepal, there are inadequate policies, plans, and programmes for accelerating the conservation and use of rich agricultural biodiversity through innovative research and development interventions. There are also capacity and knowledge gaps among researchers, policy makers extension people, agriculture development workers, food, and nutrition security activists, farmers' rights activist, and academicians with regards to agricultural biodiversity and its interlinkages with food security and climate change adaptation. With this backdrop, the need of this training manual has been realized to enhance the awareness and knowledge of stakeholders and agencies on the importance of agrobiodiversity, climate change, national, and international polices on farmers' rights.

Local Initiatives for Biodiversity, Research and Development (LI-BIRD) in coordination with Nepal Agrobiodiversity Society (NABS), Center for Crop Development and Agriculture Biodiversity Conservation (CCDABC) and National Agriculture Genetic Resource Centre (National Gene Bank) prepared this training manual with funding support from the Swedish International Agricultural Network Initiative (SIANI) and Sowing Diversity = Harvesting Security (SD=HS) programme. I hope the potential user of this manual, especially the agriculture development practitioners, extension workers, academia, and researchers, will find this manual a useful reference for their work.

I take this opportunity to extend my sincere gratitude to the authors, co-authors, and contributors who worked hard and their organizations for their excellent cooperation and collaboration throughout the preparation of this manual. I would also like to thank the reviewers and editors for providing candid inputs and for language editing.

I believe that this manual will be used by a variety of users and we expect receiving constructive feedback from them to further improve the manual.

Bharat Bhandari
Executive Director
LI-BIRD

ABBREVIATIONS

ABD	Agrobiodiversity
ABS	Access and Benefit Sharing
AoA	Agreement on Agriculture
APGR	Agricultural Plant Genetic Resources
BS	Bikram Sambat
CBD	Convention on Biological Diversity
CCDABC	Center for Crop Development and Agrobiodiversity Conservation
CoP	Conference of Parties
CSB	Community Seed Bank
DoA	Department of Agriculture
EPB	Evolutionary Plant Breeding
FAO	Food and Agriculture Organization
GATT	General Agreement on Trade and Tariff
GHG	Greenhouse Gas
GMO	Genetically Modified Organism
GoN	Government of Nepal
GPA	Global Plan of Action
IMISAP	Implementation Strategy and Action Plan
IPCC	Intergovernmental Panel on Climate Change
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
LI-BIRD	Local Initiatives for Biodiversity, Research and Development
MAT	Mutually Agreed Terms
MDG	Millennium Development Goal
MoALD	Ministry of Agriculture and Livestock Development
MoFE	Ministry of Forest and Environment
MoFSC	Ministry of Forest and Soil Conservation
MoHP	Ministry of Health and Population
NARC	Nepal Agricultural Research Council
NBSAP	Nepal Biodiversity Strategy and Action Plan
NPC	National Planning Commission
PGR	Plant Genetic Resources
PGRFA	Plant Genetic Resources for Food and Agriculture
PIC	Prior Informed Consent
PPB	Participatory Plant Breeding
PVS	Participatory Varietal Selection
SDG	Sustainable Development Goals
SMTA	Standard Multilateral Transfer Agreement
SPS	Sanitary and Phytosanitary Measures
SUN	Scaling Up Nutrition
TRIPS	Trade Related Aspects of Intellectual Property Rights
UPOV	The Union for the Protection of New Varieties of Plants
WFS	World Food Summit
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

CONTENTS

INTRODUCTION

Agricultural biodiversity or Agrobiodiversity is directly linked with food and nutritional security and also plays a pivotal role in both CC adaptation and mitigation. It is indispensable to achieving multiple Sustainable Development Goals (SDGs) set by the United Nations. Smallholder farmers across the globe are considered as custodians of local agrobiodiversity who conserve, utilize and maintain genetic resources in their communities. Increasing frequency and intensity of climate induced hazards compels smallholder farmers to suffer more productivity and diversity loss impacting their livelihood, food and nutritional security. On the other hand, inadequate policy exists and its poor implementation, limited literacy on existing policies and lack of skill for advocacy has exacerbated the adversities and put threats on securing farmers' rights in the sector. The awareness on the importance of resource conservation among the communities, policy makers, institutions, is utmost for increasing policy coherence required which ultimately supports the mainstreaming concept of sustainable use of natural resources. There is a knowledge gap among the agriculture extension worker, frontline staffs, social workers, farmers' rights activist and academicians with regards to agricultural biodiversity and farmers' rights. Thus, in order to increase the capacity and sensitize them on agrobiodiversity and farmers' rights, this training manual named ***"Training manual on Agrobiodiversity and Farmers' Rights"*** has been developed.

Purpose of the Manual

The training manual aims to serve as a resource material for conducting training in the sector of agrobiodiversity, food and nutritional security and farmers' rights. Specific objectives of the training manual are:

» Enhance understandings on agrobiodiversity, its use and importance for food and nutritional security in the context of climate change
» Sensitize existing laws and policies related to the agrobiodiversity conservation and use, farmers' rights and benefit sharing
» Enhance knowledge to identify advocacy and influencing issue of agrobiodiversity conservation and farmers' rights in Nepal.

Targeted People

The manual is targeted to the trainers/ training facilitators, specifically frontline staff of agricultural extension service, social workers, advocating agencies, and academicians. The manual is intended to be useful for farmers, students, and development workers and to those who have interest in agrobiodiversity and associated policy issues.

Overview of Training Modules and Sessions

The training is composed of three different modules. Three modules are arranged in sequence to achieve expected outcomes/ objectives of the training. Brief overview of the training modules are as follows:

Module 1: Basics of Agrobiodiversity, Food Security and Climate Change

This module covers definitions of key terminologies related to agrobiodiversity and climate change and food and nutritional security. The module will provide basic concepts of importance to agrobiodiversity conservation and promotion for food and nutritional security especially in the context of climate change and adaptive capacity. Training participants will be oriented on various good practices of agrobiodiversity conservation and management with practical exercise.

Module 2: Understanding Laws/ Policies on Agrobiodiversity and Farmers' Rights

This module covers a brief introduction of existing international and national laws, policies and protocols related to agrobiodiversity conservation and use, farmers' rights and Access Benefit Sharing (ABS) on plant genetic resources. The module is followed by a plenary session with policy experts and representatives from respective area's execution agencies where policy, program versus progress and implications will be discussed, analyzed, and advocated in a participatory manner.

Module 3: Learning Advocacy and Influencing and its Application

This module is intended to provide a basic concept of advocacy and influencing, its relevance to the present context, effective methods and tools that can be used for agrobiodiversity management as well as securing famer's rights. After completing the module, training participants will be expected to plan and use appropriate methods of advocacy focusing on a specific agenda linked with agrobiodiversity management, food security, and adaptation to climate change.

Training Curriculum

Day	Session no.	Session topic	Session objective	Training methods	Training material	Assessments tools
I	NA	Opening and inauguration session, objective sharing and introduction	Participants introduce themselves Participants understand the training objectives and session plans for the next three days Trainers are aware of the participants' level of understanding of agrobiodiversity and farmers rights Trainers understand the expectations of the participants	Participatory Pre-test	Markers, newsprint paper, meta card, masking tape, Projector, Pretest questionnaire	NA
I	1	Agrobiodiversity, food and nutritional security, climate change and associated terminologies	Participants become familiar with the concept of food and nutritional security and climate change Participants become familiar with associated terminology of the session	Lottery game Participatory discussion PowerPoint Presentation	Marker, newsprint paper, meta card, masking tape, projector,	Question and Answer
I	2	Importance and interlinkages of agrobiodiversity with climate change and food and nutritional security	Participants icrease their conceptual knowledge/ understanding on the interlinkages and significance of agrobiodiversity in the sector of food and nutritional security and climate change	Picture display Participatory discussion PowerPoint Presentation	Marker, newsprint paper, meta card, masking tape, projector, Color picture (Figure 4)	Question and Answer
I	3	Approaches and good practices of conservation and sustainable use of agrobiodiversity (definitions, importance, and case studies)	Participants become aware of the interlinkages between agrobiodiversity and ecosystem services Participants are snsitized on the role of agrobiodiversity for ecosystem services Participants become familiar with the approaches and good practices for conservation and sustainable management of agrobiodiversity	Group exercise Lecture method	Marker, newsprint paper, meta card, masking tape, Projector, pictures	Question and Answer

Day	Session no.	Session topic	Session objective	Training methods	Training material	Assessments tools
I	4	Exercise on agrobiodiversity assessment tool (Four Cell Analysis)	Participants are able to use Four cell analysis tool for agrobiodiversity assessment	Slide Presentation Group exercise	Marker, newsprint paper, meta card, masking tape, Projector,	Question and Answer
II	5	Overview of national policies in agrobiodiversity	Participants become familiar on the current national policies on agrobiodiversity Participants become aware of the national initiatives for conservation of agriculture plant genetic resources (APGRs) Participants are sensitized on policy gaps for agrobiodiversity conservation	Quiz competition Lecture method Group discussion	Marker, newsprint paper, meta card, masking tape, projector, A4 size paper	Question and Answer
II	6	Overview of international policies and laws related to agrobiodiversity and farmer's rights	Participants become familiar of key policies, pans, treaties, agreements, legislations, and regulations Participants know about international policies and laws related to agrobiodiversity and farmers right Participants become aware of how farmers rights relate with agrobiodiversity	Lecture Method Power point presentation Timeline tool	Marker, newsprint paper, meta card, color pen projector,	Question and Answer
II	7	Province and local level policies, programs and initiatives for agrobiodiversity conservation and promotion	Participants become informed on the current plans, policies, and programs related to agrobiodiversity at the respective province-level Participants become informed on current plan, policies, and prograsm related to farmers rights at the respective province-level	Discussion Lecture method Two -way interaction	Marker, newsprint paper, meta card, masking tape, Projector, policies, plan	Question and Answer
II	8	Discourse on policy and practices	Participants become familiar on the issues/ challenges at local level and provincial level Share various good practices that has been implemented by the stakeholders in agrobiodiversity Plans and policies related with agrobiodiversity Ways for minimize the challenges/address issues etc.	Panels discussion	Marker, newsprint paper, meta card, masking tape, projector, policies, plan	Question and Answer

Day	Session no.	Session topic	Session objective	Training methods	Training material	Assessments tools
III	9	Concept on advocacy and influencing, its tools and approaches	Participant bcome familiar on concept of advocacy and influencing, its type and necessity Particpants become aware of the tools, approaches and ways of advocacy and influencing in agrobiodiversity and influencing Participants become familiar on issue identification tools and techniques Participants become sensitized on advocacy strategy and plan development process	Brainstorming Role Play	Marker, newsprint paper, meta card, masking tape, projector	Question and Answer
III	10	Issue analysis and identification	Participants become familiar with the concept of issue and problem Participants beocome familiar with the technique for issue identification and analysis Participants become able to identify an advocacy issue focusing seed system in Nepal	Group discussion Group work Presentation	Marker, newsprint paper, meta card, masking tape, projector,	Question and Answer
III	11	Development of advocacy strategy and plan	Participants become familiar with the basic steps of advocacy strategy development Participants become aware of the basic considerations on developing an advocacy strategy	Brainstorming Group work Presentation	Marker, newsprint paper, meta card, masking tape, projector,	Question and Answer
III	NA	Training evaluation, reflection and closing	participatory training evaluation is conducted and the training is closed	Post test Scoring Closing Remarks	Marker, newsprint paper, meta card, masking tape, projector, post- test questionnaire	Question and Answer
Remarks	Review/reporting of previous day activities in the beginning of the day Summing up of the day long activities at the end of the day Present the summary of all topics discussed during the training at the end of the training.					
	Special arrangement: Write the Special arrange for women (if participants are pregnant and lactating) indigenous people (language) and differently able people.					

Session Plan: Opening and Inauguration Session

Session title	Opening and inauguration, objective sharing and introduction
Duration	**30 Minutes**
Learning area	Introduction among all participants and sharing the objective of the training with schedule/training sessions
Learning objectives	» Participants are able to introduce among all » Participants are able to know about the training objective and session plan for 3 days » Trainers are aware on understanding level of the participants about Agrobiodiversity and farmers rights » To collect expectation from the participants
Required materials	Marker, newsprint paper, meta card, masking tape, projector
Facilitation method and process	
Detailed activities	» Participant's registration, » Welcome speech, » Objective sharing, » Introduction of the participants and facilitators, » Expectation collection » Norms setting » Pre-training assessment
Session summary	Training opening and pre-training assessment
Session evaluation and conclusion	At the end, facilitators conclude the session by giving thanks for their active participation in each activity.
Suggestion for facilitators:	A pre-training assessment will be conducted to assess the knowledge of the participants. For that, a standard questionnaire with multiple choice questions will be developed and distributed to each participant. Once the participants complete the questionnaire, the facilitator collects and evaluates them. The same assessment will be done at the end of the training.

MODULE 1: Basics of Agrobiodiversity, Food Security and Climate Change

Overview

This module focuses on understanding basic concepts, definitions, and commonly used terminologies in the sector of agrobiodiversity conservation and management, food and nutritional security, and climate change and adaptation. Module covers a brief introduction and orientation of diverse tools and good practices of sustainable management, especially participatory tools useful for on-farm conservation and promotion of agrobiodiversity contributing to food security and climate change adaptation.

Objectives

At the end of this module, the participants will be able to:

» Be acquainted with definition and key terminologies associated with biodiversity, agrobiodiversity, climate change, food and nutritional security
» Increase conceptual knowledge/ understanding on interlinkages and significance of agrobiodiversity in the sector of food and nutritional security and climate change
» Understand and increase knowledge on different tools, practices and methods of on-farm agrobiodiversity conservation and management

Session Plan 1.1. Agrobiodiversity, food and nutritional security, climate change, and associated terminologies

Session Title	Agrobiodiversity, Food and Nutritional Security, Climate Change and Associated Terminologies
Duration	**2 Hours**
Learning area	» Concept of agrobiodiversity, food and nutritional security, climate change and associated terminology
Learning objectives	» Become familiar on concept of food and nutritional security and climate change » Be familiar the associated terminology of session title
Required materials	Marker, newsprint paper, meta card, masking tape and projector
Facilitation method and process	
Detailed activities	The facilitator uses the lottery game method to disseminate the knowledge about session terminology. Facilitator makes a chart sheet of different terminologies and elaborates the meaning of terminology through active participation.
Session summary	Remind all discussed topic and clear all questions to the participants if they have and present summary of the session.
Session evaluation and conclusion	Facilitator ask participants following questions to evaluate the session • What is agrobiodiversity? • What is food security? • What is food and nutritional security? • What is climate change? • What are the causes of climate change?
Suggestion for facilitators	Facilitator clarifies the concepts of agrobiodiversity, its related components, food and nutritional security and its different pillars. Together with it, facilitator clarifies the concept of climate change, the main causes of climate change in short, and its impacts of climate change on the agriculture sector.

1.1 Agrobiodiversity, food and nutritional security, climate change, and associated terminologies

Agrobiodiversity

Agricultural Biodiversity or Agrobiodiversity can be understood as a subset of biodiversity.

Agrobiodiversity is defined as the variety and variability of animals, plants and microorganisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries. It comprises the diversity of genetic resources (varieties, breeds) and species used for food, fodder, fiber, fuel and pharmaceuticals. It also includes the diversity of non-harvested species that support production (soil microorganisms, predators, pollinators), and those in the wider environment that support agroecosystems (agricultural, pastoral, forest and aquatic) as well as the diversity of the agroecosystems.

Food Security

FAO (1996) defines food security as "food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". According to the World Health Organization (WHO), food security is composed of three main components (Figure 2) viz., food availability, access and utilization. Food availability refers to the proper and adequate supply of quality food in a given area and food access refers to the social and economic aspects of how people get food. The income of an individual and the prices of food affect the accessibility of a food system. Food utilization refers to the ability of an individual to utilize available food effectively.

Nutritional Security

Nutritional security is defined as a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 1996).

Climate Change

In a simple term, climate change is a change in climatic parameters including temperature, rainfall, relative humidity and wind patterns over time. As a result of increased concentration of greenhouse gases (GHGs) like carbon dioxide, methane and nitrous oxide in the atmosphere, climate change is happening naturally. The United Nations Framework Convention on Climate Change (UNFCCC) refers to climate change as "a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that in addition to natural climate variability observed over comparable time periods".

Causes of Climate Change

The main reason of climate change is global warming caused by increasing greenhouse gas in atmosphere through anthropogenic activities. Major sources of greenhouse gas emission are:

- Fossil fuel burning specially on power generation like electricity and heat, transportation and fossil fuel powered machines in production factories and farms
- Deforestation
- Large scale/commercial livestock farming
- Agriculture residue burning
- Degradation of wetlands

Session Plan 1.2. Importance and interlinkages of agrobiodiversity with climate change and food and nutritional security

Session Title	Importance and Interlinkages of Agrobiodiversity with Climate change and Food and Nutritional Security
Duration	**1.5 Hours**
Learning area	» Linkage of agrobiodiversity, climate change and food and nutritional security
Learning objectives	» Increase conceptual knowledge/understanding on interlink ages and significance of agrobiodiversity in the sector of food and nutritional security and climate change
Required materials	Marker, newsprint paper, meta card, masking tape, projector, color picture (Figure 4)
Facilitation method and process	
Detailed activities	Paste the color picture (Figure 4) in board or display it from projector and discussed with picture about inter-linkage of agrobiodiversity, food and nutritional security and climate change. Explore the possible situation without connection of those situation by giving suitable example.
Session summary	Summarize the session by briefing the importance of interconnection between agrobiodiversity, climate change and food and nutritional security in a point.
Session valuation & concluding	Facilitator ask participants following question to evaluate session How will conservation of agrobiodiversity contributes on climate change adaptation? What are the advantages of agrobiodiversity conservation?
Suggestion for facilitators	Facilitator clears the participants about the importance of agrobiodiversity in changing climatic condition. Facilitators can use different audio video materials to clear the concept on topic. Video : https://www.youtube.com/watch?v=IAPF1Ee0W_g

1.2 Importance and interlinkages of agrobiodiversity with climate change and food and nutritional security

1. Food, Fibre, and Services

Climatic hazards such as floods, droughts, heat waves, etc. cause crop production loss. However, the crops and varieties with characteristics of drought tolerance, disease and pest tolerant, water logging tolerance, etc. can overcome such hazards or stress and give production which ultimately contribute to food and nutritional security.

2. Watershed Protection and Conservation

Agrobiodiversity is one of the key component of agroecosystem linked with human livelihood and ecological function. Conservation and sustainable use of agrobiodiversity helps to increase agroecosystem services contributing ecological balance. Increased ecosystem services helps to reduce climate induced adversity and increase resilience.

3. Enhance Soil Condition

Adaptation measures with conservation of agrobiodiversity maintains the soil structure and fertility. The diverse crops and micro-organisms helps maintain the soil quality contributing in productivity of the soil ecosystem.

4. Enhance Pollination

Agrobiodiversity plays a key role in sustaining lives of pollinators by providing food and habitat. Increased and well managed agrobiodiversity in the farming system promote pollinators and pollination services as diversity on food and habitat for pollinators increases.

5. Crop Breeding Adaptation

Maintenance of the diversity in the farm and landscape allows farming communities to improve the stress tolerance capacity and ensure high productivity through selection and breeding process so that such breeds/ varieties can adapt to the changing climatic condition. Diversity in farming helps to reduce risks of production failure as it will be distributed among various crops and varieties.

