



ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (VOL-1)

FOOD SECURITY AND AGRICULTURAL PRODUCTIVITY PROJECT (FSAPP)
DEPARTMENT OF AGRICULTURE
MINISTRY OF AGRICULTURE AND FORESTS
ROYAL GOVERNMENT OF BHUTAN



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Table of Contents

ACRONYMS AND GLOSSARY	3
EXECUTIVE SUMMARY	5
4. INTRODUCTION	9
1.1 THE PROJECT	9
4.1.1 <i>Project Objectives</i>	9
4.1.2 <i>Project components</i>	9
4.1.3 <i>Project Interventions</i>	11
1.2 INSTITUTIONAL SETUP FOR FSAPP IMPLEMENTATION	13
1.3 RATIONALE FOR THE ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK	13
1.4 REVIEW AND CONSULTATION FOR PREPARATION OF THIS ESMF	14
2. ENVIRONMENTAL AND SOCIAL BASELINE IN THE PROJECT AREAS	15
2.1 PROJECT SITES.....	15
2.2 USE OF FERTILISER AND PESTICIDE AND DISPOSAL OF PACKAGING MATERIALS	19
2.3 NATURAL RESOURCES USAGE FOR FARMING	19
2.4 REUSE OF RICE BY-PRODUCTS.....	20
2.5 IRRIGATION.....	20
2.6 OTHERS.....	21
3. ENVIRONMENTAL AND SOCIAL POLICIES AND REGULATIONS.....	22
3.1 WORLD BANK SAFEGUARD POLICIES	22
3.2 NATIONAL POLICY AND LEGISLATIONS	23
3.1.1 <i>Environment Assessment Act, 2000</i> :.....	23
3.1.2 <i>Environmental Clearance (EC) Regulation, 2002</i>	24
3.1.3 <i>Environmental Clearance (EC)</i>	24
3.1.4 <i>Social Assessment</i>	25
3.1.5 <i>The Water Act, 2011</i>	25
3.1.6 <i>Forest and Nature Conservation Act, 1995</i>	26
3.3 INTERIM GUIDELINE ON LEASE OF GRF LAND FOR COMMERCIAL AGRICULTURE	26
4. THE ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK	27
4.1 ENVIRONMENTAL AND SOCIAL MANAGEMENT PROCEDURE	27
4.1.1 <i>Review of interventions and negative list of attributes</i>	27
4.1.2 <i>EA categorization of the interventions</i>	28
4.1.3 <i>Anticipated issues, impacts and Suggested Mitigation Measures</i>	30
4.1.4 <i>Potential mitigation measures for identified impacts and risks</i>	40
4.1.5 <i>Environmental and Social Impact Assessment</i>	43
4.2 OBTAINING ENVIRONMENTAL CLEARANCE (EC).....	43
4.3 IMPLEMENTATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP).....	44
5. IMPLEMENTATION ARRANGEMENTS, MONITORING AND CAPACITY DEVELOPMENT	45
5.1 RESPONSIBILITIES FOR UNDERTAKING ESS/IESE AND PROCESSING EC	45
5.2 MONITORING.....	47
5.3 CAPACITY BUILDING	47

6. CONSULTATION, PARTICIPATION AND INFORMATION DISCLOSURE	49
6.1 CONSULTATIONS.....	49
6.2 INFORMATION DISCLOSURE	49
6.3 GRIEVANCE REDRESS MECHANISM (GRM)	50
7. ANNEXURES	51
ANNEX 1: ENVIRONMENTAL AND SOCIAL SCREENING OF ACTIVITIES	51
ANNEX 2: SUGGESTED LIST OF ECOPs FOR CATEGORY 2 INTERVENTIONS	55
ANNEX 3: FORMAT: SAFEGUARD ELIGIBILITY AND INITIAL ENVIRONMENTAL AND SOCIAL EXAMINATION.....	57
ANNEX 4: FORMAT: ENVIRONMENTAL COMPLIANCE MONITORING FORM.....	63
ANNEX 5: LIST OF PERMISSIBLE PESTICIDES IN BHUTAN	64
ANNEX 6: PROJECT INTERVENTIONS BY COMPONENTS AND SUB-COMPONENTS.....	65
ANNEX 7: SUGGESTED OUTLINE OF AN ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT	75

ACRONYMS AND GLOSSARY

Acronyms

AMC	Agriculture Machinery Centre
BCC	Behaviour Change Communication
BP	Bank Policy
CA	Competence Authority
CPS	Country Partnership Strategy
CRPs	Community Resource Persons
DAMC	Department of Agricultural Marketing and Cooperatives
DAO	District Agriculture Officer
DEC	Dzongkhag Environment Committee
DoA	Department of Agriculture
DoFPs	Department of Forest and Park Services
DRDP	Decentralised Rural Development Project
EA	Environmental Assessment
EAA	Environmental Assessment Act
EC	Environmental Clearance
ED	Engineering Division
EIA	Environmental Impact Assessment
ESCoPS	Environmental and Social Code of Practices
ESIA	Environmental and Social Impact Assessment
ESS	Environmental and Social Screening
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FCBL	Food Corporation of Bhutan Limited
FNCA	Forest and Nature Conservation Act
FSAPP	Food Security and Agricultural Productivity Project
GMOs	Genetically Modified Organisms
GRF	Government Reserved Forest
GVCDP	Gender and Vulnerable Communities Development Plan
IEE	Initial Environment Examination
IESE	Initial Environmental and Social Examination
ICT	Information and Communication technology
LARP	Land Acquisition and Rehabilitation Plan
MoAF	Ministry of Agriculture and Forests
NECS	National Environment Commission Secretariat
NEPA	National Environment Protection Act
NSC	National Seed Centre
OGTP	One Geog Three Product
OP	Operational Policy
PAN	Project Advisory Network
PAVA	Property Assessment and Valuation Authority
PDO	Project development Objectives
PMU	Project Management Unit
PPD	Policy and Planning Division
PSC	Project Steering Committee
RGoB	Royal Government of Bhutan

RNR	Renewable Natural Resources
RNRRDCs	Renewable Natural Resources Research and Development Centres
RoW	Right of Way
RRCDP	Remote Rural Communities Development Project
TA	Technical Assistance
ToR	Terms of Reference
WA	Water Act
WB	World Bank
WHO	World Health Organization
WUAs	Water User Associations

Glossary

Chiog	A cluster of villages
Dzongkhag	District
Geog	A block in a District (consisting of several villages)
Gup	Elected Administrative Head of the Block
Sokshing	Plot of Forest Land Used for Leaf Litter
Mangmi	Elected Representative of the Village (Villages)
Pipla	Piper species grown in forest
Tshogdu	Committee of Elected Representatives
Tshogpa	An Elected Representative of Village

Cover Pictures:

Illustrating typical wetland (Paddy) cultivation areas (terraces on sloppy land), mostly close to the existing state forest (vulnerable to crop destruction by wild animals). Flat land Paddy cultivation is evident in low foot hill of three districts (Samtse, Sarpang and Dagana) bordering India, amongst the five project districts.

EXECUTIVE SUMMARY

Background

The Royal Government of Bhutan (RGoB) through the Department of Agriculture (DoA), Ministry of Agriculture and Forests (MoAF) is availing World Bank (WB) grant support of USD 8 million for a Food Security and Agricultural Productivity Project (FSAPP). The project is to reduce rural poverty and malnutrition through the climate smart agricultural productivity enhancement for food and nutrition security programme. The project is targeted to cover twenty four Geogs (blocks) under five Dzongkhags (Districts) of; Chukha, Dagana, Haa, Samtse and Sarpang.

The project has four main components to implement: 1) Strengthening Farmer and Producer Groups; 2) Enhancing Farmer Productivity; 3) Enhancing Access to Markets; and 4) Project Management. This project with the World Bank is classified as a "Category B" project under OP/BP 4.01, with a partial assessment as the impacts are likely to be small-scale and site specific; and mitigation measures can be designed more readily. Details on project interventions by components and sub-components are provided as Annex 6.

The overlay impacts of this project are expected to be positive. However, there are few potential negative environment and social impacts from project activities. In order to apprehend the negative impacts and put in place appropriate mitigation measures for an overall positive impact of the project, adequate exercise of environmental and social impact studies on subproject activities and design of corresponding measures for avoidance, minimization and mitigation, is necessary.

The purpose of this environmental and social management framework (ESMF) is to guide the DoA and its subproject component beneficiary Dzongkhags and Geogs to undertake Environmental and Social Impact Assessment (ESIA) or Initial Environment and Social Examination (IESE), obtain Environmental Clearances (EC) and implement the Environment and Social Management Plan (ESMP) in the subproject activities for overall positive impact of the project.

For the preparation of this ESMF, consultations were carried out with stakeholders that included government officials and the farmers from the project area. One of the objectives of the consultations was to review the experiences of implementing the ESMF for the earlier WB projects and to arrive at the nature of ESMF required for this project. The summary of consultations is included as Volume II of this ESMF.

Environmental and Social Policies and Regulations

Bhutan has its national policy and legislations on environment and social protections. The Environment Assessment Act (EAA), 2000 and the Regulation for the Environmental Clearance of Projects and Regulation on Strategic Environmental Assessment, 2002, usually referred to as "EC Regulations" are the most relevant policy documents to refer for environmental and social impact assessment and development of the ESMF for FSAPP. The other national policies relevant to refer in FSAPP are the Water Act, 2011 and the Forest and Nature Conservation Act (FNCA), 1995. The EAA, 2000, EC Regulation, 2002 are accessible on the National Environment Commission (NEC) website: www.nec.gov.bt and the FNCA, 1995 is accessible on Ministry of Agriculture and Forests (MoAF) website: www.moaf.gov.bt.

The World Bank has environmental and social safeguard policies accessible from the bank's website: www.worldbank.org. The Bank's operational policy OP/BP 4.01: Environment Assessment in particular is applicable to FSAPP in Bhutan. The other applicable policies for the FSAPP are the Forest, OP 4.36, Involuntary Resettlement, OP 4.12 and Pest Management, OP 4.09.

The Environment Assessment Act, 2000 and its EC Regulations, 2002 consider fully the social concerns although it is not explicitly spelled out. All the social issues are considered while obtaining stakeholder clearances for obtaining environment clearance. Other social issues like inclusiveness of vulnerable families and individuals, gender and grievances are also discussed and agreements made in the public consultation of the affected societies.

Environment and Social Management Framework (ESMF)

The Environment and Social Management Framework (ESMF) has been developed for mainstreaming environmental and social concerns in the project. It lays out the following principles for the overall social and environmental management of sub-projects: (i) activities with severe negative environmental and/or social impacts will not be supported, and (ii) all eligible subprojects will be screened to identify and assess the associated environmental and social impacts.