Session Plan 1.3 Approaches and good practices of conservation and sustainable use of agrobiodiversity (Definition, importance and case example)

Session Title	Approaches and Good Practices of Conservation and Sustainable use of Agrobiodiversity (Definition, Importance and Case Example)
Duration	**1.5 Hours**
Learning area	» Linkage of functional agrobiodiversity with ecosystem services » Role of agrobiodiversity for ecosystem services » Approaches and good practices for conservation and sustainable management of agrobiodiversity
Learning objectives	» Aware about the concept of linkage of functional agrobiodiversity and ecosystem services » Sensitize on role of agrobiodiversity for ecosystem services » Familiar with the approaches and good practices with the conservation and sustainable management of agrobiodiversity
Required materials	Marker, newsprint paper, meta card, masking tape, projector, pictures
Facilitation method and process	
Detailed activities	Lectures using PowerPoint presentation on functional agrobiodiversity and its relationship with ecosystem services. To sensitize on role of agrobiodiversity, paste the pictures of 4 roles in round size on different four paper. Then make a chart sheet of major components of those four role and request to participants to pick one as a lottery and request them to paste on the where it is relevant. After that facilitator describes it in detail by placing all components in appropriate places. Brainstorming on approaches and good practices on conservation and sustainable management of agrobiodiversity and describe in detail with the help of appropriate pictures based on reading materials.
Session summary	Summarize the session by briefing the linkage of agrobiodiversity, its role and some approaches and good practices of agrobiodiversity.
Session valuation & concluding	Facilitator asks participants the following question to evaluate the session • What are the key relations of functional agrobiodiversity? • What are the roles of agrobiodiversity? • What are some approaches of conservation and sustainable management of agrobiodiversity?
Suggestion for facilitators	Facilitator clarifies to the participants the key relations of functional agrobiodiversity and ecosystem through suitable examples and limited use of jargon. For all topics, prepare pictures and materials for easily deliver the session message

Reading Materials (Annex 2)

1.3 Approaches and good practices of conservation and sustainable use of agrobiodiversity

Functional agrobiodiversity refers to those elements of biodiversity on the scale of agricultural fields or landscapes, which provide ecosystem services that support sustainable agricultural production and can also deliver benefits to the regional and global environment and the public at large (ELN-FAB, 2009; www.eln-fab.eu).

Approaches and good practices of agrobiodiversity

- Participatory plant breeding
- Grassroots breeding
- Participatory varietal selection
- Evolutionary plant breeding
- Community biodiversity register
- Community seed bank
- Diversity block
- Diversity kits
- Diversity fair
- Value addition and product diversification of local products with market linkage

Session Plan 1.4 Exercise on agrobiodiversity assessment tool (Four Cell Analysis)

Session Title	Agrobiodiversity Assessment
Duration	**1.5 Hours**
Learning area	Technique of agrobiodiversity assessment
Learning objectives	Familiar on using Four Cell Analysis (FCA) tool for agrobiodiversity assessment.
Required materials	Marker, newsprint paper, meta card, masking tape, projector, seeds of divers crops
Facilitation method and process	
Detailed activities	» Participants are divided into groups with each of four each ensuring gender balance in the groups. The facilitator requests the group to identify the group leader. » The facilitators orient the participants on the exercise. » The participants place the seeds of diverse crops in the cell as per their characteristics. » The group leader presents the group work and facilitator provide inputs and suggestions to the team. » Facilitator also orients on the analysis of FCA
Session summary	Summarize the session by briefing the steps of four cell analysis tool.
Session valuation & concluding	Facilitator asks participants following question to evaluate the session • What are the major considerations to use the tool? • What are the good and improvement area of the tool? • What are some approaches of conservation and sustainable management of agrobiodiversity?
Suggestion for facilitators	This session is mainly focused on the group exercise. Once the good practices session is delivered, the participants are allowed to work in a group so as to brainstorm and learn from each other. This exercise includes FCA. In this session, the participants will place the seeds in one of the four cells as per their current situation cultivation, characteristics and discuss in their within the team.

Reading Materials (Annex 2)

1.4 Exercise on agrobiodiversity assessment tool (Four Cell Analysis)

MODULE 2 : Understanding Policies on Agrobiodiversity and Farmers' Rights

Overview

This module discusses the national and international plans, policies and programs related to agrobiodiversity and farmers' rights. It aims to enrich the knowledge of the participants in various policies related with agrobiodiversity, their scope, and limitations.

Objectives

After completion of this module, the participants will be able to:

- Become familiar with the policies, plans and program related with Agrobiodiversity at National level and International levels
- Become acquainted with scope, importance and gaps of the policies
- Understand the major efforts of government for conservation of plant genetic resources
- Increase knowledge on the international plans, policies and program related with agrobiodiversity and farmers rights
- Understand various cases of farmers rights, access benefit sharing etc.

Session Plan 2.1. Overview of national policies in agrobiodiversity

Session Title	Overview of National Policies in Agrobiodiversity
Duration	**1.5 Hours**
Learning area	» National policy update on agrobiodiversity, country initiatives for conservation of agriculture plant genetic resources (APGRs) and major policy gaps for agrobiodiversity conservation.
Learning objectives	» Become familiar on current national policy on agrobiodiversity » Become aware on country initiatives for conservation of APGRs » Sensitize on policy gap for agrobiodiversity conservation
Required materials	Marker, newsprint paper, meta card, masking tape, projector, A4 size paper
Facilitation method and process	
Detailed activities	Facilitator delivers a policy update on agrobiodiversity through a quiz contest method. Prepare policy related questions and organize a quiz contest for the whole group. Make provision of small surprises as prize like chocolates, pen, seed packet, etc. Present a lecture on country initiative for conservation of APGRs Group discussion on policy gap for agrobiodiversity conservation.
Session summary	Summarize the session by the important policy update, major policy gap and major country initiatives for conservation of APGRs.
Session valuation & concluding	Facilitator asks participants the following question to evaluate the session • What are the key policies related to agrobiodiversity conservation? • What efforts and initiatives taken by government for conservation of APGRs? • What are the major policy gap for agrobiodiversity conservation?
Suggestion for facilitators	Facilitator collects updated information about current policies related to agrobiodiversity conservation. Facilitator prepares questions to engage the participants in a quiz contest. Read more on policy gap analysis for agrobiodiversity conservation.

2.1. Overview of National policies in agrobiodiversity

Major policy provisions and scope

Policy	Provision and Scope
Seed Act 1988 (Amendment 2008)	» Promotion and regulation of quality seeds » Ownership rights to local varieties » Regulating import of seeds
Agrobiodiversity Policy 2007 (1st amendment 2014)	» Management, conservation, and sustainable use of agrobiodiversity » Protection and promotion of the rights and interests of farmers and traditional knowledge » Arrangements for equitable sharing of benefits arising from access to and utilization of AGRs and materials » *In situ* and *ex situ* conservation are emphasized » Incentives for the conservation of local germplasm » establishment of gene bank
Agriculture Development Strategy 2015	» Implement agrobiodiversity policy » Initiating a system of registration of agro-biodiversity » Developing regulation for the research and experimentation of biodiversity and genetic resources and GMO
National Seed Policy 1999	» Conserving local crop varieties and protecting the rights of the local communities to them » Agrobiodiversity conservation and establishing varietal rights » Regulation of GMO and transgenic plants » Formulation and enforcement of bio-safety rules
National Seed Vision 2013-2025	» Use of local landraces and their wild relatives for developing climate resilient and nutrient rich varieties. » Promote local seed security through conservation and sustainable use of agrobiodiversity. » Promote community seed bank to conserve agro-biodiversity » promote linkage between national and international gene banks and seed banks for exchange of materials and information for biodiversity conservation

Policy	Provision and Scope
National Biodiversity Strategy and Action Plan 2014-2020	» Strengthening community-based management of agrobiodiversity » Development and implementation of incentive measures for on-farm conservation of agrobiodiversity » Expanding and strengthening organic agriculture, IPM and IPNM, plant and animal quarantine, seed certification and registration, minimum tillage etc. and climate smart agriculture programs » Establishment of an efficient system for exchange of information on all kinds of agricultural genetic resources and implementation of ITPGRFA and multilateral system of exchange of PGRFA
ITPGRFA-MLS Implementation Strategy and Action Plan (IMISAP) 2017	» Strategies and action plans for exploration and collection, conservation, documentation, exchange of materials, and monitoring of germplasm flows » Documentation system of APGRs at local, regional and national levels to be placed in action to facilitate the accessions under MLS » NARC, DoA, MoALD and other relevant organizations to have annual program to materialize the IMISAP » All relevant national policies, acts, regulations to be integrated to implement the IMISAP » proposition of a one-window system for export of PGR and multiple-window system for their import
Community Seed Bank Program Implementation Guidelines 2008	» Seed multiplication of local varieties through the community-based seed production groups » Exploration, identification, selection, and production of local seeds
Community Seed Bank Establishment Operational Guidelines 2015	» Subsidy on the construction of community-based seed storage at grass root level in order to improve the supply of seeds in earthquake affected districts

Session Plan 2.2. Overview of international policies and laws related to agrobiodiversity and farmers' rights

Session Title	Overview of International Policies and Laws related to Agrobiodiversity and Farmers' Rights
Duration	**1.5 Hours**
Learning area	» Policy, Plans, treaties, agreements, legislation and regulations » International policies and laws related to agrobiodiversity and farmers' rights » Historical context and concept of farmers' rights on agrobiodiversity
Learning objectives	» Be familiar on policy, pans, treaties, agreements, legislation and regulation » To know about International policies and laws related to agrobiodiversity and farmers' rights » Aware on concept of farmers' rights on agro biodiversity
Required materials	Marker, newsprint paper, meta card, masking tape, projector, A4 size paper
Facilitation method and process	
Detailed activities	» Facilitator delivers the basic concept on policies, plans, treaties, agreements, legislation and regulations through a lecture » Facilitator shares and discuss about international policies and laws related to agrobiodiversity and farmers' rights through a PowerPoint presentation » Facilitator clarifies the concept on farmer's rights by using timeline tool and a lecture
Session summary	Summarize the session through a short briefing the policies, plans, treaties, agrobiodiversity-related international policies and the concept of farmers' rights.
Session valuation & concluding	Facilitator asks participants the following question to evaluate the session What are the difference between policies and treaties? Please tell 2-3 international policies and law related to agrobiodiversity and farmer rights? Mention specific features of World Trade Organization (WTO), 1995
Suggestion for facilitators	Facilitator collects updated information about international policies and treaties related to agrobiodiversity and farmers rights. Read more on status of international policies and treaties and farmers' rights in context of Nepal.

2.2 Overview of international policies and laws related to agrobiodiversity and farmers' rights

a) International policies and laws related to Agrobiodiversity

- Brief description of the key international policies and laws in agrobiodiversity and biodiversity
- The Convention of Biological Diversity (CBD)
- The Nagoya Protocol
- The International Treaty on Plant Genetic Resources for Food & Agriculture (ITPGRFA)
- Interrelationships and differences between CBD and ITPGRFA
- The World Trade Organization (WTO)
- The Union for the Protection of New Varieties of Plants (UPOV)

b) Access and Benefit Sharing (ABS) and famers rights in international policy regime

- Concept of Access and Benefit Sharing (ABS) envisaged in the International Policy Regime
- Historical context and concept of Farmers' rights on agro-biodiversity
- Status of International Policies and Treaties and Farmers' rights in the context of Nepal
- Status of Implementation of International Policy Regime in South Asia
- Challenges and Gaps in Biodiversity and Agrobiodiversity related Policy Regimes
- Challenges and Gaps in Intellectual Property Rights related Policy Regimes
- Examples of effective implementations of existing laws/ policies/guidelines at international and national level

Session Plan 2.3. Province and local level policies, programs and initiative for agrobiodiversity conservation and promotion

Session Title	Province and Local Level Policies, Programs and Initiative for Agrobiodiversity Conservation and Promotion
Duration	**1.5 Hours**
Learning area	» Province level plans, policies, and programs related to agrobiodiversity conservation, promotion and marketing » Province level plans, policies, and programs related to farmers' rights
Learning objectives	» Be informed on current plan, policies and program related to agrobiodiversity at respective province » Be informed on current plan, policies and program related to farmers' rights at respective province.
Required materials	Marker, newsprint paper, meta card, masking tape, projector, policies, plan
Facilitation method and process	
Detailed activities	This session is especially designed to be piloted in all the provinces in Nepal. In this case, a delegate from the Ministry of Land Management, Agriculture and Cooperative of each province will facilitate the session. This session mainly highlights various plans, policies and programs at the provincial level related with agrobiodiversity conservation, promotion and marketing and farmers' rights. Any specific examples with good practices will also be delivered in this session. Following the session, a discussion among the participants and facilitator will be carried out.
Session summary	Summarize the session by highlighting the policies, plans, and programs related to agrobiodiversity and farmers' rights of respective province.
Session valuation & concluding	Facilitator asks participants the following question to evaluate the session What are the related policies and program at the respective province?
Suggestion for facilitators:	Facilitator brings a copy of the policies, plans, and programs related to agrobiodiversity and farmer's rights in the province. It will be great to provide copies to individual participants. Therefore, the training organizers should arrange those documents.

Reading Materials (Annex 2)

2.3. Province and local level policies, programs and initiative for agrobiodiversity conservation and promotion

National and province level laws, policies, plans and programs related to agrobiodiversity and farmers' rights.

Session Plan 2.4. Discourse on Policy and Practices

Session Title	Discourse on Policy and Practices
Duration	**1.5 Hours**
Learning area	» Issues and challenges related to agrobiodiversity at the local and province levels » Plans and policies related with agrobiodiversity » Ways for minimizing the challenges/address issues etc.
Learning objectives	» Become familiar on issues/challenges at local level and provincial level » Share various good practices that has been implemented by the stakeholders in agrobiodiversity » Understand plans and policies related with agrobiodiversity » Ways for minimizing the challenges/address issues etc.
Required materials	Markers, newsprint paper, meta cards, masking tape, projector, policies, plans
Facilitation method and process	
Detailed activities	In this session, the experts/delegates will be invited as panelists and a discussion will be conducted among them. The experts/delegates might represent the Ministry of Land Management, Agriculture and Cooperative (MoLMAC), Agriculture Knowledge Centre (AKC), Rural Municipalities/Municipalities, and custodian farmers. For better preparation of panel members, guiding questions for discussion should be provided to the panelists ahead of time.
Session summary	Summarize the session learnings and thank the panelists and participants for active involvement in the session.
Session valuation & concluding	Facilitator asks the participants following questions to evaluate the session What is your take home message from the session?
Suggestion for facilitators	Facilitator will have ensure time availability and participation of targeted panelist/panel members in beforehand. Facilitators should guide the participants for the process of policy discourse session before the arrival of panelists.

Reading Materials (Annex 2)

2.4 Discourse on policy and practices

National and province level policies, plan and program related to agrobiodiversity and farmers' rights.

MODULE 3 : Learning Advocacy & Influencing and its Applications

Session Plan 3.1 Concept of advocacy and influencing, its tools and approaches

Session Title	Concept on Advocacy and Influencing, its Tools and Approaches
Duration	**1.5 Hours**
Learning area	» Concept of advocacy and influencing » Tools, approaches and ways of advocacy and influencing » Ways of advocacy and influencing
Learning objectives	» Become familiar on concept of advocacy and influencing, its type and necessity » Be aware on tools, approaches and ways of advocacy and influencing » Become familiar on issue identification tools and technique » Understand advocacy strategy and plan development process
Required materials	Markers, newsprint paper, meta cards, masking tape, projector
Facilitation method and process	
Detailed activities	**1. Definition of advocacy and influencing** Facilitator carries out brainstorming on advocacy and influencing and presents definitions of advocacy and influencing, its type and necessity through given suitable examples **2. Tools, approaches and ways of advocacy and influencing** Facilitator leads a discussion on the tools and approaches of advocacy and influencing in 3-4 groups (at least 6 members in a group) and present at least 3 tools through role play method.
Session summary	Recap all discussed topics and clarify confusions the participants may have, and summarize the session.
Session valuation & concluding	• Facilitator asks participants the following questions to evaluate session • What is advocacy? • What is influencing? • What are the tools and approaches of advocacy and influencing? • Facilitator concludes the session by summarizing of the key points of the session and thanking everyone for their active participation.
Suggestion for facilitators	Discuss the impacts of advocacy and influencing in agrobiodiversity and farmers' rights in Nepal. During the discussion, focus on appropriate tools and approaches for advocacy and influencing to strengthen agrobiodiversity and farmers' rights in Nepal.

3.1 Concept on advocacy and influencing, its tools and approaches

Advocacy

Advocacy is the process of influencing decision-makers to change public policies and practices in ways that will have a positive and lasting impact on the lives of people.

Influencing

Influencing is making systematic efforts to change power relations, attitudes, beliefs, behaviors, social norms, and their implementation. It leads to just societies without poverty and positive change at scale in lives of people.

Tools, approaches, and ways of advocacy & influencing

There are various tools and approaches for advocacy and influencing. It may differ based on issues. The seminars, workshops, discourse, press release, poster, pamphlets, advertisement etc. served as tools for advocacy. Some tools and approaches for advocacy are as follows:

1. Face to face lobbying and advocacy.
2. Public organization, engagement and mobilization.
3. Digital campaigning and storytelling.
4. Traditional, digital and social media engagement.
5. Research, evidence generation and thought leadership.
6. Travelling Seminar
7. Strategic and collaborative partnerships.
8. Brokering relationships with key individuals or organizations.
9. Convening inclusive spaces for collaboration and discussion.
10. Capacity exchanges including mutual learning and skills building for staff, partners, networks and allies.

Session Plan 3.2. Issue analysis and identification for advocacy and influencing

Session Title	Issue Analysis and Identification
Duration	**1.5 Hours**
Learning area	» Concept of issue and problem » How to identify issue » Criteria for selecting advocacy issue » Getting to root causes- Problem tree analysis, issue analysis » Identification of advocacy issue focusing seed system in Nepal
Learning objectives	» Become familiar on concept of issue and problem » Be familiar the technique for issue identification and analysis » Be sensitized to identify advocacy issue focusing seed system in Nepal
Required materials	Marker, newsprint paper, meta card, masking tape, projector
Facilitation method and process	
Session Title	**Issue Analysis and Identification**
Detailed activities	**2.1 Basic concept on issue and problem and its identification process** Facilitator conducts a group discussion on issue and problem identification. At the end of the discussion, facilitator clarifies the concept of issue and problem by giving suitable examples. **2.2 Getting to root causes and issue analysis** Facilitator divides the participants in to 4 groups to discuss issues and root causes on one of the four major topics per group: a) food and nutritional security, b) climate change, c) policy in seed system, d) biodiversity conservation. After the group work, participants present it separately from each group, then facilitators add some points to clear on issue analysis and identification.
Session summary	Remind all discussed topic and clear all confusion of the participants if they have and present summary of the session.
Session valuation & concluding	• Facilitator asks participants the following questions to evaluate the session • What is an issue? • What is a problem? • What are the differences between issue and problem? • What are the processes for issue identification and analysis?
Suggestion for facilitators	Facilitator guides the participants to identify issues and problems in agrobiodiversity and farmers' rights in Nepal. Support the participants to identify the issue in agrobiodiversity (focusing seed system) and farmers' rights by digging out problems seen in that sector.

3.2 Issue analysis and identification for advocacy and influencing

Issue and problem are somewhat similar words since they both refer to challenging situations or matters. The main difference between issue and problem is that issue is an important topic or problem for debate or discussion whereas problem is a harmful and unwelcome matter or situation that needs to be dealt with.

Issue and problem are the two sides of the same coin.

Problem	Issue
Inactive stage of issue	Active stage of problem
Related for individual, community, public and state	Related for community, public and state
Difficulties without solution	Difficulties with solution
Limited	Global

a) What is issue?

- Active stage of problem

  Example:

  - No participation of women and Dalit for agriculture policy making? – Problem
  - Participation of women and Dalit for agriculture policy making – Issue
- Public interest
- Public affairs

b) Issue identification process

- Listing problem
- Problem prioritization
- Identify root causes of problem
- The causes of problem are the issue for advocacy

c) Issue classification

- Issue for policy development
- Issue for policy improvement
- Issue for policy implementation

d) Tree analysis - Problem and issue

Session Plan 3.3 Development of advocacy strategy and plan

Session Title	Development of Advocacy Strategy and Plan
Duration	**1.5 Hours**
Learning area	» Familiar for the step of advocacy strategy development » Basic consideration while developing strategy
Learning objectives	» Become familiar on basic step for advocacy strategy development » Be aware on basic consideration while developing strategy
Required materials	Marker, newsprint paper, meta card, masking tape, projector
Facilitation method and process	
Detailed activities	**3.1 Step for advocacy strategy development** The facilitator carries out brainstorming for advocacy strategy development and clarifies the steps through a presentation. Facilitator highlights the basic consideration to take while developing an advocacy strategy. After the theoretical session, a maximum of 4 group (consisting of up to 6 persons) will be formed and assigned the task to develop an advocacy strategy for one of the 4 issues related to agrobiodiversity and farmers' rights. After finishing the group work, all team leaders from the group will present separately and question answer session will take in each developed strategy.
Session summary	Remind all discussed topic and clear all ambiguities to the participants if they have and present summary of the session.
Session valuation & concluding	• Facilitator asks participants the following questions to evaluate the session • What are the steps for advocacy strategy development? • What area should be considered while developing advocacy strategy?
Suggestion for facilitators	Facilitators guide the participants to follow all the steps while developing an advocacy strategy. Facilitator will provide sample of strategy to all group as a reference.