The FSAPP will ensure the following procedures for environmental and social sustainability of sub-project interventions:

- Step 1: Review sub-project interventions
- Step 2: Review negative list of attributes
- Step 3: Determine EA categorization of interventions
- Step 4: Conduct environmental and social screening and develop Environmental and Social Code of Practices
- Step 5: Conduct IEE and prepare Environmental and Social Management Plan (ESMP), Gender and Vulnerable Communities Development Plan (GVCDP), and Land Acquisition and Rehabilitation Plan (LARP).
- Step 6: Implement ESMP, GVDP and LARP
- Step 7: Monitor the implementation of ESMP, GVDP, LARP

Although, the specific design and location of sub-projects are yet to be identified, a tentative list of activities including soft and hard interventions under the three components has been identified. It is also expected that some of the soft interventions will not have any negative impacts but nevertheless present opportunities for enhancing social benefits. In order to prevent any adverse impacts, simplify the process of impact identification and mitigation, the FSAPP will follow the following process and categorize the activities in the following manner:

- **Category 1 (EA not required):** Some of the FSAPP interventions for agricultural productivity promotion are categorically excluded from requirements for an environmental assessment (EA). These are activities (e.g., trainings, capacity building activities) do not lead to any adverse environmental impacts but instead provide positive environmental and social benefits.
- **Category 2 (Activities Requiring ESCoPs):** Subprojects that may have some minor impacts, not known yet, are grouped under category 2. Activities marked under Environmental and Social Code of Practices (ESCoPs) may or may not have environment and social impacts but are possible to be implemented by referring to

available ECOPs. Since the environmental impacts of projects under this category are not fully known, but assumed to have minor impacts, an Environmental and Social Screening (ESS) has been suggested to be carried out at the planning stage (Refer to Annex 1). An ESCoP is to be developed and implemented for this category of interventions. A list of ESCoPs for Category 2 interventions has been provided in Annex 2.

- **Category 3 (Activities Requiring IESE).** Sub-project activities that will have some minor to moderate impacts on the environment are grouped into category 3 and will require an Initial Environmental and Social Examination (IESE). Activities marked under this group are more likely to be activities requiring an EC. Under the FSAPP, it is expected that irrigation sub-projects will primarily require an IESE to obtain an EC from the Competent Authority. (See Annex 3 for IESE format).

During the implementation of FSAPP, a full scale Environmental and Social Impact Assessment (ESIA) may be required if the DoA plans to implement a large scale irrigation scheme. According to EC Regulation, Section 17, a full blown ESIA is necessary for activities; i) falling within the boundary of a protected area, ii) within 50 meters distance of a public park, human dwelling, hospital, school or a sacred landscape or site, and iii) any other sensitive area designated by the Secretariat. The suggested outline for an ESIA process and report has been provided in Annex 7

Implementation Arrangements, Monitoring and Capacity Building

The project will be implemented by the Department of Agriculture. An independent Project Management Unit (PMU) within the DoA, MoAF will be established that will, among other things, be responsible for implementation and monitoring of the ESMF.

While processing the EC, the EAA, 2000 has designated the National Environment Commission Secretariat (NECS) as the apex institution for issuance of the EC to all developmental activities/projects within the Kingdom. The mandated ESIA/IESE and the EC also takes into consideration all the social issues. Competent Authorities (CA) are designated in relevant line agencies and updated periodically as provided for in Annex 2 of the EC Regulations, 2002. List of activities are outlined under each CA for them to review ESIA/ESIE reports and issue EC. The DoA is the CA for; a) irrigation channels, and b) activities related to agriculture research and development.

There is Dzongkhag Environment Committee (DEC) in all the 20 Dzongkhags which is also a designated CA. In case of the FSAPP project activities, except for irrigation subproject activity, where DoA will be the CA, other activities requiring EC from screening could be cleared by the respective DEC

With regards to **ESS/IESE and EC processing** the followings are responsible:

DoA (PMU)/Beneficiary Geog –Beneficiary Geog of a subproject activity with technical support from the Geog/Dzongkhag RNR Sector and the PMU shall be responsible for undertaking the screening, scoping (including formulation of draft ToR), baseline data collection, conducting ESS/ESIA/IESE, and preparing the management plans, including the ESMP.

DEC – DEC for activities not under its CA jurisdiction will review initially the ToR and later the ESIA/IESE report for its completeness in terms of documentation and forward the ToR/report to the relevant CA with its comments/observations and recommendations. If the activity is within the competency of the DEC, the DEC will first

review and approve the ToR for the ESIA/IESE exercise. On receipt of the appropriate report, the DEC will review and scrutinize the information provided in the report and ask additional information, if required. When the information is complete and satisfactory, the EC will be issued with a set of Terms and Conditions. The proposal/application also can be rejected if the information is incomplete, not satisfactory or if irreversible impacts are foreseen. When there is no designated CA, the DEC will forward the ToR/report to the NECS.

CA – When the ToR and the ESIA/IESE report are forwarded to the relevant CA by the DEC, the CA will exercise the same procedure as mentioned above for the DEC.

NECS – When the cases are referred by the CAs to the NECS, the NECS will assume the role of CA to review, scrutinize and make decisions to issue EC or reject the proposal/application.

The ESMF requires **regular supervision and monitoring** of the impact of the project on the environment and social aspects. The project will plan and implement the following environmental monitoring programs to ensure environmental and social sustainability of livelihood programs: (i) compliance monitoring; (ii) quarterly progress monitoring; and (iii) third party environmental review/audit. The arrangements for supervision and monitoring include appointment/designating of an Environment and Social Focal Points at the PMU and vesting all the environment and social safeguards supervision and regular monitoring requirements at respective sites. Dzongkhag Environmental Officer will carry out periodical compliance monitoring. The NECS officials are expected to conduct adhoc/surprise monitoring. The environmental compliance monitoring format is provided as Annex 4.

In terms of **capacity building**, the Project implementing team (PMU, Dzongkhags and Geog agriculture officers, Dzongkhag and Geog engineers and RNRDRC's engineers) have to have awareness, sensitization and skill regarding environmental and social aspects of the project for necessary sub-project planning and implementation. As such, an awareness and capacity building training is proposed to be undertaken at the beginning of the project commencement.

Consultation and Disclosure

During project preparation, a series of consultations were held with important stakeholders, including government institutions, NGOs, private firms, and youths both at the local and central levels. The government (Ministry of Agriculture and Forests) shall disclose the ESMF on its website. The executive summary has been translated into national language (Dzongkha) and has been uploaded in the MoAF's website. If the document is revised, the revised version shall be uploaded. The World Bank shall disclose the ESMF at the Infoshop.