Reading Materials (Annex 2)

3.3 Development of advocacy strategy and plan

Steps in developing an advocacy strategy

» Problem
» Overall aim
» Specific objectives
» Rationale for organization engagement
» Power analysis
» Targets and allies
» Message
» Tools and actions (research, policy development, lobbying, media, pop mob, funding others.)
» Opportunities and events
» Human and financial resources
» Risks
» Monitoring and evaluation

How to make an advocacy strategy?

» Be ambitious
» Develop it in consultation
» Keep the focus on what we can influence
» Keep the strategy short and simple
» Keep the strategy dynamic and evolving
» Choose the most powerful approaches to achieving change
» Focus on what we plan to do
» Be clear on resources needed
» Focus on delivering the strategy
» Be clear on resources needed
» Focus on delivering the strategy

Session Plan 3.4. Post training evaluation, reflection and closing

Session Title	Training Evaluation, Reflection and Closing
Duration	**1.5 Hours**
Learning area	» Training evaluation » Reflection and closing
Learning objectives	» Participatory training evaluation and closing
Required materials	Marker, newsprint paper, meta card, masking tape, projector
Facilitation method and process	
Detailed activities	**4.1 Post Training Evaluation and Reflection** Once the regular sessions are completed, an evaluation will be conducted with the participants. This mainly helps the organizer to know much the participants have learned from the training. The sample questions provided to the participants at the beginning of the event will be again provided to them. This serves as a post training assessment of the program. After the completion of post training evaluation, the facilitator hands over the session to the organizer for reflection, evaluation and closing of the event. The organizer will request the participants to give their reflection with regards to training sessions, logistics, outputs, etc. The organizer can request participants (one male and one female) to volunteer themselves for giving their opinion. Similarly, the facilitators who will be available till the end of the program will also be requested to give their remarks (observations, suggestions, way forward) on the program and participants. **4.2 Closing** At the end, certificates are distributed to all the participants. The closing of the program is done by the organizer by thanking all the participants, facilitators for their active participation and making the training program successful.
Session Title	**Training Evaluation, Reflection and Closing**
Session summary	Training evaluation, reflection and closing
Session valuation & concluding	Vote of thanks to the participants and organizer
Suggestion for facilitators	Facilitators develops a questionnaire for training evaluation, presents the summary of evaluation immediately to make the participants aware of their level of learnings.

ANNEX

Annex 1. Questionnaire for pre and post training evaluations

Full marks: 100 Pass marks: 40

(All questions have equal value)

Questions

Pre/ Post Test Questions (Tick mark the right answer)

1) How many levels are there in agrobiodiversity?
   i) 3 levels iii) 5 levels ii) 4 levels iv) 6 levels

2) What is genetic biodiversity?
   i) Within species iii) both of them
   ii) Between species iv) none of them

3) What are major causes of climate change?
   i) Deforestation iii) both a) and b)
   ii) Burning of fossil fuels iv) none of them

4) When "National Agrobiodiversity Policy" was formalized?
   i) 2007 AD iii) 2013 AD ii) 2012 AD iv) 2014 AD

5) When did Nepal became signatory to the CBD?
   i) 1992 iii) 1986 ii) 1995 iv) 2002

6) Write any for ways/methods of advocacy and influencing?
   i) iii) ii) iv)

7) What does ABS stands for in the sector of agrobiodiversity and farmer's rights
   i) Agrobiodiversity Based Services
   ii) Access to Biological Services
   iii) Access Benefit Sharing
   iv) Access and Benefit Services

8) Which approach/practice is not considered as a good practice of agrobiodiversity management?
   i) Diversity Block iii) Diversity Fair
   ii) Community Seed Bank iv) Mono Cropping

9) What are the outputs of conservation and promotion of agrobiodiversity?
   i) Food and Nutrition Security iii) Increase rainfall and temperature
   ii) Decrease ecological balance iv) Increase agricultural production

10) What does farmer's right agrobiodiversity talks about?
   i) About farmer's education system
   ii) About farmer's right to sale hybrid seeds
   iii) About farmer's right to use local seeds and their knowledge
   iv) None of above

Annex 2. Reading Materials

Session 1.1: Agrobiodiversity, food and nutritional security, climate change and associated terminologies

Before understanding agrobiodiversity, we need to understand biodiversity. Biodiversity, short for biological diversity is defined as the variety of all living things on the Earth or in a particular habitat. The Convention on Biological Diversity (CBD, 1992) defines biodiversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems." Biodiversity can be divided/separated in three layers/levels as follow:

Ecosystem Diversity: An ecosystem is a specific geographic location/area where all living organisms and non-living things co-exists and interact. Ecosystem diversity is all the differences among ecosystems including habitats, geo-climatic conditions, biological community and ecological functions and interactions. This is the highest level of biodiversity including species and genetic diversity within it.

Species Diversity: Species diversity is the number of species of living organisms that live/exist in a particular location/ ecosystem. It can be understood as variability at the organism level which can be differentiated as inter-species diversity.

Genetic Diversity: Genetic diversity is defined as genetic variability that exists within as well as among species. Genetic diversity is the total number of genetic characteristics in the genetic makeup of a species, it ranges widely from the number of species to differences within species.

Agrobiodiversity

Agricultural Biodiversity or Agrobiodiversity can be understood as a subset of the Biodiversity.

FAO defines agrobiodiversity as the variety and variability of animals, plants and microorganisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries. It comprises the diversity of genetic resources (varieties, breeds) and species used for food, fodder, fiber, fuel and pharmaceuticals. It also includes the diversity of non-harvested species that support production (soil microorganisms, predators, pollinators), and those in the wider environment that support agroecosystems (agricultural, pastoral, forest and aquatic) as well as the diversity of the agroecosystems.

Similar to biodiversity, agrobiodiversity also has three levels of diversity, viz., ecosystem diversity, species diversity, and genetic diversity. Ecosystem diversity in agrobiodiversity can be understood as variability in the agricultural system which includes biotic (plant, animals, microorganism, fishes, birds, etc.) as well as abiotic components (geology, climate, topography etc.) within the agricultural system. Flatland and trophic agriculture ecosystem, mountain and terrace farming ecosystem, river basin farming ecosystem, and agro-forestry ecosystem are typical examples of different ecosystem diversity in agrobiodiversity.

Similarly, species diversity in agrobiodiversity is variability of living organisms within the particular agricultural ecosystem. We can understand species diversity as various crops and livestock like rice, wheat, maize, apple, banana, taro, yam, mushroom, cow, buffalo, chicken, fish, etc. Genetic diversity is diversity within and among species like different varieties or breeds of crops and livestock.

Agrobiodiversity can be further divided into six different components (crops, forage, livestock, aquatic, insects and microorganisms) and four subcomponents as domesticated, semi-domesticated, wild relatives and wild edible in Nepal (Figure 1).

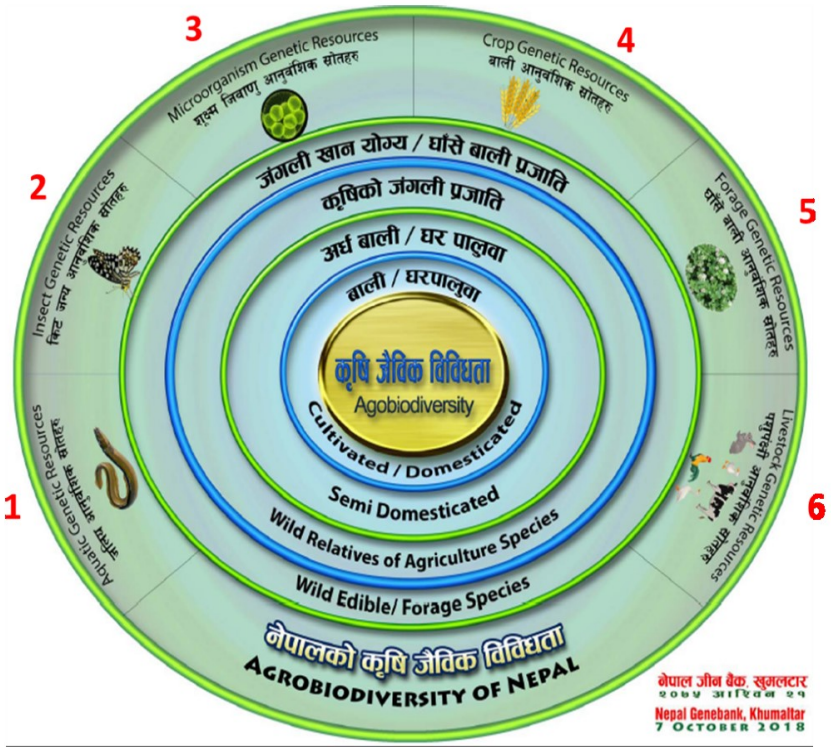

Figure 1. Components and subcomponents of agrobiodiversity (Source: National Gene Bank, Khumaltar 2018)

Other key terminologies associated with agrobiodiversity

Food Webs: Food webs are made up of multiple trophic levels, such as varieties of green plants, herbivores, predators, etc. For example, on a farm, maize is a green plant which utilizes energy from the sun to convert CO_2 from the atmosphere, water from rain and minerals from the soil to form its stems, leaves, roots and cobs. The cattle and other livestock are fed with maize stems and leaves which use the energy and nutrients contained in them to maintain themselves and to produce milk. Similarly, people consume both maize grains and milk from cows. So, in this case energy and nutrients flow along the food web, from plants to people.

Landscape: Landscape can be defined as the traits, patterns and structure of a specific geographic area, including its biological composition, its physical environment and its anthropogenic or social patterns. Literally, it is an area where interacting ecosystems are grouped and repeated in similar form.

Food Security: Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 1996). According to the World Health Organization (WHO), food security is composed of three main components (Figure 2), viz., food availability, access, and utilization. Food availability refers to the proper and adequate supply of quality food in a given area and food access refers to the social and economic aspects of how people get food. The income of an individual and the prices of food affect the accessibility of a food system. Food utilization refers to the ability of an individual to utilize available food effectively.

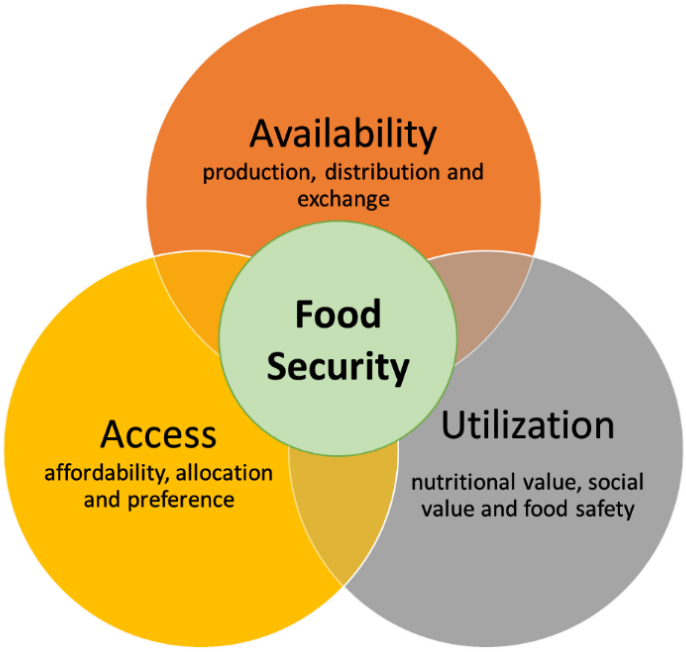

Figure 2: The three components of food systems with their main elements shown in italics. (Ingram et al., 2005)

Other key terminologies associated with food and nutritional security

Malnutrition: It is the condition that develops when the body is deprived of vitamins, minerals and other vital nutrients it needs to maintain healthy tissues and organs to function. Malnutrition occurs in people who are either undernourished or over-nourished. WHO have defined Malnutrition as deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. The term malnutrition covers 2 broad groups of conditions. One is 'under-nutrition'—which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals). The other is overweight, obesity and diet-related non-communicable diseases (such as heart disease, stroke, diabetes, and cancer).

Food and Nutritional Security: Food and nutrition security is when all individuals have reliable access to sufficient quantities of affordable, nutritious food to live a healthy life. For easy understanding we can define food security and nutritional security in a fragmented way. According to the United Nations' Committee on World Food Security, food security is defined as the condition when "people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life."

Nutritional security is understood as a situation that exists when all "people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996).

Climate Change: In a simple term, climate change is a change in climatic parameters including temperature, rainfall, relative humidity and wind patterns over time. As a result of increased concentration of greenhouse gases (GHGs) like carbon dioxide, methane and nitrous oxide in the atmosphere, climate change is happening naturally. The United Nations Framework Convention on Climate Change (UNFCCC) refers to climate change as "a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that in addition to natural climate variability observed over comparable time periods".

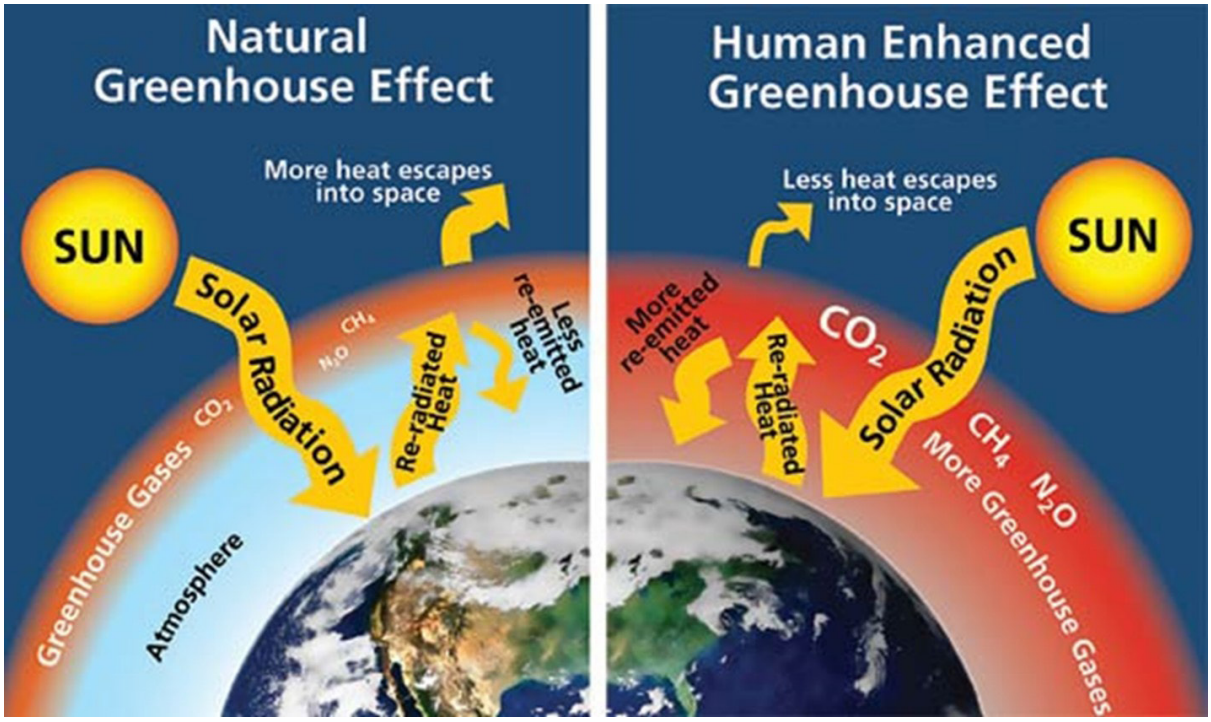

Figure 3: Greenhouse effects in earth due to natural and anthropogenic activities. (source: William Elder, National Park Service)

Major causes of global warming

Burning of Fossil Fuels: Fossil fuels (coal, gas, petroleum oils, wood, etc.) burning cause emission of GHGs like carbon dioxide, carbon monoxide and nitrous oxide in the atmosphere.

Agricultural Practices: The haphazard use of chemical fertilizers and residue/ biomass burning releases different types of GHGs in the atmosphere. Huge amount of GHGs emitted during the process of manufacturing, transformation and use of chemical fertilizers and pesticides.

Intensive Farming/Livestock: Ruminant animals such as cattle and sheep produce a large amount of methane during their process of digestion of food (enteric fermentation). Manure management is another key source of GHGs like methane and nitrous oxide.

Deforestation: Trees absorb carbon dioxide from the atmosphere mainly for photosynthesis. When trees are cut down, the carbon stored in the trees is also released into the atmosphere. Carbon dioxide, carbon monoxide, nitrogen oxides and sulfur oxides are released when the trees are cut down.

Other key terminologies associated with climate changes

Greenhouse Effect: The greenhouse effect is the process by which radiation from the sun is trapped in the atmosphere thus warming the planet's surface. GHGs cause greenhouse effects that result heat trapping which have made Earth's environment habitable making favorable temperature all life forms. Natural and balanced greenhouse effect is very essential to sustain lives on Earth.

Weather: It refers to the state of atmosphere at a particular place and time. It is the short-term day to day change in the temperature, rainfall, humidity, etc.

Climate: It refers to the long-term atmospheric condition and weather pattern in a particular place for over 30 years.

Climate Resilience: It is defined as the capacity to prepare for, recover from and adapt from the climatic hazards.

Adaptive Capacity: It is a measure of the potential, ability, or opportunities of a community or system to cope with the situation when they are exposed to climate-induced stress or disasters.

Vulnerability: Vulnerability can be defined as "the degree to which a system is susceptible to and unable to cope with adverse effects of climate change, including climate variability and extremes (IPCC, 2007).

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Session 1.2. Importance and Interlinkages of Agrobiodiversity with Climate change and Food and Nutritional Security

Agrobiodiversity Conservation: It serves a basic component of adaptation strategies to the changing climate. Sustainable use of agrobiodiversity helps to reduce the negative impacts of climate change especially in the fragile ecosystem and enhance the system. Cultivation of a high level of diversity in the ecosystem and diversification of agrobiodiversity in the landscape strengthens the ecosystem's resilience. Plant Genetic Resources contribute to the stability of the agricultural ecosystem and climate change adaptation. For example, if we have planted multiple crops or varieties in a particular time period and drought occurs, all of them might not fails or die due to drought condition because different crops and varieties have different level inherit capacities to tolerate drought stress. Plating higher diversity will minimize the risk of crop production failure as there are back-up crops. Such crop varietal diversity in the farming system is the foundation for maintaining agrobiodiversity.

Agrobiodiversity plays an important role in maintenance of ecological and social services provided by the agro ecosystems. It provided all kind of services like provisioning (food, fodder, medicine, fuel, etc.), regulating (soil-water purification), cultural (associated with cultural practices and sue values) and supporting services (pollination service, soil nutrient re-cycling etc.). For example, different landscapes and wildlife conservation, soil health maintenance and protection through prevention of erosion, maintenance of fertility and structure, sequestration of carbon and functioning of the water cycle. So, agrobiodiversity serves as a hub for acquiring economic, social and ecological benefits which are utilized at different levels, including farm/household, community, nationally and globally.

Figure 4. Showing the various aspects and interconnection between agrobiodiversity, nutrition and climate adaptation practices. Source: bit.ly/3NiFicc

Importance of Agrobiodiversity in the Changing Climatic Condition and Food and Nutritional Security

1) Food, Fiber and Services

Climatic hazards such as floods, droughts, heat waves etc. cause a greater crop loss than what? However, the crops and varieties with characteristics of drought tolerance, disease-pest resistance, water logging tolerance, etc. can overcome such hazards conditions and give production which ultimately contribute to the food security. Agrobiodiversity allows sustainable and resilient food production and other natural resource-based products that contributes to the food and nutrition security. For smallholder farmers, crop varieties and livestock breeds possessing adaptive capacity to the changing environment can be important resources for increasing production and secure livelihood (Sthapit et al., 2006). Similarly, maintaining a larger species diversity in home gardens serves as an important means for farm management which reduces risk and contribute to family nutrition and income generation. Often the bulk of the agrobiodiversity needed by the smallholders are maintained by farming communities themselves rather than the formal sector.

2) Watershed Protection and Conservation

Agrobiodiversity conservation reduces the adverse effects of the climate change leading to ecosystem restoration and rehabilitation. This helps to reduce the vulnerability to extreme events such as drought, excessive rainfall, and landslide and enhance ecosystem services, i.e., availability of diverse food and habitat, pollination, pest regulation and erosion control. Plantation of deep-rotted crops, perennial crops helps to reduce soil erosion and increase stability preventing siltation of rivers and lake, flooding and landslides.

3) Enhancing Soil Condition

Adaptation measures with conservation of agrobiodiversity maintains the soil structure and fertility. Soil microorganisms, an important component of agrobiodiversity, maintain the soil quality contributing in productivity of the soil ecosystem. The vegetated land along with the water sources such as rivers, wells, and springs act as a sponge which holds water during the high water levels and slowly releases them in a longer period of time.

4) Enhance Pollination

Agrobiodiversity plays a key role in conservation of the pollinators. For example, planting different types of flowering plants will provide diverse food and habitats for pollinators contributing its higher numbers and species diversity. Since pollinators provides crucial service for the crop production of many nutritious fruits and vegetables, increasing their number directly contributes to higher production. Agrobiodiversity helps in continuation of biological processes that support sustainable production systems, provided by soil microorganisms, pollinators and predators.

5) Crop Breeding and Adaptation

Maintenance of the diversity in the agroecosystem allows farming communities to improve the stress tolerance capacity and ensure high productivity through selection and breeding from the variability within and between the breeds/varieties to adapt to the changing climatic condition. Such breeds and crops varieties can be an indispensable part of the coping strategies. Similarly, introgression of genes especially from wild relatives/genetic resources or cross pollination results in new genotypes and helps to maintain broad genetic base within the crops. Agrobiodiversity have adaptive traits and contribute to disease and pest resistance. Maintenance of diverse genes of agrobiodiversity in the fields, orchards, and home gardens create diverse selection and adaptation parameters through

exposure to the environmental change. It can also contribute to reduced fertilizer and pesticide losses to the environment, and thus a reduction in greenhouse gas emissions, pollution, and negative health consequences.

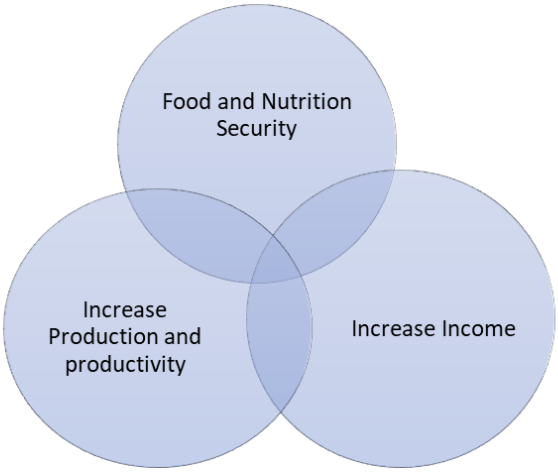

Figure 5. Outputs that can be achieved through conservation and promotion of agrobiodiversity

Reference

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Session 1.3. Approaches and good practices of conservation and sustainable use of agrobiodiversity (Definition, Importance and Case Example)

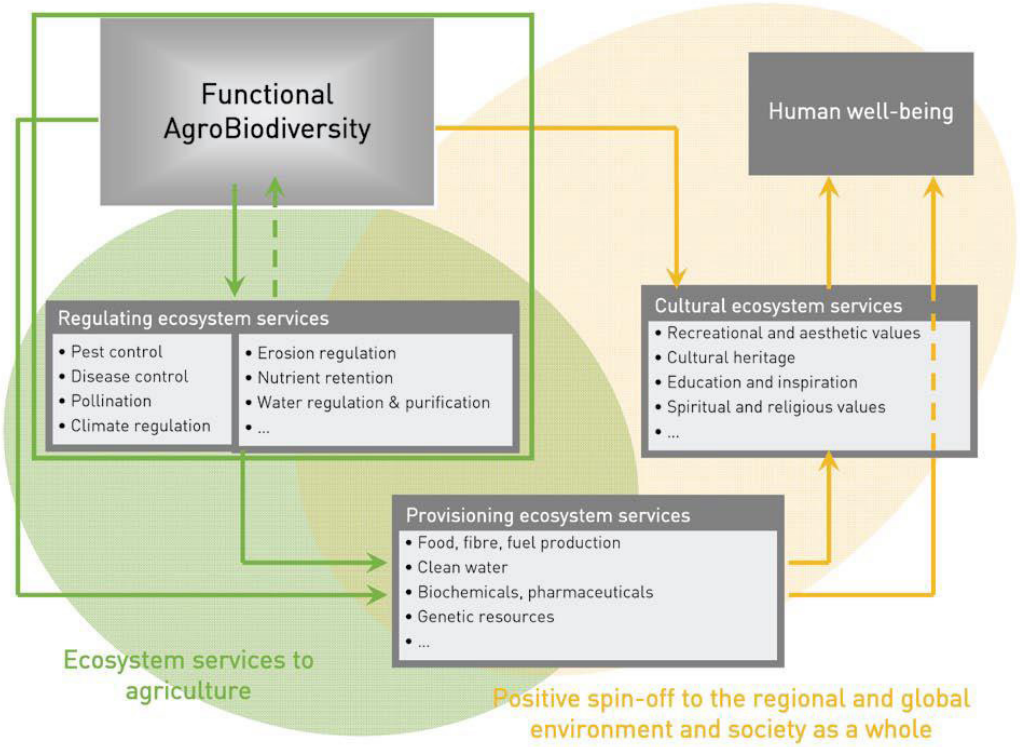

Figure 6: Agrobiodiversity generated ecosystem services. (Source: Millennium Ecosystem Assessment, 2005)

Background

Agrobiodiversity is a subset of biodiversity that includes the variety and variability of animals, plants and micro-organisms directly or indirectly utilized for agriculture and food production. It covers different components of genetic resources comprising crops, forages, livestock, aquatic, insects and micro-organisms (Joshi et al., 2020). It includes the diversity of genetic resources (varieties and breeds) and of species utilized for the production of food, forage, fiber, energy, and medicines. It also includes the diversity of natural species supporting production (e.g. soil micro-organisms, predators, pollinators) and the general diversity of organisms present in agro ecosystems (FAO, 1999).

The concept of functional agrobiodiversity has recently been introduced and is increasingly being used as a framework in scientific research, policymaking, and on-farm implementation. Functional agrobiodiversity refers to those elements of biodiversity on the scale of agricultural fields or landscapes, which provide ecosystem services that support sustainable agricultural production and can also delivers benefits to the regional and global environment and the public at large (ELN-FAB, 2009; www.eln-fab.eu). Functional agrobiodiversity uses science-based strategies to optimize regulating, provisioning and cultural ecosystem services that are essential for human well-being which ultimately support sustainable agriculture production (Figure 6).

Broadly, agrobiodiversity can be studied in three layers comprising genetic, species, and habitat diversity. All three components are important for sustainable agro ecosystem planning and management. Genetic diversity covers the variation within species and includes varieties, breeds and genes.

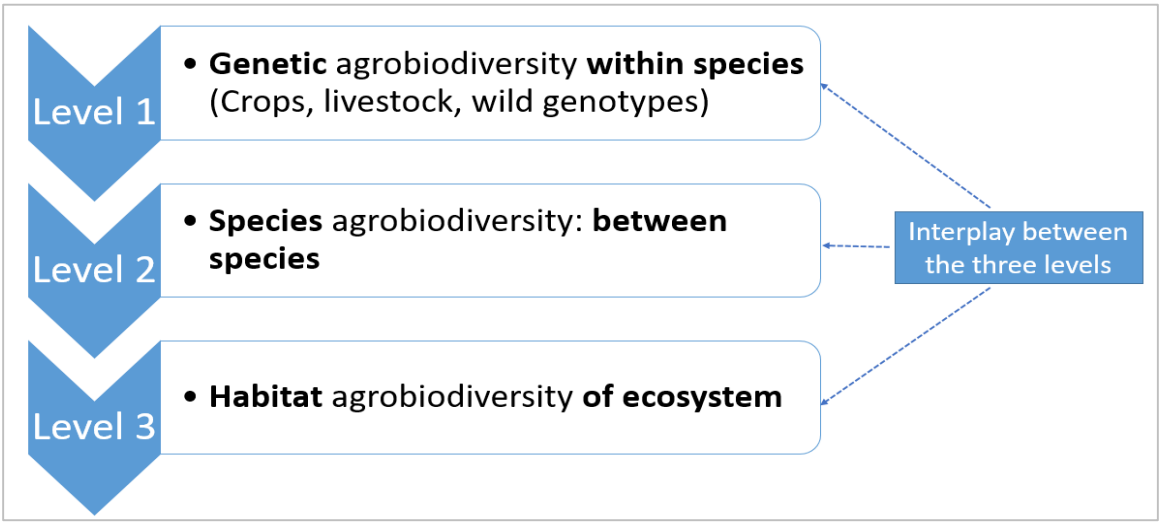

Figure 7: Level of agrobiodiversity from field to landscape level

However, the species agrobiodiversity covers the diversity between species including different hierarchical levels such as families and orders. Similarly, habitat or ecosystem agrobiodiversity captures diversity at habitat or ecosystem level (Figure 7).

The agrobiodiversity components are carried out by deliberate farmer selection and natural evolutionary process, and mostly include as planned and associated agrobiodiversity. The planned agrobiodiversity covers the cultivated cultivars/breeds and species which are chosen by farmers. However, the associated agrobiodiversity are related to support agriculture production through nutrient cycling, soil formation, pest control, pollination, etc.

Agrobiodiversity is serving four different ecosystem services: supporting, provisioning, regulating and cultural. Agrobiodiversity holds the key role to provide these ecosystem services which is essential for sustainable agricultural production and improving human well-being.

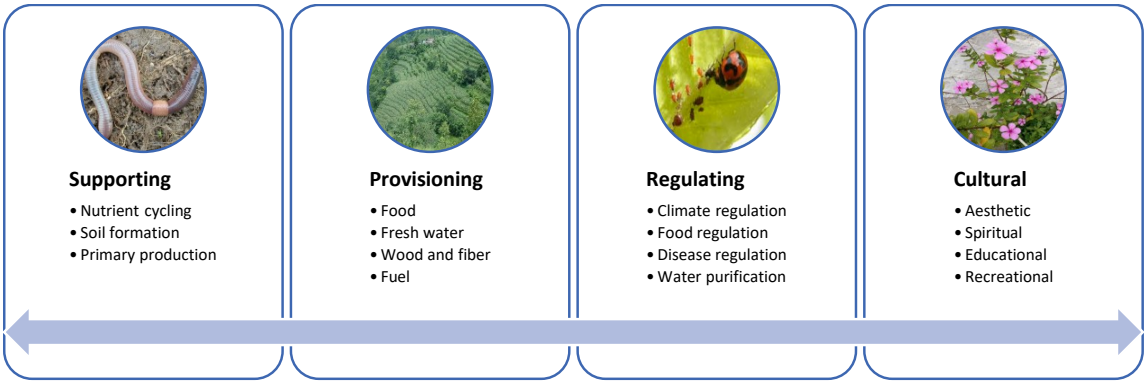

Figure 8. Ecosystem services provided by Agrobiodiversity components.

At the elementary level, agro ecosystem consists of three intermingled sub-systems including productive sub-system (cropped field), semi-natural sub-system (hedges, ditches, woodlands), and human sub-system (infrastructures and settlements). Agro ecosystem exist as the result of natural selection processes and the careful selection and refinement of farmers with the aim to increase crop production and provide services that may positively affect production. They are mostly managed to reduce negative impacts of agriculture on soil, water, air, biotic component, and landscape.

Figure 9: Women farmer performing crossing on rice in PPB.

Primarily, the organisms present in an agro ecosystem can be classified into five groups: i) productive species: cultivated and bred species, ii) auxiliary species: support to agro ecosystem functioning includes both planted and spontaneous, iii) pest species: reduction of production, iv) wild species producing goods and v) spontaneous neutral species. The high disturbance intensity and frequency caused by modern agronomic intervention will allow only few species to exist which can adapt to this situation. Similarly, mechanization of agriculture causes a decline in diversity of different native and local bred and species in various agro ecosystem as it promotes monoculture. The decline of agrobiodiversity is gradually becoming a severe threat to food and nutritional security and making the agriculture more vulnerable to climate change, pests and diseases.

With this context and background scenario, a set of practices and approaches/ methods have been identified for the conservation and sustainable management of agrobiodiversity. These approaches and good practices have been discussed hereunder.

Participatory Plant Breeding

Participatory plant breeding (PPB) can be defined as an approach of on-farm conservation and improvement of farmers' varieties. PPB is first and foremost an approach for developing varieties with specific local adaptation (instead of conservation) for the needs of smallholder farmers that may not have been a priority for the mainstream breeding programs. This approach seems relevant for searching new diversity, selection and exchange of variable population that match their local preferences and needs. This method has been developed to remove the shortcomings of centralized system of breeding. It attempts to identify varieties by respecting farmers and consumers value of specific location. While developing the variety, at least one of the parent will be a local variety to retain some useful alleles in the gene pool contributing to conserve and maintain on-farm diversity. In this approach, new variety has been developed by combining preferred traits of modern and local cultivars. The technology developed from PPB would be better fit to farmers' field compared to conventional plant breeding as it involves farmers from early stages of breeding process even from goal setting to selection of genotypes from segregating population. For resource-poor farmers, PPB-bred varieties will be more suitable to their particular niches and become suitable options against biotic and abiotic stresses by delivering the varieties at local level.

Figure 10: Stakeholders monitoring the seed production plot of Jethobudho rice.

Grassroots Breeding

The grassroots breeding (GB) is a participatory approach of landrace enhancement and will serve as a valuable approach for on-farm conservation and management of agrobiodiversity.

The participatory landrace enhancement of Jethobudho (JB) population from Pokhara Valley will serve as a successful example of grassroots breeding.

Among the various breeding approaches, GB is mainly used method by farmers' institutions formally or informally as it simple and could be practiced by using simple selection technique. This approach enhances the capability of farmers and local institutions to search within existing genetic diversity, select niche specific planting material, multiply with adequate quantity and distribute it within the community (Sthapit and Rao, 2009). In this approach, pure lines and eventually the mixture of pure lines would be generated from an existing diversity of the landrace population through the exploration of farmer-preferred traits. Depending upon the nature and type of crop improvement, GB can take place from few years to several years, and generally varies from three to six years depending upon the need of trait improvement objective. The positive traits are gradually increased, and negative traits are narrowed down by applying various degree of positive and negative selection pressures to increase better yield, quality, and greater disease resistance for obtaining genetic gains over years. For GB to be effective there needs to be existing variability in the local variety population for the selection to be effective. While the selection process would reduce overall genetic diversity, the selection is against undesirable traits. This makes the local variety more desirable and competitive, which can help with its continued cultivation rather than extinction.

The method of landrace enhancement by using grassroots breeding can be illustrated by using following steps as shown in Figure 11.

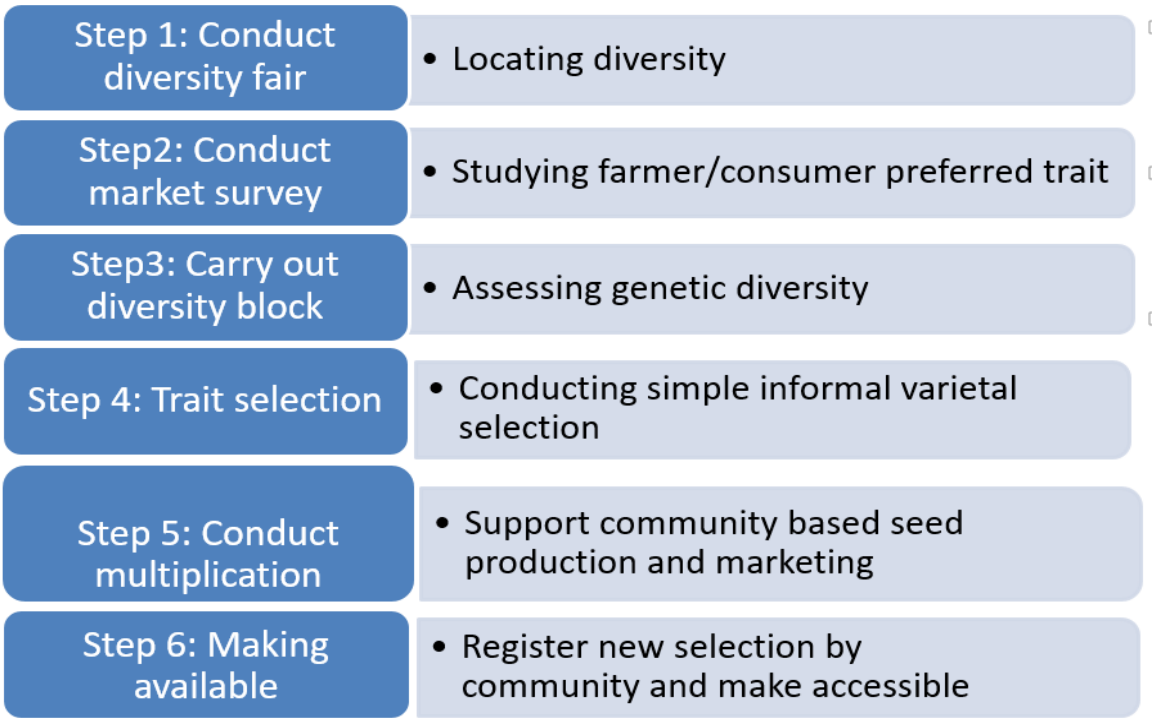

Figure 11. Steps of grassroots breeding for enhancing local landrace. Source: (Sthapit and Ramanatha Rao, 2009)

Participatory Varietal Selection

Participatory varietal selection (PVS) is a powerful approach for identifying suitable varieties that meets the need of farmers. In this approach, farmers are provided with a "basket of varietal options" to choose the best for their location. PVS itself can be considered as the best approach for enhancing on-farm varietal diversity and crop improvement (Joshi and Witcombe, 1996). PVS can be considered as an important strategy for crop improvement and support to identify the suitable genotypes that could be supplied more rapidly into the formal seed sector (Witcombe and Yadavendra, 2014). The PVS not only involves the selection of advance lines or pipeline varieties from the breeding scheme but also important approach to select the promising traditional, released and pre-release varieties by farmers on their own field.

Figure 12: Farmers observing varietal perfomance on PVS.

Evolutionary Plant Breeding

The evolutionary plant breeding (EPB) is a participatory approach for on-farm conservation and utilization of genetic resources and mainly used to enhance farmers' resilience to climate change, sustainable crop productivity, and nutrition. This approach could be applied in rainfed condition especially to poor and smallholders sharing heterogeneous environment (Ceccarelli and Grando, 2020). This method is suitable for both self-pollinating and cross-pollinating crop species. The population could be formed either by utilizing segregating population or other evolving population comprising landraces that are available to increase farmers' resilience to climate change. In the past, some of the evolving population (mostly evolved from wild relatives) has been grown by smallholders but always less prioritized by national governmental agencies. This method of plant breeding could be performed by utilizing diverse germplasm source comprising landraces, improved varieties and advanced lines by mixing similar proportion of cultivars based on their functional traits (Figure 10). After population formation, natural selection pressure with farmers' decision should be used to maintain high level of polymorphic varieties. By appearance, they are heterogeneous in nature (in Nepali: *chyashmishe type)* especially in terms of morphology including grain color, type, and shape. These populations have high buffering capacity against disease, pest and other biotic and abiotic stresses. The evolutionary population is a potential germplasm source for on-farm agrobiodiversity conservation, restoration, and utilization of genetic resources at field level. Breeders and custodian farmers can select the plants they like from the evolutionary population to adapt to their own needs as new varieties.

Figure 13. Illustrating simplified process of forming evolutionary population

Community Biodiversity Register

The community biodiversity register (CBR) is a valuable tool to document information about genetic resources and traditional knowledge into a standard register in a systematic manner (Figure 14). More-elaborately, the community biodiversity register is a record keeping system that includes the information of custodians, passport data, agroecology, cultural and religious use value of commodity and relevant knowledge. The CBR is used mainly to document and conserve the biodiversity in a given area and associated knowledge about it. In Nepal, the CBR was first introduced in 1998 by the Global On-farm Conservation Project to strengthen the in-situ conservation of crop diversity on-farm. CBR helps farming communities to develop a sense of ownership of their genetic resources. It will guide the protection of traditional knowledge and genetic materials from bio piracy, promoting bio prospecting, monitoring genetic erosion, developing local ownership for development and conservation actions. The CBR will internalize the local communities and institutions about the importance of biodiversity and its significant contribution to the sustainable food and nutritional security.

Figure 14. Use of Community Biodiversity Register for documenting agrobiodiversity at community level.