Grievance Redress Mechanism (GRM)

The GRM for the project is based on Bhutan's existing dispute resolution mechanisms, both formal and informal, that relies on mediation and public hearing managed by local authorities. In addition, a Grievance Redress Committee will be established within the PMU comprising representatives from the MoAF and PAN to receive complaints unresolved through the traditional mechanism. Besides the national system, there is also the option to seek redress through the World Bank's Grievance Redress System and the Inspection Panel.

4. INTRODUCTION

1.1 The Project

The Royal Government of Bhutan (RGoB) through the Department of Agriculture (DoA), Ministry of Agriculture and Forests (MoAF) is availing World Bank (WB) grant support of USD 8 million for the Food Security and Agricultural Productivity Project (FSAPP) to reduce rural poverty and malnutrition through climate smart agricultural productivity enhancement for food and nutrition security. The main objective of the project therefore is to increase farmer's agriculture productivity, food security and nutrition and improving access to agricultural markets.

4.1.1 Project Objectives

The project aims at directly benefitting approximately 10,400 household beneficiaries through its integrated interventions. Through improved home-grown school feeding programmes, the project aims to target 3,000 school children in 17 schools located in 11 Geogs in 4 Dzongkhags. The achievements of the project objectives will be measured by the following indicators; a) increase in the productivity of supported crops by at least 20 percent in the targeted areas, b) increase in the marketed value and Volume of agricultural production by 20 percent in targeted areas, and c) number of direct project beneficiaries (of which 30% shall be women beneficiaries).

The proposed FSAPP project is well aligned with the Bank's Country Partnership Strategy (CPS), which emphasizes that the commercialization of agriculture has been one of the key drivers towards overall poverty reduction. It is anticipated to scale up best practices and build on the gains made through the earlier two projects: DRDP and RRCDP, by adopting a more integrated and focused approach and to support the agriculture sector in Bhutan.

4.1.2 Project components

Component 1: Strengthening Farmer and Producer Groups – USD 1.08 million

The objective of this component is *to strengthen farmers' and producers' groups to better enable them to implement and sustain project interventions*. It is designed to address one of the key constraints to improved agricultural productivity and socio-economic conditions of farmers - weak farmers' groups that lack necessary and relevant skills, knowledge, practices, quality inputs and appropriate technologies.

This component has three subcomponents:

- (1) Farmer Group Strengthening and Formation
- (2) Strengthening Producer Groups
- (3) Contributing to Improved Nutrition

Component 2: Enhancing Farmer Productivity – USD 5.21 million

The objective of this component *is to improve agricultural productivity vital for improving food security and nutrition*. The component will promote climate smart agriculture through productivity enhancement of rice, vegetables, pulses, and potatoes for improved food security and nutrition. The productivity of key high value crops such as spices (specifically large cardamom and ginger), vegetables, and citrus will also be promoted for both local and export markets. The overall purpose is to expand cultivated areas, increase climate smart cropping intensity, and increase productivity and production for potential commercial surplus. The approach under this component is holistic and area-specific, providing an integrated package of interventions based on the relevant farming systems and specific crops appropriate to the priorities of the farmers, farming systems and overall production potential in the selected area.

Based on this approach, Component 2 will focus on three main areas of intervention: water use efficiency, improved farm management and technical capacity building, and enhanced agri-inputs and technologies – all aimed at improving productivity. These are summarized below.

- (1) Water Use efficiency
- (2) Improved Farm Management and Technical Capacity Building
- (3) Improved Agricultural Inputs and Technologies

Component 3: Enhancing Access to Markets – USD 1.0 million

The component aims *to promote value chains for select high value nutrient-rich crops and enhanced linkages to domestic and export markets*. The primary focus will be to: (a) reduce post-harvest losses, (b) strengthen nutrition sensitive value chains of selected crops; and (c) enhance producers' knowledge, bargaining power, and access to agri-markets. It will include strengthening local producer-consumer linkages, and establishing productive relationships with public and private market players, school meal programs, and exporters. The overall commodity selection strategy will follow the 'One Gewog Three Product (OGTP)' approach of the MoAF that focuses on the top three commodities as per the current production scale. Component 3 include two sub-components:

1. Post-Harvest and Market Infrastructure Support
2. Linkages to Domestic and Export Markets

Component 4: Project management – USD 0.71 million

Component 4 will support all aspects of project management including: (a) management and coordination, (b) monitoring and evaluation, (c) technical assistance, and (d) a grievance redress system. The expected outcome of this component is an effective and transparent project management system. The main

functions and activities will be to: (a) provide overall governance and direction to the project; (b) provide strategic, management, and operational guidance and support to project staff for achieving the PDO and expected outputs; (c) regularly monitor and analyze the overall and component specific quality and pace of implementation, ESMF compliance, budget and expenditures, and address any issues, bottlenecks, and gaps to ensure that progress in project implementation is on track; (d) conduct a capacity needs assessment of project staff and provide requisite knowledge, management skills, exposure visits, and specific thematic/technical training in a systematic manner; (e) establish a robust monitoring and evaluation (M&E) and reporting system, including baseline surveys, a mid-term assessment, and end of project evaluation; (f) establish a clear and effective mechanism for grievance redress, including a system for receiving, recording, and addressing complaints and using them for course corrections as required; (g) strengthen project communication and knowledge management as well as document, collate, and disseminate project experiences and learning; and (h) support reviews, studies, and policy analysis that would contribute to the country's agriculture, food security, and nutrition policies and plans.

4.1.3 Project Interventions

All project interventions are pro-poor and have a substantial focus on the capacity building of farmers, producer groups and farm enterprises. Capacity building in terms of technical skills, group formation and operations, business development trainings, market orientation, and other hand-holding support is woven through all project components. In some cases, the same target groups will be beneficiaries under all components, and in other cases, their capacity building will be more focused and narrower depending on their needs and market potential.

A key focus of the project is on improving Bhutan's nutrition status. Similar to farmer groups' capacity building that is spread across all project components, a clear thread has been woven through the project for identified activities on nutrition with a focus on two key activity areas: i) diversifying the school meal plate and ii) improving awareness of food-based nutrition issues, both of which are integral to all project components. Four entry-points have been identified including: i) increasing the availability of diverse vegetables, fruits, and legumes; ii) improving access of farmers to secure markets and the access of school children to diverse produce; iii) ensuring the sustainability of these linkages by developing diverse locally and culturally adapted menus to coincide with the seasonal calendar; and iv) creating Behaviour Change Communication (BCC) materials including the use of ICT to induce demand and create value for nutrient-rich foods and improve cooking practices.

All project interventions will take gender into consideration and ensure women's equal participation in project activities, their representation in farmer groups and involvement in decision making. This project draws from the lessons learnt through previous projects and builds on the gains made through prior investments. The lists of project interventions / activities are as follows:

Increasing agriculture production

- Irrigation channel construction
- Micro irrigation schemes (drip, / sprinklers for vegetables, citrus and cardamom)
- Agriculture diversification
- Support disease-free seedlings / saplings
- Electric fencing (wildlife mitigation)

Strengthening farmers group and capacity building

- Create new/strengthen existing producers groups /cooperatives
- Organize 300 farmers groups
- Capacity building of water user associations
- Training of extension agents (on disease management, vermin- composting, conservation farming, and post-harvest value addition techniques including branding and marketing, organising and developing producers groups)
- Provide cooking training
- Capacity building of producers groups (for governance, commercial farm management, business skills, production planning, sustainable production and sustainable operational management)
- Capacity building and exposure for exporters including facilitation of knowledge / information exchange

Supporting market linkages

- Enhancing linkages between vegetable demand in schools and supply in local markets
- Support revision of school menu
- Exposure visits for successful home grown school feeding programs
- Conduct social marketing campaigns

Market accessibility and value chain development

- Nutrient management practices
- use of bio-fertilizers to improve soil fertility
- Green house technologies
- Provide small farm machineries (power tillers, mini threshers, reapers, ridgers, and weeders)
- Value chain development for high value crops for preservation and connecting to appropriate markets

Market infrastructure, value addition and ICT

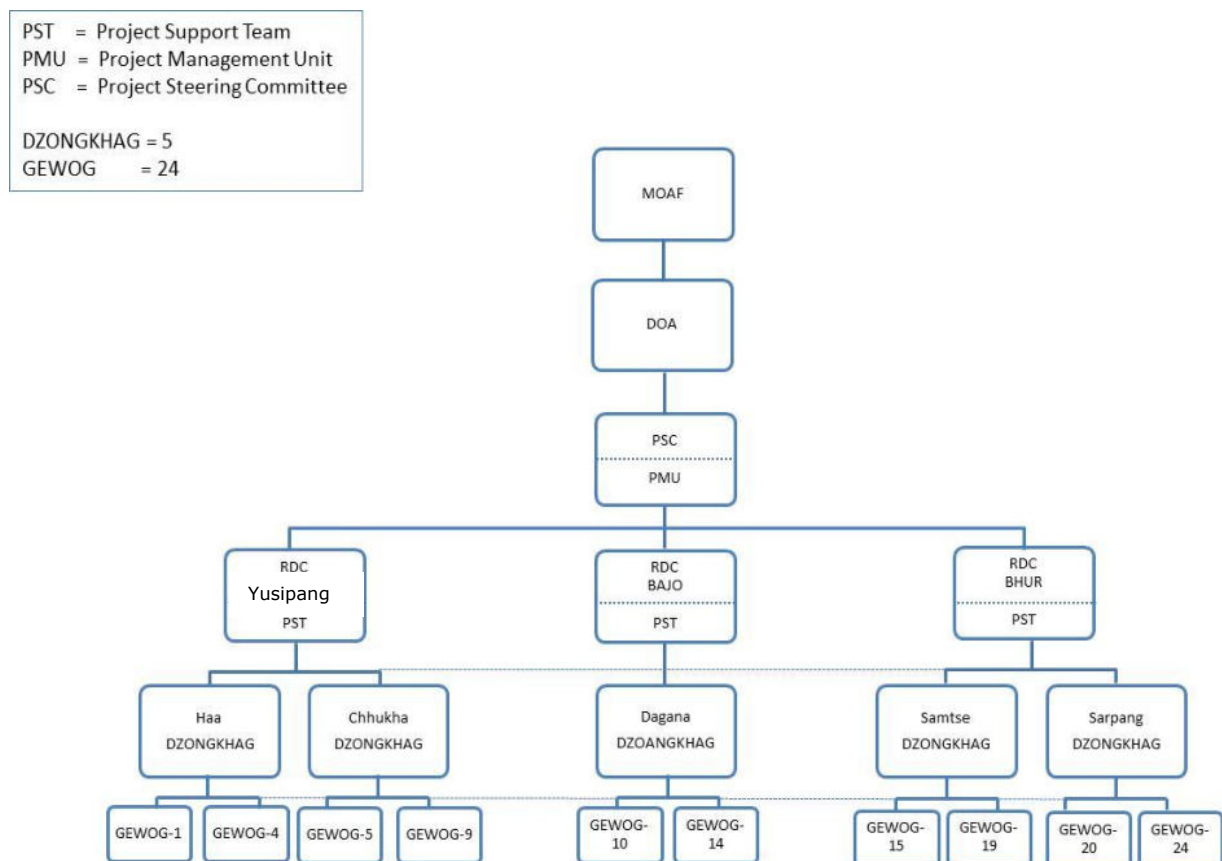
- Conduct behaviour change analysis (BCC)
- Support value addition (drying technologies, zero energy cooling chambers, and weighing facilities)
- Provide marketing infrastructures (post-harvest, storage and packaging)
- Organise production clusters for export led chain
- Piloting model farm shops
- Strengthen access to market information (ICT support)
- Business development innovative facility (support innovative technologies and business development)

Refer Annex 6 for details on project interventions by components and sub-components.