Community Seed Bank

Community Seed Bank (CSB) is one of the community based approach for on-farm conservation and utilization of local plant genetic resources. Varying over the countries, different names have given for this multipurpose participatory initiative, like community gene bank, farmer seed house, seed hut, seed wealth center, seed savers group, association, or network, community seed reserve, seed library, and community seed bank (Vernooy, R., P. Shrestha and B. Sthapit, 2015a). CSB is operated at local level, managed by the local community organization and involves the processes of identification, documentation, production, collection, storage, distribution (exchange and share) and marketing of diverse locally important plant genetic resources.

The community seed bank could be both in situ and ex situ. If the germplasm is conserved and maintained at farm level from the seeds produced at the same site and recycled into next generation then it is termed as in situ conservation. In contrast, if it is produced and maintained by collecting the seed produced from another location, it will be defined as ex situ conservation. The community seed bank approach is extremely important for the conservation and management of local varieties, unique traits and diversify the production system at local level. This approach is equally important for the mitigation and adaptation of climate related hazards including flood and drought.

Diversity Block

Diversity block is a valuable approach to assess and demonstrate the diversity of local crop varieties and their important traits. It is managed mostly by local institutions in a site easily visible and accessible to the community members. This method is useful for visualizing the unique traits and agro-morphological characters present in the varieties. Diversity blocks help public awareness raising about local varieties and demonstrate the importance of conserving the local varieties by farming community. The diversity blocks will be established near the public place which helps to create the demand of local varieties and foster the exchange and multiply of germplasm within and outside the local communities. The growing of diverse local varieties at same experimental block will allow to assess intra and inter-varietal diversity by farmers and choose the desirable one for their own purpose. This method will also allow to repatriate old landraces into farming system for their restoration and utilization by farmers and various institutions.

Figure 15: Women farmer observing seed diversity display in CSB (left), a diversity block of local rice varieties (right). Photo: Pitambar Shrestha, LI-BIRD

Diversity Kit

Diversity kit is an approach for deploying new diversity to farmers especially to access varietal or species level diversity aiming to contribute to their food and nutritional security. This method provides as a valuable tool to conserve and maintain on-farm varietal diversity. Diversity kit is a set of small quantities of seeds of diverse crop species and cultivars including improved varieties, landraces, and elite lines being packed for distribution in order to remove the inadequate access to diverse seeds and planting materials. The seeds for diversity kits may be collected from diversity block, research farms, or farmers' fields.

Figure 16: Seed packets to be distributed as a diversity kit

Diversity Fair

A diversity fair is a simple, quick, and suitable approach of locating diversity and measuring richness at the community level. The farmers will bring their local crop genetic resources from their representing communities into diversity fair to exhibit the range of landraces. It helps the fair participants (e.g., farmers. students, researchers, policy makers, entrepreneurs, etc.) to recognize the importance of crop genetic resources and can foster the creation of a favorable policy environment to maintain, enhance, and create diversity

Figure 17: Participant observing crop diversity in diversity fair.

of crops and varieties. The diversity fair is valuable especially to individual farmers and farming community to promote, distribute and exchange of their local seeds and linking them directly with market. The diversity fair helps to know diversity rich species and endangered landraces by various stakeholders and sensitize policy makers about the value of local crop diversity. It is an important approach to identify the custodian farmers and recognize them with policy makers. This approach will become a valuable tool to encourage farmers about their agrobiodiversity conservation and maintenance effort either through providing custodian farmer's award or by linking them directly with resource centers.

Value addition and product diversification of local products with market linkage

This is the suitable strategy for conservation and sustainable use of local varieties through consumers' awareness, better processing, packaging, and sensitizing the nutritional value. This approach is particularly suitable to increase the demand of local products by raising awareness about diversified use of the local products. The existing local crop diversity could be sustainably used only if properly explored, promoted with adequate sensitization about its importance and use in terms of nutritious and cultural values. The product diversification from a particular local

Figure 18: Customers buying local food products from local outlet.

landrace or crop cultivar will add economic value by simple processing and link with niche markets that support farmers' livelihoods. The importance of local products and its diversification is gathering momentum as consumers have expressed greater interest to health, cultural and other important value of local products. The value addition of local products and its consumption and utilization will be helpful to contribute to on-farm conservation of genetic resources at field level.

Conclusion

Effective management agrobiodiversity is vital to optimize agro ecosystem services that contributes sustainable agriculture production and ecological balance. Agrobiodiversity management is the integrated approach of managing agrobiodiversity components from field to landscape level. Good practices of agrobiodiversity management should possess functional integration of biodiversity components and regulate various agro ecosystem services for improving human well-being. Agrobiodiversity conservation and sustainable use is an interdisciplinary approach that combine the actions and recommendations to produce quality products and services by considering environmental, economic and social dimensions. The future direction of agrobiodiversity management should be guided by participatory involvement of community members for the conservation, restoration and utilization of genetic resources and should be replicable and adaptable at various scale.

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Session 1.4. Exercise on agrobiodiversity assessment tool (Four Cell Analysis)

Four Cell Analysis (FCA)

Adopted from Sthapit et al. (2006)

Four-cell analysis (FCA) is a participatory method to identify the most important biological assets that play a role in the livelihoods of local people; to facilitate systematic analysis of farmers logic of extent and distribution of local crop diversity; and to identify common, unique and rare plant genetic resources so that the community and professionals can develop diversified livelihood options and conservation plans.

Objectives of the FCA are:

» To identify common, unique and rare crop/varieties within the community
» To document the reasons why the crops/varieties are found in a dynamic state in the community; and
» To identify the level and type of interventions needed for the conservation of crops/varieties in a given community

Procedure

At first, participants need to define when they regard as a piece of land in the village allocated to a particular crop a "large area" and when it is considered a "small area". They define what people refer to as "grown by many households" and "grown by few households". 'Large' and 'small' are relative measures, depending on the type of crop and production purpose. Experiences have shown that some kind of a definition usually emerges while going through the exercise of allocating the varieties to the four cells. FCA can be done in crop species level or variety level as per the requirements. Before starting the process, participants needs to decide and perform accordingly.

Step 1: Prepare inventory of the crop name/ variety names which participants have bring or can be found in their community

Step 2: Draw a four cell matrix in paper as shown in the Figure 19 and ask questions mentioned below:

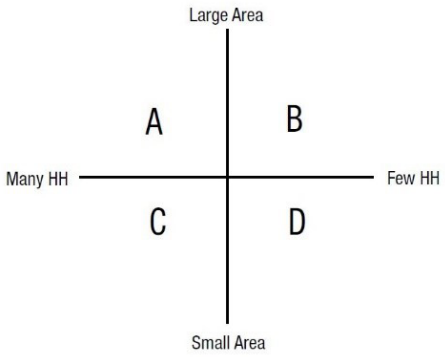

Figure 19: Four-cell analysis of extent and distribution of local crop diversity

- What are the crops/varieties that are grown in large area by many households?
- What are the crops/varieties that are grown in large area by few households?
- What are the crops/varieties that are grown in small area by many households?
- What are the crops/varieties that are grown in small area by few households?

Call out the name of variety from the list and let farmers have a discussion about where it should be placed in the quadrants. Similarly, this exercise should be conducted for all varieties listed in the inventory or brought by the participants.

Step 3: After completion, farmers are asked why they have placed each specific plant/ crop/variety in cell A, B, C or D (Figure 19). The reasons are recorded after a group discussion and consensus is reached in a focus group discussion. Now the facilitator

should discuss with participants and elicit reasons for placing landraces in a large area or small area. Document the use values of each landrace falling into each category in four cells in order to understand farmers' rationale in greater depth.

Step 4: Validate the rationale of managing cultivars at household levels. Varieties which fall into four different cells have one of the following rationales; a) varieties grown for food security or for the market or with multiple use values tend to be cultivated in large areas by many households; b) landraces cultivated for socio-cultural (traditions, religious rituals, food culture) purposes are grown in small areas by many households; c) varieties with specific adaptations traits (such as cultivars adapted to swampy lands, poor soil fertility, drought, shade, etc.) are grown in large areas by few households and d) varieties with specific uses or limited use value to particular families are grown in small areas by a few households. This common pattern is generally found to be consistent with economic rationales and there are some variations guided by specific household circumstances as well. The value of diversity for each household is reflected by the proportion of population size of variety allocated from the total cultivated area of the crop.

Step 5: Helps to identify common and rare types of crop diversity within the community and facilitate both developmental as well as conservation action plans (Figure 20). Helps to discuss the results with the community/participants and ask how they wish to maintain rare varieties. If nobody wants to grow a variety then it should be sent to ex-situ conservation (Figure 20). Helps to identify cultivars grown by a few households in small areas or in large areas that are vulnerable to genetic erosion and therefore, require a range of interventions.

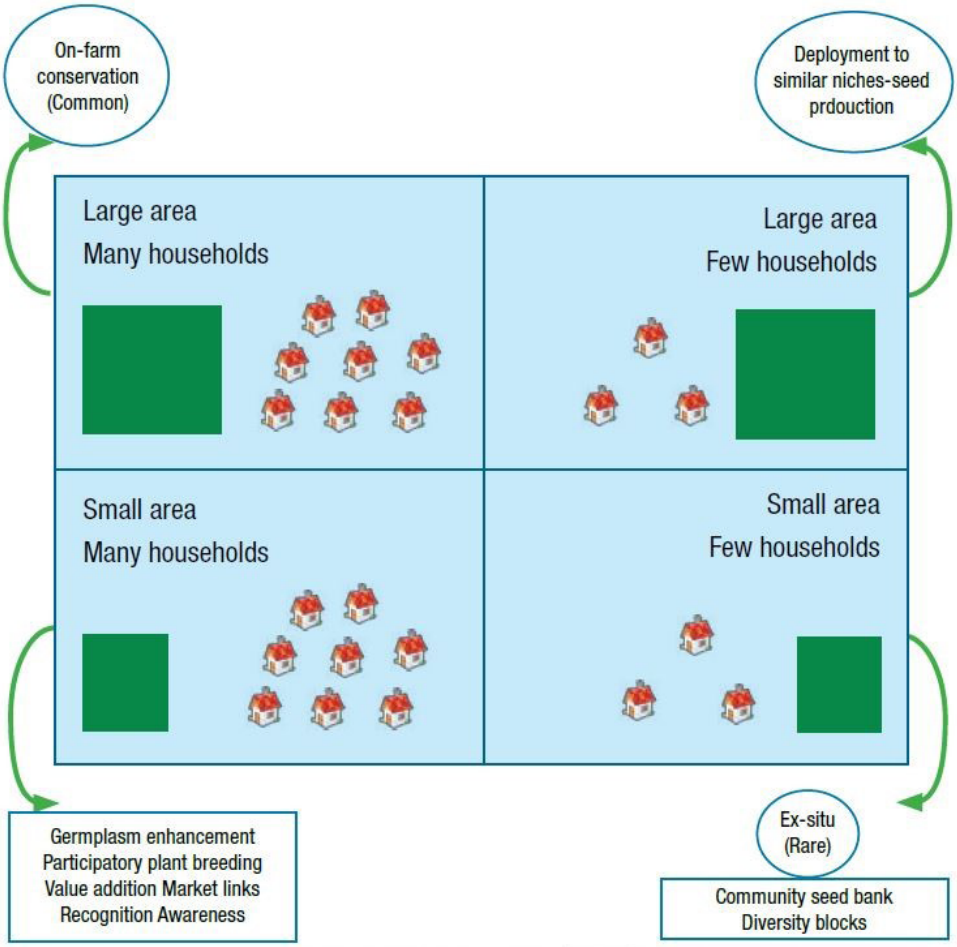

Figure 20: The four-cell analysis for the community based on-farm conservation actions (Adopted from Sthapit et al. (2006)

Session 2.1. Overview of National policies in agrobiodiversity

Biological diversity is indispensable for the existence of human being. The loss and degradation of biodiversity negatively affects the planetary health compromising the survival and well-being of human and animal with more impact on the poor and vulnerable group of people. Nepal is rich in biodiversity as at it occupies 49th position in the world on biodiversity although it occupies only less than 0.03 percent of total earth land mass but harbors 3.2 percent and 1.1 percent of the world's known flora and fauna, respectively. Similarly Nepal is considered as a rich country on agrobiodiversity as well. The country is rich in landraces, but only 37 landraces of 19 local crops have been utilized in breeding to develop 41 crop varieties so far. Nepal became a member of the Convention on Biological Diversity (CBD) in 1992 and of ITPGRFA in 2009. It is also a party of other international protocols including The Cartagena Protocol on Bio-safety (2000) and the Nagoya Protocol (2014). A number of policy and regulatory frameworks for conservation of agrobiodiversity are in place in the country including the Agrobiodiversity Policy, the Seed Act, and the National Seed Vision 2013-2025, among others. Number of government and non-government institutions have been working in the field of agrobiodiversity conservation.

The rapid loss of agriculture plant genetic resources (APGRs) has threatened the food and nutrition security nationally and globally. The last hundred years witnessed more than 75 percent loss in crop varieties developed by farmers over millennia which form an important part of agricultural biodiversity (FAO, 2010). A large proportion of wild edible plants and wild relatives of important food crops are likely to disappear in a few decades to come due to climate change impact and the change in farming practices. However, mainly rapid proliferation of modern farming practices has caused the rapid loss to agrobiodiversity and indigenous technology and knowledge in Nepal. The negative impact of climate change has aggravated the situation.

The importance of agriculture plant genetic resources (APGRs) for the well-being of mankind cannot be overemphasized. However, there is a rapid loss of APGRs worldwide with some of them on the verge of extinction. This situation has threatened the food and nutrition security nationally and globally. Some of the main reasons are mono-cropping of modern varieties; changes in food preferences mainly towards rice; shortage of farm labor; high costs of production; the stigma attached to landraces/indigenous cultivars as 'poor men's food/crop' leading to undervaluation and negligence. This has threatened food and nutrition security of local people. Therefore, it is important to conserve and utilize the landraces and indigenous varieties for better food security and livelihoods of local population. The negative impact of climate change has only aggravated the situation. Therefore, it is crucial to conserve and utilize the landraces and local cultivars for food and nutrition security and sustainable livelihoods of local populations.

Major efforts and initiatives of GoN on conservation of APGRs

Nepal became a signatory to the CBD in June 1992 and ratified it in November 1993. Agrobiodiversity policy 2007 is the first landmark policy. Nepal became party of ITPGRFA on 19 October 2009. Agrobiodiversity Policy 2007 (first amendment) was brought in to harmonize it with the provisions of ITPGRFA. Likewise, Nepal Biodiversity Strategy and Action Plan (NBSAP) (2014-2020) incorporated the provisions of ITPGRFA. The MoAD prepared ITPGRFA-MLS Implementation Strategy and Action Plan (IMISAP) in 2017. The purpose of this document was to bring together information on current status of PGR for food and agriculture, flow of genetic materials, dependency of the country on foreign genes. It presents a strategy to translate policies into action for

the benefit of farming communities. IMISAP has proposed a one-window system for export of PGR and a multiple-window system for their import.

Major policy framework	Other related policies
» Seed Act 1988 (Amendment 2008) » Seed Regulations 2069 BS (2013) » National Seed Policy 1999 » Agrobiodiversity Policy 2063 BS (2007), 1st amendment 2071 (2014) » Plant Protection Act 2064 BS (2007) » Plant Protection Regulations 2066 BS 2010) » National Seed Vision 2013-2025 » National Biodiversity Strategy and Action Plan 2014-2020 » Agriculture Development Strategy 2015 » ITPGRFA-MLS Implementation Strategy and Action Plan (IMISAP) 2017	» National Parks and Wildlife Conservation Act 2029 BS (1973) » National Parks and Wildlife Conservation Regulations 2030 BS (1974) » Nepal Treaty Act 1990 » Environment Protection Act 2053 BS (197) » Environment Protection Regulations 2054 (1997) » Forest Act 2049 BS, 2nd amendment 2073 (2016) » Forest Regulations 2051 BS, 5th amendment 2072 BS (2015) » Plant Protection Act 2064 BS (2007) » Plant Protection Regulations 2066 BS (2010) » Biotechnology Policy 2006 » The Intellectual Property Policy of Nepal 2017 » National Climate Change Policy 2019 » Agroforestry policy 2019

Despite the country being rich in agrobiodiversity and various policy frameworks for conservation in place, conservation and utilization of native agrobiodiversity is something that not getting adequate priority. Use of landraces in crop varietal development and improvement has not received due attention and priority. More than 90-95 percent of the germplasm used in crop varietal development are exotic ones. There is an urgent need of policy shift to facilitate the utilization of in-country landraces for varietal development and contribution to the global genetic pool.

Table 1: Major policy provisions and scope

Policy	Provision and scope
Seed Act 1988 (Amendment 2008)	» Promotion and regulation of quality seeds » Ownership rights to local varieties » Regulating import of seeds
Agrobiodiversity Policy 2007 (1st amendment 2014)	» Manage, conserve and sustainable use of agrobiodiversity » Protection and promotion of the rights and interests of farmers and traditional knowledge » Arrangements for equitable sharing of benefits arising from access to and utilization of APGRs and materials » In-situ and ex-situ conservation are emphasized. Incentives for the conservation of local germplasm. establishment of gene bank

Policy	Provision and scope
Agriculture Development Strategy 2015	» Implement agrobiodiversity policy » Initiating a system of registration of agrobiodiversity » Developing regulation for the research and experimentation of biodiversity and genetic resources and GMO
National Seed Policy 1999	» Conserving local crop varieties and protecting the rights of the local community on them » Agrobiodiversity conservation and establishing varietal rights » Regulation of GMO and transgenic plants » Formulation and enforcement of bio-safety rules
National Seed Vision 2013-2025	» Use of local landraces and their wild relatives for developing climate resilient and nutrient rich varieties » Promote local seed security through conservation and sustainable use of agrobiodiversity. » Promote VDC level seed bank and community seed bank to conserve agrobiodiversity » Promote linkage between national and international gene banks and seed banks for exchange of materials and information for biodiversity conservation
National Biodiversity Strategy and Action Plan 2014-2020	» Strengthening community-based management of agrobiodiversity » Development and implementation of incentive measures for on-farm conservation of agrobiodiversity » Expanding and strengthening organic agriculture, IPM and IPNM, plant and animal quarantine, seed certification and registration, and climate smart agriculture programs. » Establishment of an efficient system for exchange of information on all kinds of agricultural genetic resources and implementation of ITPGRFA and multilateral system of exchange of PGRFA.
ITPGRFA-MLS Implementation Strategy and Action Plan (IMISAP) 2017	» Strategies and action plan for exploration and collection, conservation, documentation, exchange of materials, and monitoring of germplasm flows » Documentation system of APGRs at local, regional, and national levels to be placed in action to facilitate the accessions under MLS. » NARC, DoA, MoALD and other relevant organizations to have annual program to materialize the IMISAP. » All relevant national policies, acts, regulations to be integrated to implement the IMISAP. » Proposition of one-window system for export of PGR and multiple-window system for their import
Community Seed Bank Program Implementation Guidelines 2008	» Seed multiplication of local varieties through the community-based seed production groups » Exploration, identification, selection, and production of local seeds
Community Seed Bank Establishment Operational Guidelines 2015	» Subsidy on construction of community-based seed storage at grass root level in order to improve the supply of seeds in earthquake affected districts

Major Policy Gaps

Many policies pertinent to agrobiodiversity, climate change, and nutrition seem to a large extent be the result of obligations that Nepal has made for the implementation of the related international conventions and treaties. Policy formulation steps, such as situation analysis, problem identification, stakeholder consultation, ex ante analysis of the likely impact of the policy in question, and so on were not adequately followed in the formulation of national policies in these areas.

Moreover, due to poor involvement of stakeholders and the general public in the formulation process, awareness and understanding of these policies among many higher-level government officials and extension workers, has been largely poor. Poor inter-ministerial coordination between MoALD and other line ministries has resulted in technical as well as implementation gaps in most of the agrobiodiversity, nutrition, and climate change related policies.

Various climate change related policies have identified Agriculture and Food security as one of the most vulnerable sectors and have suggested the adaptation options. However the impact of climate change on agrobiodiversity has been largely overlooked while its impact on forest biodiversity is acknowledged and adaptations proposed.

There have been gaps in effective implementation of whatever provisions have been made about agrobiodiversity conservation and utilization in various agricultural policies. In many cases, needed legal provisions and instruments, plan of action, program and budgetary provisions have not been made. Likewise, there has been a gap in the institutional capacity of MoALD. The function of the current agrobiodiversity and environment section under the food security and food technology division of the ministry has been severely constrained by the lack of trained manpower, under staffing and program budget, among others.