1.2 Institutional setup for FSAPP implementation

The FSAPP project is to be implemented by a Project Management Unit (PMU) established at the Head Quarters or the Department of Agriculture or the Policy and Planning Division of the Ministry of Agriculture and Forest. A Project Steering Committee (PSC) chaired by the Director General of the DoA will be established to guide the PMU in implementation of the project. The Agriculture Extension Officer at the beneficiary Geog will be focal person at the Geog level to implement the project under the supervision of the respective Dzongkhag Agriculture Officer. The PMU will designate or recruit an Environmental Focal Person to monitor and supervise the ESMF and the ESMP at respective sites.

Figure 1: Organogram of the FSAPP implementation institutional setup



1.3 Rationale for the Environment and Social Management Framework

The FSAPP is classified with the World Bank as a "Category B" project under OP/BP 4.01, with a partial assessment as the impacts are likely to be small-scale and site specific; and mitigation measures can be designed more readily. The overlay impacts of this project are expected to be positive. However, there are few

potential negative environment and social impacts from project activities. In order to apprehend the negative impacts and put in place appropriate mitigation measures for an overall positive impact of the project, adequate exercise of environmental and social impact studies on subproject activities and design of corresponding measures for avoidance, minimization and mitigation, is necessary.

The purpose of this environmental and social management framework (ESMF) is to guide the DoA and its subproject component beneficiary Dzongkhags and Geogs to undertake Environmental and Social Impact Assessment (ESIA) or Initial Environment and Social Examination (IESE), obtain Environmental Clearances (EC) and implement the Environment and Social Management Plan (ESMP) in the subproject activities for overall positive impact of the project. Specifically, the ESMF serves as a set of guidelines to be used for projects where precise nature, location and scale of new interventions are little known or unknown in advance. The main objective of the ESMF is to ensure that adverse environmental and social impacts are avoided or appropriately mitigated and compensated while acquiring the overall objectives of the project. The ESMF, as such, is developed based on the World Bank and the national environmental and social safeguard policies.

1.4 Review and Consultation for preparation of this ESMF

For the preparation of this ESMF, consultations were carried out with stakeholders that included government officials and the farmers from the project area. One of the objectives of the consultations was to review the experiences of implementing the ESMF for the earlier WB projects and to arrive at the nature of ESMF required for this project. These were done mainly through focus group discussions with the farmers and consultation with officials. The summary of consultations with Dzongkhag officials and the farmers for the formulation of this ESMF and for review of Decentralised Rural Development Project (DRDP) and Remote Rural Communities Development Project (RRCDP) experiences are included as Volume II of this EMSF.

2. ENVIRONMENTAL AND SOCIAL BASELINE IN THE PROJECT AREAS

2.1 Project Sites

This section provides insight into the project Dzongkhags (Dagana, Samtse, Sarpang, Haa and Chukha)¹. These five project Dzongkhags out of total 20 Dzongkhags in Bhutan are shown in the administrative map of Bhutan (figure 2).

Figure 2: Administrative Map of Bhutan (map not to scale)



Dagana Dzongkhag is situated in the south western part of the country with Sarpang Dzongkhag to the south, Tsirang to the east, Wangdue Phodrang to the north and Chhukha to the west. It has one Dungkhag namely Lhamoizingkha and fourteen Geogs namely Deorali, Dorona, Drujegang, Gesarling, Goshi, Kana, Khebisa, Lajab, Lhamoizingkha, Nichula, Trashiding, Tsendagang, Tsangkha and Tseza. It has an area of about 1723 square kilometers with elevation ranging from 600 meters to 3800 meters above the sea level.

Dagana Dzongkhag is one of the poorer Dzongkhag with high levels of poverty incidence, unemployment and low general literacy. Access to the Dzongkhag is through the Dagana-Tsirang highway which is often closed during the monsoons cutting-off the Dzongkhag from the rest of the country. Agriculture farming is the main source of income for majority of the population. The fertile land and suitable climatic conditions make Dagana one of the major producers of mandarin and cardamom in the country. Other crops and vegetables like broccoli, cauliflower, cabbage, potato, chillies, tomatoes and horticulture crops like banana, passion fruit, pear and avocado are also grown. The Dzongkhag also has potential for harvesting

¹11th Five Year Plans, GNH Commission, Royal Government of Bhutan

Non-Wood Forest Products (NWFP) such as Pipla, Thysolinia and Cinnamon. However, the NWFP potential is underutilized thereby not contributing to income of the households.

Favourable climatic conditions and fertile land provides the opportunity for the Dzongkhag to enhance agricultural (paddy, vegetables, fruits etc), livestock (dairy and meat products) and NWFP (Pipla, Thysolinia and Cinnamon) production. Dagana also has potential for tourism development.

The major challenge faced by the Dzongkhag is the high levels of poverty. Among the 20 Dzongkhags, Dagana has the third highest level of poverty, almost double that of the national average of 12 percent in 2012. The high levels of poverty is attributed to remoteness of the Dzongkhag and poor agricultural productivity due to human wildlife conflict, farm labour shortages and lack of adequate irrigation, storage and marketing facilities.

Samtse Dzongkhag is situated in the in south western foothills of the country. It is bordered by Chukha Dzongkhag in the east, Haa Dzongkhag in the north and Indian states of West Bengal and Sikkim in the south and west respectively. Samtse is at an elevation of 600-800m above sea-level and lies in the sub-tropical monsoon climate zone with good forest cover. There are two Dungkhags namely Dorokha and Trashichholing and fifteen Geogs namely Norgaygang, Pemaling, Sang Ngag Chhoeling, Norboogang, Denchukha, Dophuchen, Dungtoed, Namgyelchholing, Phuntshopelri, Samtse, Trashichholing, Tadhing, Tendruk, Ugyentse and Yoeseltse.

The poverty still remains high and was almost twice the national average of 12 percent in 2012. The high level of poverty is attributed to low levels of literacy in the Dzongkhag.

Samtse Dzongkhag with its warm climate and rich fertile land has high potential to increase cash crop production and also has opportunities for double cropping. The flat arable land is suitable for farm mechanization. Paddy, maize, wheat, buckwheat, barley and millet are some of the cereal crops grown in Samtse. Among the cash crop, cardamom, mandarin, areca nut, ginger and wide variety of fruits and vegetables are grown. The Dzongkhag also has rich forest resources particularly bamboo, cane and incense plants.

In terms of the challenges, increasing agriculture and livestock productivity is constrained by human wildlife conflict; farm labour shortages, lack of adequate irrigation facilities, and lack of storage and marketing facilities. A high level of illiteracy resulting in low quality of employment and high poverty rates is a major concern.

Sarpang Dzongkhag is situated in the south-central part of the country and shares its 200 kilometers southern border with the Indian state of Assam, to its east is Zhemgang Dzongkhag, to west lies Tsirang and to its north Trongsa Dzongkhag. Around three quarters of its land is under forest cover mostly consisting of the broad leaf subtropical evergreen trees. The Dzongkhag is located

in the subtropical climatic zone, extending from an elevation of 200 meters to 3,600 metres, from the Phibsoo Wildlife Sanctuary in the west to the Manas National Park in the east. The Dzongkhag is supported by 12 Geogs namely Gelephu, Samtenling, Sershong, Chuzagang, Umling, Tareything, Jigmecholing, Gakidling, Dekiling, Sengye, Chhuzergang and Shompangkha, and a Drungkhag and a Thromde in Gelephu.

Sarpang Dzongkhag's poverty incidence of 4.2 percent is below the national poverty incidence of 12 percent in 2012. Paddy, maize wheat and millet are some of the major crops grown in the Dzongkhag. Orange, areca nut, cardamom and ginger are the principal cash crops grown by the farmers.

Haa Dzongkhag is situated at an elevation ranging from 1000 to 5600 meters above sea level. The Dzongkhag is administratively divided into six *Geogs* namely Bji, Katsho, Eusu, Samar, Gakeyling and Sombaykha. The Dzongkhag is supported by one *Dungkhag* to cover the *Geogs* of Gakeyling and Sombaykha.

Haa being located at a very high altitude, the cultivatable agricultural land forms only around 2 percent of the total area of the Dzongkhag. Most of the area comprises of dry land and pasture land. The people of Haa depend on livestock and trade for their livelihood. Livestock rearing constitute an important economic activity, with a majority of the northern *Geogs* depending on livestock products such as butter, cheese and yak meat.

While the poverty incidence for the Dzongkhag is reported to be low as compared to the national average of 12 percent in 2012, there are pocket of settlements where poverty is high. The Dzongkhag also has potential to enhance agricultural and livestock production. Wheat is the main cereal crop grown in the Dzongkhag and other crops include barley and buckwheat. In the south cardamom and ginger constitutes the principal cash crops while in the north, potato is the main cash crop with apples and vegetables cultivated on a moderate scale. However, agricultural and livestock productivity is challenged by human wildlife conflict, shortage of farm labour and lack of storage and marketing facilities.

Chukha Dzongkhag is located in the south-western part of the country and shares its borders with the Dzongkhags of Dagana to the east, Samtse and Haa to the east, Paro and Thimphu to the north and the Indian states of West Bengal to the south. Due to its strategic location along the bordering towns of the states of West Bengal, it is the principal Dzongkhag that serves as the main entry and exit point for most commercial activities. The Dzongkhag is administratively supported by a *Dungkhag*, namely Phuentsholing, and eleven *Geogs*: Chapcha, Bjachho, Bongo, Getana, Geling, Dungna, Metakha, Lokchina, Darla, Sampheling and Phuentsholing. It has an area of approximately 1882.38 sq. km, with elevation ranging from 200 m to 3500 m above sea level. Out of its total land area, about 82.39 % is under forest cover and 9%, under cultivation.

People of Getana, Dungna, Metakha, Geling, Bongo and Lokchina are relatively poor as they live in inaccessible remote areas. These communities are geographically cut

off by rugged terrain. Conversely the people of Bjachho, Chapcha, Darla, and Phuentsholing besides farming have access to markets and other means of income. The majority of the people in the Dzongkhag depend on agriculture, livestock and horticulture for their livelihood. Their main crops include oranges, potatoes and cardamom. Livestock rearing is a major occupation and provides opportunities for processing and trading in dairy products such as butter, cheese and milk because of the availability of ready markets.

The summary of socio-economic status of the project Dzongkhags are reflected in table 1.

Table 1: Socio-economic status of the five Dzongkhags of the project area in 2012

Dzongkhag	Area (sq. kms.)	No. of Geogs/ Chiogs/ Households	Population	Agriculture area (acres)	Agriculture area (%)	Forest cover (%)
Chukha	1882.38	11 - 2870	84,203	9,241.10	4.92	85.77
Dagana	1389.00	14 43 -	25,070	7,536.70	4.38	87.06
Haa	1899.20	6 30 1770	13,330	2,780.9	1.49	65.35
Samtse	1309.10	15 76 13,027	60,100 (2005)	17,366.30	13.31	78.03
Sarpang	1655.00	12 61 7346	37,101	8,295.64	3.99	88.00

Source: Statistical Yearbook of Bhutan 2013, National Statistics Bureau (NSB), Thimphu.