Rights related to agrobiodiversity conservation have also been vested on provincial and local level governments as per the constitution as well. However, most of these sub-national governments have not given due priority to agrobiodiversity in their sectorial plans and policies. Although some of the provincial governments have promoted climate smart villages, promotion of crop landraces and community seed banks, they also seriously lack the capacity to implement the related constitutional rights as well as various national policy framework for the conservation and utilization of agrobiodiversity. Likewise, there has been a dearth of critical mass which is well-versed in related subjects and international conventions and treaties that Nepal has been a party of.

Despite being the focal ministry to implement ITPGRFA, the MoALD is lagging behind in assuming that role and becoming the champion in the field of agrobiodiversity conservation in the country. In this context, the role of the National Agrobiodiversity Conservation Committee (NABCC) has been largely poor. Despite the recognition of climate change adaptation in agriculture by various frameworks, sadly, the role of the MoALD in formulating policies and designing program and projects for adaptation has been largely ignored. The MoFE, being the focal ministry for climate change related affairs, needs to play more proactive role to onboard the MoALD in dealing with climate change issues in agricultural sector.

The Ministry of Health and Population (MoHP) is the focal ministry for nutrition. Likewise, the National Planning Commission (NPC) is also the focal institution for a number of programs and initiatives including the Multi-sectorial Plan II and Scaling Up Nutrition (SUN), a global movement. The MoALD in many such national nutrition frameworks and international initiatives has not been adequately taken on board for designing and implementing pro-nutrition agriculture programs.

Fulfilling the nutritional needs of the folks through supplying nutritious foods through implementing nutrition-sensitive interventions is not getting due attention. In nutrition related policies, more emphasis has been given to nutrition-specific programs and interventions. Nutrition-specific interventions are largely costly, short-term and are useful in dealing with the deficiency of specific nutrients in human body. Nutrition-sensitive interventions provide long-term solution for hunger and malnutrition.

Issues and way forward

Low level of awareness and poor knowledge on the part of stakeholders and political and bureaucratic leadership on conservation of APGRs and provision of international treaties such as ITPGRFA. Conservation of APGRs not receiving adequate attention and priority in practice (program/budget, institutional arrangement, capacity building, etc.). Use of landraces in crop varietal development and improvement has not received due attention and priority. More than 90-95 percent germplasms used in crop varietal development are exotic ones.

APGRs contribution to global gene pool and getting benefit out of that has been only little explored so far. There has been poor inter-ministerial coordination and poor inter-governmental coordination. Likewise, there has been delay in enforcing pertinent legal arrangements including passing of ABS bill, plant varietal protection and farmers' rights bill, agrobiodiversity conservation and utilization bill from the parliament.

Way forward

A nationwide campaign for exploration, identification, characterization, documentation, conservation and promotion of economically important native APGRs is urgently needed. Likewise, documentation and scaling up of traditional knowledge, wisdom, and technology pertinent to APGR conservation and utilization. There is a need of listing of crop landraces and identification of rare and unique ones. Similarly, system and arrangement of domestication of crop wild relatives and wild edible plants should be introduced at local levels to avoid the potential food crisis.

Mechanism between MoFSC, MoALD, NARC, DoA should be developed to conserve and utilize crop wild relatives and wild edible plant. Likewise, institutional capacity strengthening of gene bank and CCDABC with clear mandate for APGR conservation and promotion at the national level. Also, government farms/centers and NARC research stations should be given the mandate of conserving endangered species and act as field gene bank.

Some other required actions include for the conservation and promotion of agrobiodiversity

- Community seed banks (CSBs) could play an instrumental role to this end. Therefore, CSB should be promoted as a grassroots institution for the conservation and utilization of local agrobiodiversity
- Institutional development and capacity building of CSB for the effective implementation of on-farm conservation of APGRs
- Reward and incentive mechanisms for custodian farmers
- Nationwide campaign on promotion of important crop landraces and neglected and underutilized species (NUS) with the involvement of all three tiers of government
- NUS based dietary diversification, product diversification and value addition at the local level
- Utilization of native APGRs for varietal development and contribution to global gene pool and getting benefit out of that should get priority
- Expediting the process of developing legal and institutional arrangements for the implementation of and harmonizing with interventional conventions and treaties pertinent to genetic resources
- International convention, treaty, and protocols in the national context

» More research on agrobiodiversity and native APGRs
» Introduce/strengthen agrobiodiversity conservation related curricula in school and university education

Session 2.2. Overview of International Policies and Laws related to Agrobiodiversity and Farmers' rights

1. Context and Concept of Policy

1.1. Definition of policy, plans, treaties, agreements, legislation and regulations

Policies are statements, official rules, guidelines, and course of actions and decisions taken by the public authorities and institutions for management of a specific problem or resource (Ellis, 1992; Friedman, 2003). The Oxford Dictionary defines policy as "code of conduct, rules, regulations, protocol, intentions and plan of actions". Policy is a deliberate system of guidelines to guide decisions and achieve rational outcomes. Policies can assist in both subjective and objective decision making (https://en.wikipedia.org/wiki/Policy). At the international level, the important policies and laws considered are international bilateral and multilateral agreements, treaties, conventions, and protocols. At the national level, the important policies and laws considered are national economic and agricultural development policies, national legislation, and administrative orders. International policies and legislation provide important pathways to seeds and food security, livelihoods, poverty alleviation and conservation and sustainable use of agrobiodiversity that are relevant to implementation and realization of farmers' rights in developing countries. Globalization, liberalization, and advances in biotechnology are among the most obvious and fundamental trends that affect and influence policy and legal debates on ownership, conservation, and exchange of biological materials (The Crucible II Group, 2000). Policies and laws influence the exchange, flow, use, and inclusion of agrobiodiversity at the international, national, and local levels. International policies, agreements, and legal frameworks to which the country is a party to, guide the development and enforcement of national policies and laws at the national level (Gauchan et al., 2005; 2017). International policies and laws mainly have direct impact on import, export and trade of genetic resources in the country and overseas which influence on conservation and use of genetic resources in the country.

1.2 Overview of international policies and laws related to agro-biodiversity and farmers' rights

International conventions, treaties, laws, and protocols play important role in the conservation and sustainable use of agrobiodiversity. The important international conventions, treaties and agreements that are important and relevant to biodiversity and agrobiodiversity including, conservation, access, exchange and use include the CBD (1992), the WTO/TRIPs (1995), the UPOV (1978; 1991), the ITPGRFA (2001), the Biosafety Protocol (2000), and the Nagoya Protocol (2010) (Gauchan et al., 2005; 2017). Among them, the Convention of Biological Diversity (CBD) which was signed in Earth Summit, Rio de Janeiro in June 1992 is most important convention for biodiversity conservation, sustainable use and equitable sharing of benefits arising from the use of genetic resources (CBD, 2001). It is a llegally binding agreement which recognizes biodiversity as a "common heritage" to "national sovereignty". The World Trade Organization (WTO) which came into force in 1995 is important for agriculture and agrobiodiversity which influences mainly through provisions such as an agreement in agriculture (AoA), Sanitary and Phytosanitary Measures (SPS) and the Trade Related Aspects of Intellectual Property Rights (TRIPS) (Gauchan, 2005). Among these three provisions, TRIPS has

direct relevance to crop improvement, conservation, exchange, and ownership through the Article 27.3(b). The other most important convention relevant to provisions for developing incentives to crop improvement is the International Union of New Plant Varieties (UPOV) model, which is a voluntary convention established in Geneva in 1961 under the World Intellectual Property Organization (WIPO). UPOV offers governments specifically two models of protecting plant varieties: 1978 and 1991 through Patents and Plant Breeders' Rights. However, the option of signing on to the 1978 convention is now no more available and Nepal is not yet a member of UPOV (1991). This Convention does not recognise the indigenous knowledge and innovations of farmers and local communities to genetic resources (Gauchan et al., 2017; 2018). An international framework called the Cartagena Protocol on Biosafety Protocol that deals with the regulations related to the safety of the genetically modified (GM) technologies and GM foods on human health, biodiversity and environment was developed in 2000. The most important legally binding international agreement that is important in terms of agrobiodiversity and farmers' rights is the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) approved by the FAO conference on November 3, 2001 (FAO, 2001). The Nagoya Protocol (2010) provides a framework for access and benefit sharing of genetic resources as per the provision of the CBD (1992).

1.3 Brief description of key international policies and laws in agrobiodiversity/biodiversity

The important international policies and laws (agreements, conventions, treaties, protocols) related to biodiversity, agrobiodiversity, farmers' rights, plant breeder's rights and access and benefit sharing (ABS) that are mentioned above are briefly outlined, elaborated and presented below.

Convention of Biological Diversity (CBD)

The Convention of Biological Diversity (CBD) is the most important convention for biodiversity conservation, sustainable use and equitable sharing of benefits arising from the use of genetic resources (CBD, 2001). It is a legally binding convention which was signed at the Earth Summit, in Rio de Janeiro in June 1992 and legally came into force in December 1993. It recognizes biodiversity as a "national sovereignty", "which was previously considered as common heritage" of the mankind. The main objectives of CBD are Conservation, Sustainable Use and Access and Equitable Sharing of Benefits (ABS) arising from the use of genetic resources (CBD, 2001). It recognizes that biodiversity conservation can be possible focusing on both in situ and ex situ conservation linking with social and economic benefits of people. The focus of the convention is not only conservation and sustainable use of genetic resources but also conservation and use of their associated traditional knowledge, skills and innovation.

Nagoya Protocol

The Nagoya Protocol (NP) on Access and Benefit Sharing was adopted on 29 October 2010 at the 10th meeting of the Conference of Parties (COP) in Nagoya, Japan. It is being implemented since October 2014. It is a supplementary agreement to the CBD with the main aim to advance the implementation of the 3rd objective of the CBD: "Fair and equitable sharing of benefits arising from the utilization of genetic resources" (CBD, 2011). The Nagoya Protocol is a landmark agreement in the international governance of biodiversity and is relevant for a variety of commercial and non-commercial sectors involved in the use and exchange of genetic resources. It maintains the CBD approach to access and benefit sharing, based on the principles of prior informed consent (PIC) and mutually agreed terms (MAT) (NP: Art 5 & 6). The Protocol also recognizes ITPGRFA as a specialized instrument under Article

4(4) for PGRFA to harmonize with it. The Protocol requires countries to "endeavor to support" the development of community protocols for ABS by indigenous and local communities (art 12).

International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) is a global treaty for food security and sustainable agriculture. It is the outcome of the FAO Conference which was approved on November 3, 2001 by the Resolution 3/2001 (FAO, 2004). This was approved after 7 years of negotiations in the FAO. It is a legally binding international commitment for the management of world's key plant genetic resources for food and agriculture (PGRFA). The main objectives of the Treaty are similar to the CBD, which includes conservation, sustainable use and access and equitable sharing of benefits derived from the use of plant genetic resources for food and agriculture. The main feature of ITPGRFA is Multi-lateral System (MLS) of Access and Benefit Sharing arising from the use of genetic resources (Gauchan and Upadhyay, 2006). It has also a provision of Farmers' Rights in Article 9 of the treaty which defines the concept of farmers' rights but the legal framework for the implementation of Farmers' Rights is given responsibility to the national Governments (FAO, 2004; Gauchan, 2011).

Interrelationships and Differences between the CBD and the ITPGRFA

There are some interrelationships and differences between the CBD and the ITPGRFA. The objectives of the CBD and the ITPGRFA are basically identical as they aim to promote the conservation of biological /genetic resources; sustainable use of the biological/ genetic diversity and the equitable sharing of benefits derived from its use. However, they differ in modality of access and benefit sharing (ABS) processes (Gauchan et al., 2017). The ITPGRFA focuses on a Multilateral System of Access and Benefit sharing of genetic resources using the Standard Multilateral Transfer Agreement (SMTA). The emphasis is on facilitated access from free and restricted access of plant genetic resources for food and agriculture. On the other hand, the CBD and the Nagoya Protocol focus on bilateral access and benefit sharing subject to individually tailored access and benefit-sharing (ABS) agreements for genetic resources (CBD, 2011).

The World Trade Organization (WTO)

The World Trade Organization (WTO) was created in 1994 from the General Agreement on Trade and Tariff (GATT), which came into force in 1995. The WTO has three important components applicable to agriculture which include (i) Trade Related Aspects of Intellectual Property Rights (TRIPS) (ii) Agreement on Agriculture (AoA) (iii) Sanitary and Phytosanitary (SPS) Measures. The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) of WTO requires that all countries that are members provide a minimum level of intellectual property protection in their national laws. The Article 27 (3) (b) of the TRIPS Agreement, explicitly requires member states to provide "patent and /or "effective sui generis" or by any combination thereof" intellectual property protections for plant varieties. However, this TRIPS provision does not recognize "Farmers' Rights & Traditional knowledge" of farmers (Gauchan, 2005; 2017).

The Union for the Protection of New Varieties of Plants (UPOV)

The Union for the Protection of New Varieties of Plants (UPOV) is a voluntary convention established in Geneva in 1961 under the World Intellectual Property Organization (WIPO). The aim of UPOV is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development

of new varieties of plants, for the benefit of society (https://www.upov.int/about/en/). The UPOV is a sui generis form of intellectual property protection designed specifically for the protection of plant varieties (Bragdon, 2005). It sets forth standards, including national treatment, for the granting of breeders' rights and it is TRIPS compatible. The UPOV offers governments two models of protecting plant varieties: 1978 and 1991 through Patents and Plant Breeders' Rights. Now only the 1991 option is available. The UPOV (1991) provision does not have option for farmers' rights and it does not recognise the indigenous knowledge and innovations of local communities to genetic resources (Adhikari et al., 2000; Gauchan et al., 2017). Nepal is not a member of the UPOV (1991).

1.4 Historical context and the concept of farmers' rights on agrobiodiversity

The concept of farmers' rights was introduced in the FAO Undertaking on Plant Genetic Resources in 1979 following a series of debates that started in the Food and Agricultural Organization of the United Nations (FAO) about unequal distribution of benefits obtained from the sharing of germplasm (FAO, 2001; Swaminathan, 2002). This led to the adoption of three FAO Conference resolutions (4/89, 5/89, 3/91) simultaneously recognizing the rights of plant breeders as well as farmers. The principles of Farmers' Rights was first endorsed by the FAO in 1989, which recognizes that farmers and rural communities have contributed greatly to the creation, conservation, exchange and knowledge of genetic resources (FAO, 2001; Gauchan, 2011). The concept of farmers' rights was then included in the FAO Undertaking on Plant Genetic Resources and, later, in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFRA), which evolved from the FAO's international undertaking in 2001 (FAO, 2001; Gauchan and Upadhyay, 2006).

The working definition of farmers' rights provided by the Farmers' Rights Project (http://www.farmersrights.org/about/) of the Fridtj of Nansen Institute (FNI, 2013) states that farmers' rights consist of the *"customary rights of farmers to save, use, exchange and sell farm-saved seed and propagating material, their rights to be recognized, rewarded and supported for their contribution to the global pool of genetic resources as well as to the development of commercial varieties of plants, and to participate in decision making on issues related to crop genetic resources".*

The concept of farmers' rights, therefore involves the "recognition and rewarding to the farmers for their past, on-going and potential future contributions in conservation and management of agrobiodiversity" (Swaminathan, 2002). It also foresees protection of farmers from the commercially motivated intellectual property systems. This concept was later introduced in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFRA) in 2001, which emphasizes the need for promoting and protecting farmers' rights at both the national and the international levels. Article 9 of the Treaty recognizes the enormous contributions that farmers and local communities have made to the conservation and development of plant genetic resources for food and agriculture (PGRFA) and identifies measures to protect and promote farmers' rights (FAO, 2004). It also recommends national governments to take national measures to realize farmers' rights. The concept of farmers' rights as defined in the Article 9 of the Treaty can be presented mainly in four components.

1. Rights to seed: customary rights of farmers to save, use, exchange and sell farm-saved seeds (beyond local varieties)
2. Rights to traditional knowledge
3. Rights to participate in decision making
4. Rights to fair and equitable sharing of benefits arising from their use.

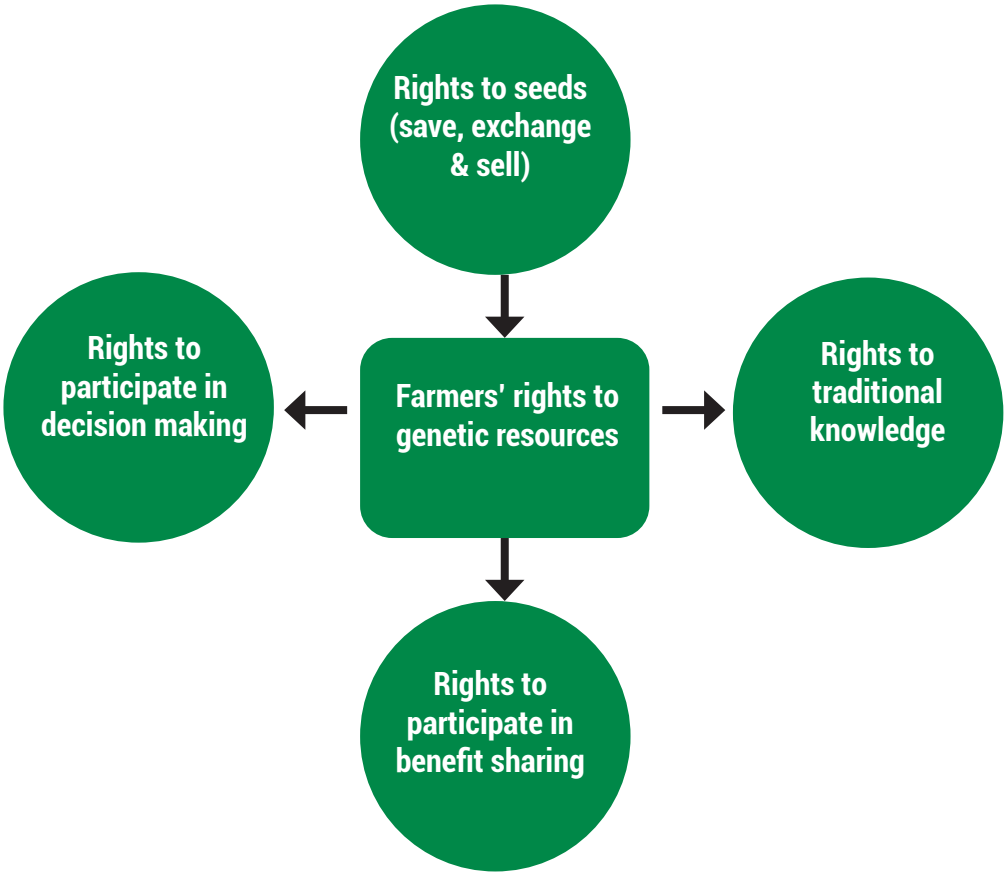

Figure 21: Components of farmers' rights in line with ITPGRFA Art (9). Adapted from ITPGRFA (2004) and Gauchan (2011)

The ITPGRFA article (9) recognizes farmers' rights as indicated in the four components (Figure 21) including traditional knowledge and Multilateral Systems of Access and Benefit Sharing provisions. Therefore, the Treaty provides important mechanisms and options for adopting own tailor made effective sui generis systems in the countries. Similarly, the Nagoya Protocol on Access to Genetic Resources and Benefit Sharing, under the Convention of Biological Diversity (CBD), supports and protects farmers' rights by seeking prior and informed consent of related communities for access to genetic resources and traditional knowledge. It makes provisions for equitable sharing of benefits accruing from the use of genetic resources and associated traditional knowledge (CBD, 2001).

1.5 Status of international policies and treaties and farmers' rights in the context of Nepal

Nepal became party to the CBD in 1993 and the WTO in 2004, International Treaty on Plant Genetic Resources for Food and Agriculture (2001) in 2009 and Nagoya Protocol (2010) in 2019 (Gauchan et al., 2017). However, Nepal is not yet a member of the International Union of New Varieties of Plants (UPOV). Nepal was a party to the Global Plan of Action (GPA) in 1997, developed under the auspices of FAO at an international technical conference on Plant Genetic Resources held at Leipzig, Germany in 1996. This treaty highlights the unique future and public good nature of crop genetic resources and recognizes the present and past contributions of farmers in developing and making availability of

crop genetic resources (Gauchan and Upadhyay, 2006). Article 7 of the ITPGRFA suggests for national commitments and international cooperation for conservation and sustainable use of PGRFA. It provides mechanisms of access and exchange of genetic resources that are pooled under Multilateral Systems (35 food crops and 29 forage PGRFA-Annex-1 Materials) and also recognizes farmers' rights (Article 9) to genetic resources and traditional knowledge that are conserved and owned by farming communities. Nepal became party to the ITPGRFA from October 19, 2009 (Gauchan et al., 2017; 2018).

The specific features and the status of Nepal's membership to the relevant international policies, conventions, treaty, laws, and protocols are outlined in Table 2.

Table 2. Nepal's Membership in International Policies and Treaties and their Specific Features

International Policies	Date of Membership	Specific features
Convention of Biological Diversity (1992)	Nepal signed it in 1992 and ratified in 1993	- Sovereign rights to nations - Conservation and utilization - Access and equitable sharing of benefits
World Trade Organization (WTO),1995	Nepal got full membership in April 2004	- Plant Variety Protection - Agreement on Agriculture - Sanitary and Phytosanitary (SPS) Measures
International Treaty for Plant Genetic Resources for Food and Agriculture (2001)	Nepal became party to the Treaty in October 2009	- Conservation, sustainable use, benefit sharing - Multilateral Systems of Access - Farmers' Rights
Nagoya Protocol (2010)	Nepal ratified in December 2018 and became party on March 3, 2019	- Provides framework for access to genetic resources and the fair and equitable sharing of benefit arising from their utilization
International Union for the Protection of New Varieties of Plants (UPOV) 1991	Nepal is not a member of UPOV 1978 or 1991	- Plant breeders Rights and Patents - No provision of farmers' rights and recognition of farmers' seed system

Source: Adapted from Gauchan et al. (2017)

The provisions of WTO TRIPS Article 7.3b makes obligation to the country to develop its own sui generis legislation that meets the needs and priorities of the country. One option to meet the requirement of TRIPS in WTO is the use of the International Union of Plant Varieties (UPOV) model (1991) which has a provision for Plant Breeders' Rights (PBR). PBR advocated by the UPOV (1991) provides strong incentives to industrial breeders to create uniform high yielding varieties without sharing benefits to local communities from which raw materials (landraces) for developing these varieties were obtained. In this type of PBR, the rights of farmers to save seeds have been reduced into a privilege. Since both patents advocated by TRIPS and plant breeder rights of available UPOV (1991) do not recognise the indigenous knowledge and innovations of local communities to genetic resources, they foster biopiracy (Gupta, 1996; Adhikari

et al., 2000). Currently, Nepal is not a member of UPOV (1991) but it is a member of World Intellectual Property Organisation (WIPO) in which UPOV is one of the intergovernmental forums. Though Nepal is not an UPOV member, immediate PVP requirement of WTO/TRIPS and the lack of ready-made legislation in the country may force Nepal to adopt this type of sui generis law (Gauchan et al., 2018). Use of UPOV (1991) model as such and use of patent systems in developing sui generis legislation are expected to have negative impacts for a country like Nepal (Adhikari et al., 2000; Gauchan et al., 2005; 2017) because more than 90% of seed supply in Nepal comes from farmers' own saving and local exchange of seed (Gauchan, 2019).

2. Challenges, Gaps and Issues in International Policies and Laws

2.1 Challenges and gaps in biodiversity and agrobiodiversity related policy regimes

The major challenges, gaps, and issues faced by developing countries are the timely formulation and implementation of biodiversity friendly legislative framework, action plans and incentive mechanisms as per their provisions of the international policy regimes. The CBD which is a global framework that provides sovereign ownerships rights of genetic resources to respective member countries is still not fully being implemented in many developing countries including in Nepal due to a lack of appropriate national legislative and institutional framework. The CBD has a provision to provide ownership over all types of biological resources including agricultural biodiversity at both national and community levels. However, this requires systematic documentation of genetic resources and traditional knowledge through biodiversity registration process at the community and the national level. Registration of diverse biological resources requires characterisation which is complicated, resource intensive, and time consuming as it requires detailed field inventory, survey, morphological and genetic analysis (Gauchan, 2005). The present Access and Benefit Sharing legislation under approval formulated with the leadership of Ministry of Forest and Environment (MoFE, 2018) focuses on bilateral access to genetic resources and its fair and equitable sharing of benefits. However, this bilateral ABS framework is difficult to implement due to high cost of transactions and difficulty of accessing agricultural genetic resources from several countries as no country is self-sufficient in its own agricultural genetic resources (FAO, 2004).

Presently, the international policies and regimes are focusing on "globally-important" forest and wild life biodiversity rather than agrobiodiversity that are important for global food security and ensuring rights of farmers and local communities. Consequently, in many developing countries, the domestic policy and legislation also give priority to forest and wildlife biodiversity including rare and endemic ones, while not emphasizing crops and livestock that are important for ensuring local and national food security. Within agrobiodiversity also much attention has been given for ex situ conservation in Gene bank rather than supporting on-farm conservation and strengthening local seed system for ensuring lives and livelihood of smallholder famers and rural vulnerable communities.

Moreover, there is a low level of awareness of these international policy regimes among stakeholders at the national level. Considering their low level of awareness and the complexity of easy access, the ABS law under approval in Nepal has given option to form separate laws for food security crops under multilateral system of access and benefit sharing as per the provision of ITPGRFA. In this context considering the special nature and feature of agricultural biodiversity, the Ministry of Agriculture and Livestock Development (MoALD) has drafted Agrobiodiversity Conservation and Utilization Act (2018) which has provision

of ABS under MLS framework as per the provision of ITPGRFA. This bill is still under revision and approval. Some of the international policy regimes have been implemented in the countries through the formational of relevant national legislation, regulations, and policy frameworks. For instance, Nepal has formulated the Agrobiodiversity Policy (2007) revised in 2014 as per the provisions of the CBD and the ITPGRFA, while India and Bhutan have formulated the Biodiversity Act as per the provision of the CBD. Even though, these proposed policy and legislative frameworks are approved and implemented well, the prospects of effective enforcement of access and benefit sharing legislations in developing countries like Nepal is also complicated and complex due to long open porous borders, the need of monitoring the use of crop genetic resources as they flow through a maze of national and international transactions, difficulty to enforce Material Transfer Agreement in a cross-country or international context (Gauchan, 2005; Gauchan et al., 2018). Moreover, unlike genetic resources of pharmaceutical products, agricultural genetic resources do not have high immediate monetary value and their source of origins are multiple, complex, and difficult to trace out due to frequent exchanges and free movement (Gauchan and Upadhyay, 2006). If a landrace that occurs in many places, it will be unlikely to command a market value under benefit sharing arrangements and even if it does, sharing benefits will be difficult due to multiple and complex source of origins and lack of institutional mechanisms and procedures in place to quantify and share the benefits arising out of their use (Gauchan, 2005; Gauchan & Upadhyay, 2006).

2.2 Challenges and gaps in intellectual property rights related policy regimes

Trade related Intellectual Property Rights Systems (TRIPS) of the WTO and the UPOV are the important international policy regimes that promote intellectual property rights (patents ad plant breeders' rights) which mainly create an incentive for commercial breeders to create high yielding uniform varieties for commercial monoculture agriculture. Full implementation of these international policy regimes in developing countries may erode rich agrobiodiversity of the countries that are mainly promoted through public support and subsidies. Furthermore, TRIPs and UPOV provisions presently do not recognise indigenous knowledge, informal innovations, and collective rights of farming communities over genetic resources including age-old sustainable practices of local communities or any other customary legal systems (Gauchan, 2005; 2017). As a result they provide no incentives for on-farm conservation of local crop diversity. In addition, patents and plant breeders' rights commonly accepted by the TRIPS and the UPOV (1991) put restrictions on local saving and exchange of seeds by the farming communities, which are the principle means for sustaining in situ conservation. Nepal is still far behind in developing relevant policy and legal needs to address the changing needs of the country in the context of membership to the WTO and changing climate scenarios. The government is constrained by lack of relevant expertise, resources and institutional arrangements in the development of policy.

The TRIPS of the WTO has a provision to develop a sui generis legislation based on specific national needs and contexts, where provision of farmers' rights can be included. Initial draft on Plant Variety Protection and Farmers' Rights Act was developed by the MoALD in 2005 and revised in 2008 as per the provisions of the TRIPS. However, currently, the country lacks adequate commitment as well as capacity and expertise to finalize and implement this law. Limited awareness exists among stakeholders on the recent international, national policy, and incentive mechanisms for protecting and promoting agrobiodiversity conservation and use. The key issues and mechanism for wide consultation, debate and public participation in the development and

implementation of relevant strategies, legislations, incentive structure, and action plans have been still much limited in Nepal (Gauchan et al., 2017)

Overall, at present policies formulated and implemented are mainly directed to promotion of major food and cash crops and modern varieties without analyzing their consequences on on-farm genetic diversity. The notion that "economic benefits can be derived only from the promotion of modern varieties/technologies" is still the guiding philosophy in the policy formulation (Gauchan et al., 2005). Despite some good initiatives made in agrobiodiversity policy development and project implementation presently agrobiodiversity programmes are not fully integrated and mainstreamed in national development programmes. Biodiversity policy and program are still focused on forest and wildlife with little emphasis on conservation and sustainable use of agricultural biodiversity for ensuring food security and poverty reduction.

3. Examples of Effective Implementations of Existing Laws/ Policies/Guidelines at International and National Level

There are few global examples of successful implementation of international policies and laws related to farmers' rights, prior informed consent, standard /material transfer agreements and access and benefit sharing mechanisms in agriculture arising from the use of genetic resources. Some good examples exist for medicinal herbs from Kerala, India (TGBRI model) and South Africa but specifically for agricultural genetic resources the examples are limited. Few of these important cases and examples related to agrobiodiversity are outlined below.

Case study 1: Indian Plant Variety Protection and Farmers' rights Act (2001)

The Plant Variety Protection and Farmers' Rights Act (2001) is an important global example of formulation and implementation of sui generis legislation that is based on provision of farmers' rights (Box 1).

Box 1: Implementation of Plant Variety Protection & Farmers' Rights Act (2001), India

India is the first country to formulate Plant Variety Protection and Farmers' Rights Act in 2001 as a sui generis legislation that has provisions of farmers' rights. This law is formulated as per the provision of the WTO TRIPS. This law has provision for both breeders' rights and farmers' rights and hence a balanced form that provides incentives to both plant breeders and farmers. The Protection of Plant Varieties and Farmers' Rights Authority (PPV & FRA) has been established by the Central Government for implementing this law The Authority grants exclusive rights to the breeders, farmers and researchers who have bred, evolved, or developed any plant varieties (https://plantauthority.gov.in/). The law provides provisions for implementation of farmers' rights through the establishment of Gene fund to reward and recognize farming communities and supports for registration of farmers' varieties. Under this law, once a variety is registered, any person, group or non-governmental organization may submit a claim for benefit sharing. Each party must present its claims in a hearing; the Plant Variety Authority will then determine the amount of benefit sharing, on the basis of the use of genetic material in the development of the variety as well as the commercial utility and market demand for the variety.

Case study 2: Basmati Patent Claim and Revocation

One of the popular cases of securing ownership rights over traditional crop genetic resources comes from the example of revocation on ownership by India over patent claim by an US company on basmati rice (Box 2). Traditional basmati varieties which are aromatic with long slender grains are from South Asian origins. They are commercially grown in India and Pakistan, though in small scale they are also grown in Nepal.

Box 2: Basmati Patent Claim by US Rice Tech Co and Revocation from India

Basmati rice is a major exported rice variety from India and Pakistan. They are of slender grains with aroma, hence, fetches higher prices than other common non-basmati varieties. Rice Tech Inc. of the USA, was granted a patent for Basmati Hybrid Rice Variety by the U.S. Patent and Trademark Office (patent no. 5,663,484) in September 1997 (https://sciencebusiness.net/news/72228/The-story-of-the-basmati-rice-patent-battle). The award of the basmati rice patent rapidly triggered a wave of protests and judicial challenges globally. The Indian government approached the U.S. Patent Office and urged it to re-examine the patent in order to protect the interests of India's rice. It also took the issue to the WTO. In 2002, as a result of judicial and political challenges, RiceTec withdrew 15 claims (out of 20), thus removing obstacles to Indian rice exports to the United States. More significantly, the U.S. Patent Office ordered that the title of the patent be changed to "Rice Lines Bas 867, RT 1117 and RT1121".

Case Study 3: Access and Benefit Sharing Agreement with Local Communities in Peru

Potato is an important traditional crop grown widely in the Andean region in Latin America. A great diversity of native potato varieties exists but are disappearing rapidly with climate changes and replacement by modern varieties. This model used community protocol to regulate the use of local genetic resources for ABS, conservation, and sustainable use. An important example of making ABS agreement using community protocol between International Potato Research Centre (CIP) and local community for potato crop in Peru is given in Box 3.

Box 3: Model Agreement for Repatriation of Native Potato Varieties in Peru

Globally, there are very few cases of ABS implementation of agricultural genetic resources. One successful case of local ABS mechanism for PGRFA is found in Peru where the Quechua Potato Park communities have used Community Protocols for ABS agreements with the International Potato Centre (CIP) for access and benefit sharing (Argumedo, 2011). The Quechua Community (Association of Potato Park Communities) and the International Potato Centre (CIP) have made an agreement for the repatriation of > 1400 potato varieties from the CIP that was collected in 1960s from the local communities. Some of these varieties were also improved ones brought from research centers. The inter-community agreement specifically addresses access and sharing of benefits resulting from the repatriation agreement between the Potato Park and the International Potato Center (CIP). The agreement of Potato Park is based on traditional customary rules and practices and as per the provisions of the Nagoya Protocol, the CBD, the ITPGRFA. It also includes articles from human rightss law and the rights to food provisions.

In Nepal, access and benefit sharing exist for improved hybrid 'Srijana' tomato between NARC (the developer of parental lines) and the private seed companies and entrepreneurs. A MoU between NARC Horticulture Research Division (HRD) and seed company was signed in November 2010 (HRD, 2010) to provide access of superior parental inbred lines to the private sector. In return the private sector should share benefits with the NARC HRD arising from commercial seed sales. According to agreement, private seed companies and entrepreneurs need to pay a royalty of 3% of the value of seed sales at the dealer prices to NARC. Interaction with NARC HRD indicated that private sectors are not regularly paying 3% of the value of seed sales.

Presently, community seed banks (CSBs) are emerging globally and nationally as a local solution for seed security and platform for access and exchange and conservation of local genetic resources. Community Biodiversity Management Committee (CBM) is also inbuilt or can be built in the CSB function for local level ABS institution as envisaged by Nepal's ABS revised draft Bills (2018). They are managed and governed by local community collectively and a well-functioning CSB adopt key CBM tools and approaches (e.g., CBR, PPB, Diversity Blocks, CBM trust fund, etc.). Community seed banks can be a potential local level institution for access and benefit sharing and implementing farmers' rights since they are managed and governed by local community collectively (Gauchan et al., 2018).

4. Conclusion and Way Forward

The Convention on Biological Diversity (CBD) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) are two important international instruments guiding conservation and use of agricultural biodiversity in Nepal. Nagoya Protocol is an important instrument for promoting access and benefit sharing arising from the use of genetic resources. Many developing countries rich in biodiversity /agrobiodiversity have adopted provisions of CBD and ITPGRFA but not the provisions of the UPOV. However, many developed countries of the North, are the members of UPOV and hence have adopted the provisions of Patent and Plant Breeder's rights to promote innovations in agriculture. Nepal has made some progress in the development of policies and programs in line with the international treaties and conventions. However, current international policies and regimes are still focusing on "globally-important" forest and wild life biodiversity including rare, endemic and endangered species and ecosystems rather than agrobiodiversity that are important for global food security and ensuring rights of farmers and local communities. Within agrobiodiversity also much attention has been given for ex situ conservation in gene banks rather than supporting on-farm conservation and strengthening local seed system for ensuring lives and livelihood of smallholder famers and rural vulnerable communities. Some initiatives such as on-farm conservation of agrobiodiversity and policy related projects were implemented in Nepal that made some contribution in influencing policies and bringing agrobiodiversity conservation agenda through community empowerment, policy research and advocacy. Despite some good initiatives made in agrobiodiversity policy development and project implementation presently agrobiodiversity programmes are not fully integrated and mainstreamed in national development programmes.

Moreover, the prospects of effective enforcement of international policy regimes in the developing countries such as farmers' rights and ABS is complicated and complex due to the lack of adequate database, human resource capacity, institutions and the need of monitoring the use agrobiodiversity. Community seed banks can be a potential local level institutional model for access and benefit sharing and implementing farmers' rights since they are managed and governed by local communities collectively.

However, presently in many developing countries including in Nepal, they are being operated informally as local level community institutions. Therefore, there is a need to formalize community seed banks as legally recognized institutions for facilitating ABS mechanisms in addition to serving as platform for local seed security and biodiversity conservation. The major challenges, gaps and issues faced by the developing countries are the timely formulation and implementation of biodiversity friendly legislative framework, action plans and incentive mechanisms as per their provisions of the international policy regimes. Nepal has yet to approve its own ABS, PVP and farmers' rights legislations that can act as the nation's sui generis legislation based on national needs and context as per the provision of international policy regions. Though, draft laws exist on Plant Variety Protection and Farmers' Rights Act (2005), Agrobiodiversity Conservation and Utilization Bill (2018) and ABS draft Bill (2018), they are yet to be officially approved.

Moreover, there is a low level of awareness of international policy regimes among stakeholders at the national level. Considering the low level of awareness among farmers and stakeholders on their rights to genetic resources, the new national legislation that are being formulated need significant support to realize farmers' rights and agrobiodiversity conservation. The situation can be improved with a strong emphasis on promotional tools and incentive mechanisms that encourage farmers to register varieties and file for ownership rights over local genetic resources. However, this will require formulation of ABS and farmers' rights legislation and their effective implementation at the country level. The laws and policy regimes should not discourage local sharing of genetic resources and traditional knowledge in biodiversity conservation. Disruption of the local seed system could disrupt the livelihoods of small rural farmers.

Favorable policies on sustainable agricultural development and mainstreaming agrobiodiversity conservation will be needed to provide incentives to local communities and stakeholders for sustainable harnessing, utilization, and conservation. These include specific targeted policies such as appropriate technology, price, markets, and institutions (credit, insurance, and regulatory framework) for their production, value addition and marketing. Enabling policies and programmers for conservation, value addition and marketing are needed to support to local agrobiodiversity for farmers in production, promotion and integration in agricultural development programs. Value chain development including raising awareness on the value of agricultural biodiversity at different levels, building capacity of 'custodian' farmers and researchers are essential to assess diversity, characterize, and use rich agrobiodiversity for integrating on-farm conservation of agricultural biodiversity in national development programs. In addition, appropriate policies on effective sui generis systems and farmers' rights need to be created to recognize and reward farmers and communities for their knowledge and innovations including safeguarding valuable genepools of agricultural crops and animals. Designing appropriate curricula and courses in formal education systems and training extension workers for the dissemination of promising native farmers varieties through extension packages can help in promoting agrobiodiversity conservation and ensuring farmers' rights to genetic resources.

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Session 2.3. Province and local level policies, programs and initiative for agrobiodiversity conservation and promotion

Review existing laws, policies related to the agrobiodiversity and farmers; rights. Provide copies of reference documents to the participants as a reading materials.

Session 2.4. Discourse on policy and practices

Review existing policies, plans, and develop discussed points targeting major gaps and issues of its implementation. Provide copies of reference documents to the participants as well.

Session 3.1: Concept on Advocacy and Influencing, its tools and approaches

Advocacy is the process of influencing decision-makers to change public policies and practices in ways that will have a positive and lasting impact on the lives of men and women living in poverty.

It is a means to empower the marginalized and powerless to gain a better policy environment with implications for implementation of policies. Clarity of purpose, safeguard, confidentiality, equality and diversity, empowerment and putting people first are the principles of advocacy. Advocacy happens at international, national, state, political, governmental, institutional, community, or individual levels.

Influencing is the systematic effort to change power relations, attitudes, beliefs, behaviors, social norms and their implementation. It leads to just societies without poverty and positive change at scale in lives of people living in poverty. Influencing is about achieving desired changes in the society through change in behavior and culture rather than direct action to change policies. Sometimes changes in policy alone may not lead to implementation due to the inertia of changing traditions.

Advocacy might involve

» Advocating new policies and practices

» Advocating reform of existing policies and practices

» Advocating the enforcement of existing policies and practices

» Advocating the elimination of current policies and practices

» Advocacy can take place at a variety of levels from local communities through to international institutions, and include a variety of methods including lobbying, media work, popular campaigning and changing public attitudes

Types of advocacy

» Public interest advocacy – focused on policy reforms that serves public interest

» Social justice advocacy – focused on issues that affect people's lives – especially poor and marginalized

» People-centered advocacy – focused on empowering people to advocate for their rights

» Participatory advocacy – focused on expanding space for citizens to be involved in public decision making

Why do advocacy?

» It empowers partners, communities and CSOs to articulate their voice

» It strengthens programme sustainability and increase coverage and impact of a programme with limited resources

» It increases organization's profile and this in turn helps to generate additional support

» It increases organization's credibility with and access to key decision-makers, and this further increase organization's ability to influence them

Possibility of risk due to advocacy

- Security risk to staffs, partners and programme
- Reputation risk if it goes wrong
- Relationship risks - may damage existing relationships
- Expectation risks - can create unrealistic expectations on the part of supporters, partners and beneficiaries about the likelihood of rapid change
- Financial risks – high amount of investment in advocacy but result in poverty reduction might be zero

Agrobiodiversity is a subset of the genetic resources that directly contributes to food or fibre production. As Nepal is an agricultural country with more than 65% of the country's' population dependent on agriculture for their livelihoods. In this case, prioritizing the agricultural activities and putting its dimension on priority is utmost. This serves to contribute to the food and nutrition security of the people at the local, provincial, and federal levels. Though various initiatives, policies, and programmes have been formulated with regards to agrobiodiversity, there remain some gaps in them. In order to fill such gaps, advocating on the specific agendas and subject matter would add value. It helps to provide clear communications and messages to the target audiences.

Tools, Approaches and ways of Advocacy & Influencing

There are various tools and approaches for advocacy and influencing. It may differ based on issues. The seminars, workshops, discourse, press release, poster, pamphlets, advertisement, etc. served as tools for advocacy. Some tools and approaches for advocacy are as follows:

1. Face to face lobbying and advocacy.
2. Public organization, engagement, and mobilization.
3. Digital campaigning and storytelling.
4. Traditional, digital and social media engagement.
5. Research, evidence generation and thought leadership.
6. Travelling Seminar
7. Strategic and collaborative partnerships.
8. Brokering relationships with key individuals or organizations.
9. Convening inclusive spaces for collaboration and discussion.
10. Capacity exchanges including mutual learning and skills building for staff, partners, networks, and allies.

Similarly, there are some ways need to follow while doing influencing. The ways may differ case by case. Some ways for influencing are:

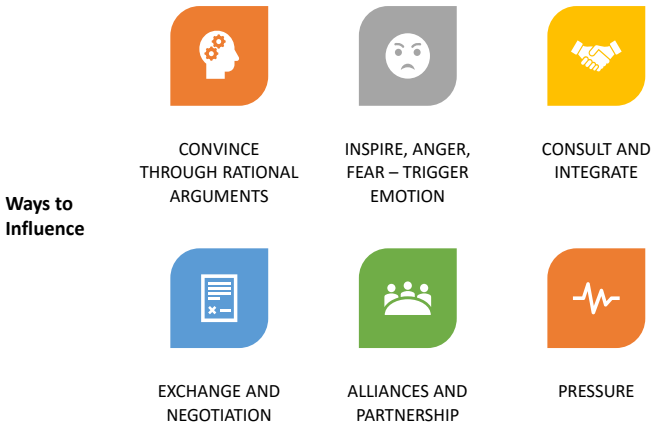


Figure 22: Different ways of influencing

1. Convince – Appeal to logic, use evidence
2. Trigger emotions – Inspire – often appeals to shared values, beliefs
3. Consult and Integrate: Involve others in your work, motivate their participation, valuing their experience and opinion
4. Exchange and Negotiate: Offer a benefit, an exchange, not just financial, could be learning, experience, status
5. Alliances and Partnership: Form a group of people who share a purpose, reinforce this between them, work to bring others on board
6. Pressure: Use power to achieve change – impose your agenda in some way – often top-down (hierarchy) but could be bottom-up

Session 3.2: Issue analysis and identification for advocacy and influencing

Issue and problem are somewhat similar words since they both refer to challenging situations or matters. The main difference between issue and problem is that issue is an important topic or problem for debate or discussion whereas problem is a harmful and unwelcome matter or situation that needs to be dealt with.

Issue and problem are the two sides of a coin.

Problem	Issue
Inactive stage of issue	Active stage of problem
Related for individual, community, public and state	Related for community, public and state
Difficulties without solution	Difficulties with solution
Limited	Global

e) What is issue?

» Active stage of problem

Example:
- No participation of women and dalit for agriculture policy making? – Problem
- Participation of women and dalit for agriculture policy making – Issue

» Public interest

» Public affairs

f) Issue identification process

» Listing problem

» Problem prioritization

» Identify root causes of problem

» The causes of problem are the issue for advocacy

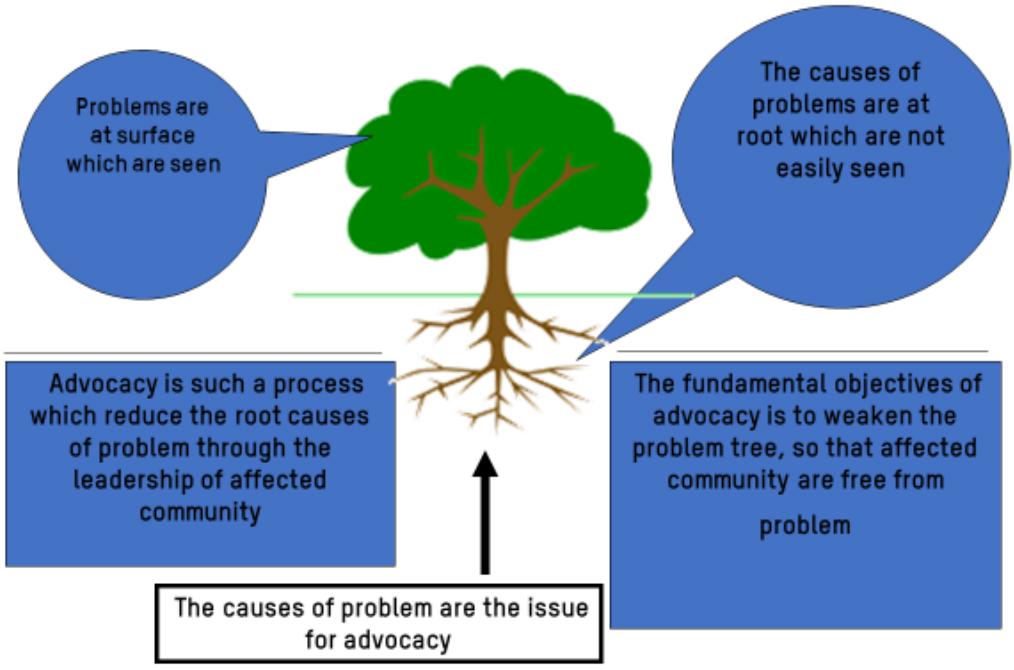
g) Issue classification

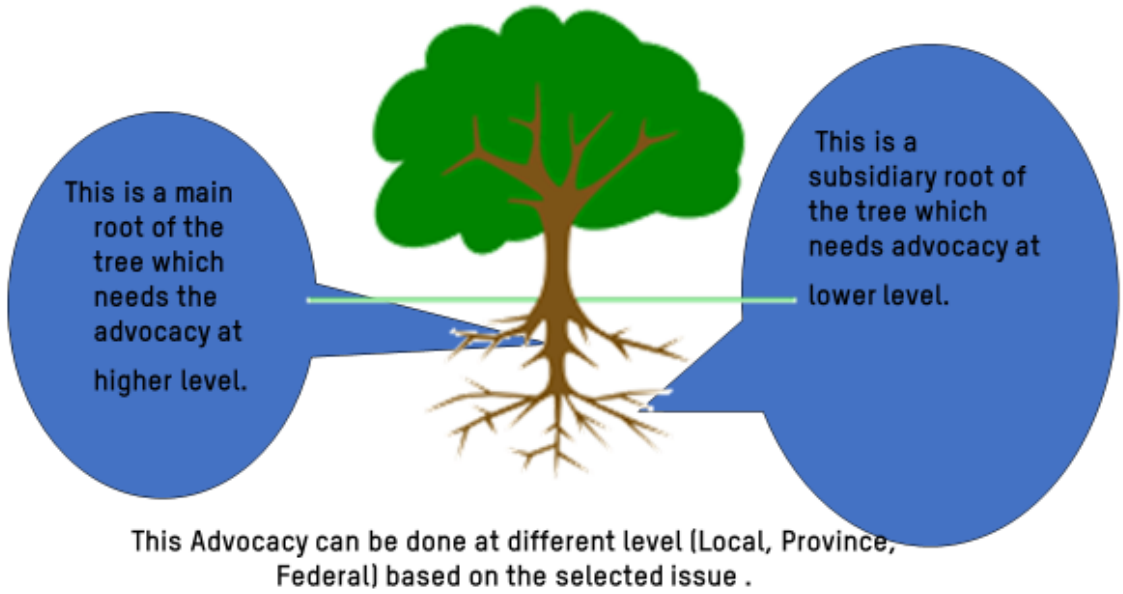
» Issue for policy development

» Issue for policy improvement

» Issue for policy implementation

h) Tree analysis - Problem and issue





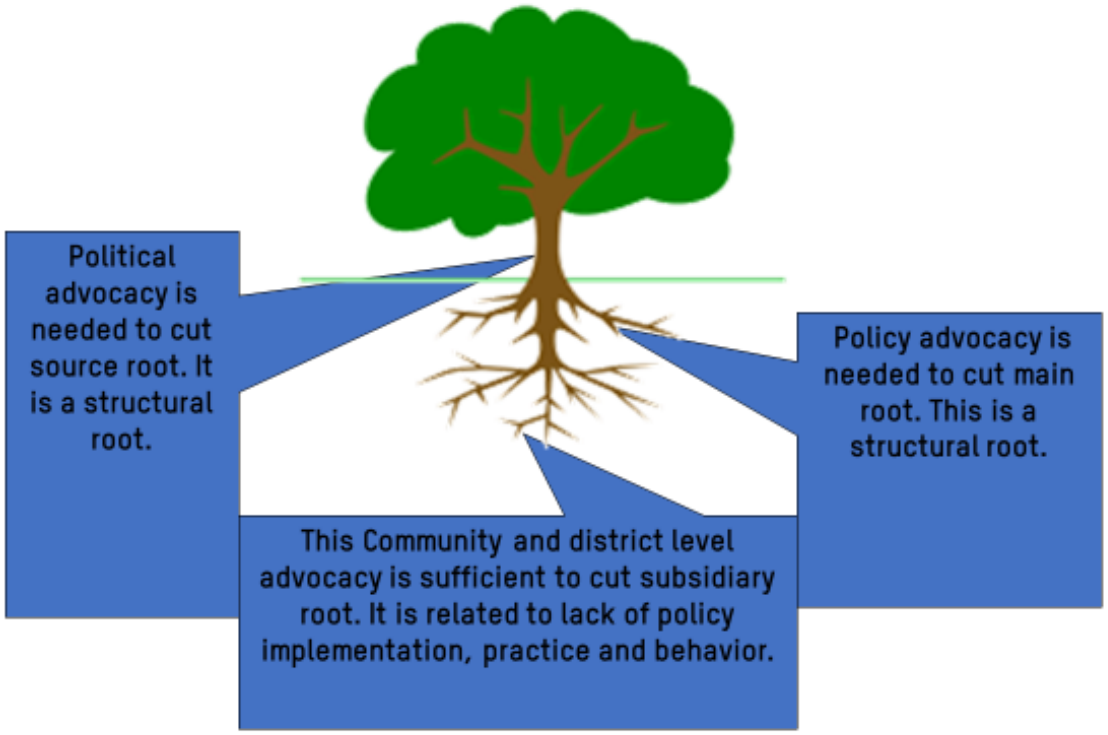


Figure 23: Problem tree analysis

Session 3.3: Development of advocacy strategy and plan

Step in developing strategy

- Problem identification
- Overall aim
- Specific objectives
- Rationale for organization Engagement
- Power analysis
- Targets and allies
- Message
- Tools and actions (Research, policy development, lobbying, media, pop mob, funding others..)
- Opportunities and events
- Human and financial resources
- Risks identification
- Monitoring and evaluation

How to make clearer strategy?

- Be ambitious
- Develop it in consultation rights holders and experts
- Keep focus on what we can influence
- Keep the strategy short and simple
- Keep the strategy dynamic and evolving
- Choose the most powerful approach to achieving change
- Focus on what we plan to do
- Be clear on resources needed
- Focus on delivering the strategy

Example of an Advocacy Plan

Emergency Capacity Building Project	Humanitarian Advocacy Strategy on Disaster Management Act (DMA)
Background: The problem	Located in the low-lying deltaic region, Bangladesh is one of the most disaster-prone countries in the world. Extreme weather conditions and disastrous hazards like flood and flash flood, tornado, tidal surge, and cyclones are regular phenomena in the country. Along with geo-physical factors a great number of socio-economic factors are seen associated with relative vulnerability and complexity of the disaster impacted communities in the country. What is worth mentioning is that the entitlement and rights of the disaster affected people and communities of the country are not entitled in any law of the country. Though there has been an underlying process to prepare a Disaster Management Act for last couple of years, In the initial draft the Disaster Management Act emphasis was more on definitions, roles and functions of the statutory bodies and government functionaries and their indemnities instead of entitlement and rights of the disaster affected communities and the relevant accountability framework of the duty bearers towards this end. Later on, due to continued campaign the Draft Disaster Management Act got a review in consultation with relevant stakeholders. Multilateral, bilateral and other development organizations working with relative vulnerability and complexity of the disaster affected people and community though for long triggering for a complete and people-friendly Disaster Management Act having appropriate accountability arrangements for the duty bearers, the end result is still seen far away. However, the process has contributed towards a few remarkable achievements in this regard. Through a long consultative process with all relevant government and non-government stakeholders, initial draft has now reached to a final stage. Major stakeholders in the field are seen more or less happy with the end draft of the draft Act. Mentionable also that very recently though the draft Act was placed to the Cabinet for necessary approval, unfortunately it has further been sent back to the concern Ministry fr a final review. In view to all of the above and more particularly in view to the ever-increasing climatic extreme events, now it appears high time in the national context to have a complete and passed a Disaster management Act. From this perspective an Emergency Capacity Building Project (ECB) – a consortium of 6 international NGOs working for disaster affected people and community find it important to start a huge campaign on this. As pioneers in dealing with disasters in national context, ECB finds it appropriate and effective body to act on this without further delay.
	Campaign for Sustainable Rural Livelihoods (CSRL) a national coalition of around 250 development organizations spread over the whole country and working closely on climate change and agriculture issue, appears would add utmost value with this campaign effort. This advocacy strategy focuses on the lasting solution of the life and livelihoods of the disaster affected communities. Moreover, it is expected to contribute positively on food & income security of the disaster impacted community in which women in all consideration are the most vulnerable.
Solution	Disaster Management Act has been endorsed by the Cabinet and passed in the National Parliament and is ready for implementation.
Goal	The rights of the disaster affected people in Bangladesh is ensured throughthe appropriate implementation of Disaster Management Act.
Objective	To influence the Prime Minister, Minster for the Ministry of Food & Disaster Management (MOFDM), members of the Parliamentary Standing Committee on the MOFDM, and Members of Parliaments towards enactment and implementation of Disaster Management Act.

Emergency Capacity Building Project	Humanitarian Advocacy Strategy on Disaster Management Act (DMA)
Scope/Coverage of Work	**Content:** In the context of increased intensity and frequency of weather-related extreme events caused by climate change are addressed appropriately through a complete 'Disaster Management Act'. **Form:** The campaign would be essentially a national level one. Partners working in disaster prone areas will complement the national level campaigning.
Strategy/ Tactics	**Research:** No research work is required.
	Policy: No additional policy work is necessary. However, a short briefing note on legal preparedness would be developed in Bangla based on IFRC studies.
	Lobby: Lobbying meeting will get top priority to deal with policy level actors. Among others, the Office of the Prime Minister, Peoples Representative of Bangladesh, Minster for the Ministry of MOFDM, members of the Parliamentary Standing Committee on the MOFDM, and Members of Parliament in disaster prone areas will be lobbied to have the campaign end result in place.
	Media: All relevant stakeholders will be mobilized by using media. Among others statement, press release, case study, coverage of the public events, post editorial, press conference, and talk show will get priority.
	Popular Mobilization: Limited number of popular mobilization will be facilitated at disaster prone areas to supplement the national level lobby and advocacy works. (Momentum)
	Program Linkage: ECB is an international coalition of 6 NGOs that have been supporting 100s of national and grassroots organizations performing humanitarian works at community level. The success of the campaigning will open tremendous window of opportunity for them at operational level.
Power Analysis	**Champions:** ECB and CSRL
	Friends/Allies: IFRC, UN organizations including CDMP, DER (Disaster & emergency response), Sub group of Local Consultative Group on emergency, DIPECHO partners
	Swingers: Bureaucrats
	Blockers: Bureaucrats
	Targets: Office of the Prime Minister, Peoples Republic of Bangladesh, Minster for the MOFDM, members of the Parliamentary Standing Committee on the MOFDM, and Members of Parliament
Key Message	Enact the Disaster Management Act, secure life, livelihoods and resources
Timeline	The timeline of the Project is six months, from March 2011 to August 2011.

Activities and budget	Activities	Amount in BDT
	• Development and publication of a short briefing note on legal preparedness in Bangla based on IFRC studies	100000.00
	• Sending letters to the Office of the Prime Minister, Office of Speaker in National Parliament & Minister for the MOFDM for immediate action to pass and implement Disaster Management Act	5000.00
	• Statement by Country Directors of the INGOs and DER for national and international media	5000.00
	• Press conference by DRR partners of the ECB	40000.00
	• Story collection on flash flood, AILA, river-bank erosion, SIDR and publication and dissemination	150000.00
	• Publication and dissemination of 'Testimony of Journalists'	200000.00
	• Post-card campaign at Khulna, Satkhira, Sunamgonj, Gaibandha and Barguna (@BDT 120000X5 Districts)	600000.00
	• Local level lobby with MPs at Khulna, Satkhira, Sunamgonj, Gaibandha and Barguna (@BDT10000X5Districts)	50000.00
	• Women & children memorandum submission to PM through district administration	50000.00
	• Lobby meeting with Minister for the MOFDM, & members of the Parliamentary Standing Committee on the MOFDM	50000.00
	• National Hearing involving women in disaster proneareas	200000.00
	• Fax & Telecommunication	30000.00
	• Salary for Campaign Officer	503000.00
	Total: Nineteen lakhs and eighty-three thousand BDT only	19,83,000.00
Financial Management	Oxfam GB Bangladesh Office Finance Department would be responsible for overall financial management of the project. Oxfam GB's existing policy framework on financial management would be applied for this, which have important bearings with Statutory Law in this regard. A project will be facilitated by the Policy and Advocacy Department while this will be designed under the humanitarian Programme Implementation Plan (PIP). ECB will finance this project.	
Milestones/ Indicators	• Statement made publicly or privately by any of the targeted office bearers • The draft has been sent to the cabinet or to the parliament • Visible initiative in regard to pass the Act in national Parliament	
Opportunities/ Potentials	• Draft already developed, sent to the cabinet and cabinet further sent it back to the MOFDM for review. • Relevant stakeholders are happy with the draft. During previous advocacy initiative they were asked by the ministry to send additional comments on the draft	
Risks and Sensitivities	There are some influential Ministers in the Cabinet and few other bureaucrats who are against NGOs. They may block the initiative	
Human Resource	Under the overall supervision and guidance of the **Policy & Advocacy Manager** of the Oxfam GB Bangladesh Programme, a full time **Campaign**	

	Officer will administer the campaign receiving partial support from **Media & Communication Coordinator** of the Policy & Advocacy Department. Campaign Officer would be focal point while collaborating Oxfam GB Humanitarian Team & ECB.
Monitoring, Evaluation and Learning	Campaign Officer would report the progress directly to his/her line manager and Oxfam GB Humanitarian Team & ECB. Oxfam GB Humanitarian Team & ECB will provide feedback to the campaign Officer; however, in any emerging complex situation they will contact directly to the Policy & Advocacy Manager. A review meeting involving project related stakeholders will be organized during the project-ending month and the report will be shared accordingly for further learning.
Internal Communications	Campaign Officer will provide necessary information to Humanitarian Team and ECB as and when required.
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Session 3.4 Post Training Evaluation (Annex 1), Reflection and Closing

For more information

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