The project is targeted to cover twenty four Geogs (blocks) in five Dzongkhags as reflected below in table 2.

Table 2: Proposed list of Geogs for focus of project activities

Dzongkhag	Proposed Geogs
Chukha	Bongo, Dugana, Getana, Metakha, Samphelling
Dagana	Drujeygang, Karna, Karmaling, LhamoiDzingkha, Nichula
Haa	Gakiling, Usue, Samar, Sangbaykha
Samtse	Dorpuchen, Norboogang, SangNgagCholing, Tading, Tendruk
Sarpang	Gakidling, Shompangkha, Dekiling, Samtenling, Tareythang

2.2 Use of fertiliser and pesticide and disposal of packaging materials

Use of agrochemicals as shown in Table 3 is minimal in Bhutan. Therefore it shows that organic farming is predominant in Bhutan. The project also does not support agrochemical usage in increase of agriculture productivity. Therefore, agrochemical impact on the society and the environment is not an issue.

Table 3: Chemical Fertilizers distribution (Kg/Ltr.) between 2004-2011

Period	Insect-icides	Fungi-cide	Rodenti-cide	Herbi-cide	Acaric-ide	Others (Non-toxic)	Total
2004	13.07	2.87	0.07	0.87	0.01	10.05	26.94
2005	2.55	2.52	0.04	0.81	0	0.18	6.1
2006	3.04	2.41	0.04	1.02	0.02	10.73	17.26
2007	4.13	4.10	0.04	1.85	0.01	10.04	20.17
2008	3.91	2.70	0.05	2.7	0	0	9.36
2009	3.87	0	0.05	2.7	0	0	6.62
2010	4.90	3.4	0.05	3	0	0	11.35
2011	7.30	5.7	0.08	7.56	0	0	20.64
Total	42.77	23.7	0.42	20.51	0.04	31	118.44

Source: Statistical Yearbook of Bhutan 2013

Farmers' awareness on occupational health and application of personal protection when being in close contact with pesticide has been improving with more and more awareness programmes from the Department of Agriculture on support from the donor agencies. Awareness on the value of organic farming is also visible which encourages farmers to stick to consumption of traditional organic fertilizers. As such, records of improper disposal of agrochemical packaging materials causing environmental (soil, water and air) pollution is not visible in Bhutan. The DoA, MoAF has been always attentive in educating and creating awareness on safe disposal of packaging materials. Therefore, farmers are strictly guided to safe collection and treatment of packaging materials of fertilizers and pesticides.

2.3 Natural resources usage for farming

Water, leaf-litter for manure, farming tools starting from Ploughs and Bullock Yoke are all extracted from the nearby forests. Livestock grazing is open in the forest. Perennial streams are tapped in natural drainage systems for irrigation. Mostly in the southern Dzongkhags, rain-water is also harvested for irrigation. Water pumping for irrigation is not so significant. Therefore, natural resources use for farming is natural and traditional.

Dry leaf in winter is collected for manure-making. Farmers usually have individual household registered or leased leaf litter collection areas Sokshing. Farmers also collect dry leaf from other forests when the households do not own a Sokshing. While registered/leased area is free for leaf collection, any tree felling requires permit from the Department of Forest and Park Services. The culture of manure-

making from leaf-litters mixed with animal Dung is the main reason for not using high quantity chemical fertilizers.

2.4 Reuse of rice by-products

Rice straw burning happens in small scales and only in some parts of the country. Due to high fire risk, open burning of bushes and straw in the fields is highly discouraged by the national policies and laws. The Rice straw normally is consumed as feedstock for livestock in winter. In southern Dzongkhags like Chukha, Samtse and Sarpang, straws are also used for organic manure-making and mushroom farming. Rice husk can be composted for use as fertilizer or soil conditioner. The use of Rice husk for compost with leaf-littering is common again in the southern Dzongkhags. This FSAPP should further promote this mushroom farming and composting options to enhance agriculture productivity and for agriculture waste management.

2.5 Irrigation

As stated above, perennial streams are usually tapped in natural drainage systems for irrigation. Soil erosion/land slide, falling tree and boulders on the steep hill slopes are a common challenge for irrigation schemes especially in monsoon. The irrigation water tapping points are either washed away or eroded by swollen monsoon water. The long irrigation canals constructed on the fragile slopes breakdown or often gets eroded by landslides or fallen trees and boulders. It is also common the water in the canals get blocked with foreign materials to overflow and instigate soil erosion down the slope including sliding away of the canal infrastructure itself. These are common irrigation management challenges besides the risk of drying away of water resources due to deforestation, climate change or other unknown factors.

There are also rainfall dependent irrigation systems in many parts of the country, especially southern Dzongkhags. Samtse, Dagana and Sarpang could have such irrigation systems dependent on monsoon patterns and vulnerable to climate change effects. Otherwise, although hydropower development is a major developmental activity in Bhutan, as of now, there is no record of irrigation water conflict with hydropower projects. Henceforth, the Water Act 2011 is very clear in prioritizing water resources usage. Water for energy is only after water for drinking and sanitation, and water for Agriculture.

Groundwater extraction is not a prominent practice in Bhutan and this project does not have provisions to support ground water extraction activities. Overwatering and improper use of agrochemicals could affect surface ground water quality as overflow surface runoff carrying agricultural chemical residues to water sources, while part of redundant water also infiltrate into ground water bringing pollutants to shallow groundwater and artisan aquifers. However, overwatering is not possible and improper use of agrochemicals is strictly regulated in Bhutan.

2.6 Others

Broadly the population in Bhutan is divided into eastern (*Shar chop*), western (*Ngalop*) and southern (*Lhotshampa*), where Lhotshampas are Nepali origin and religion predominantly is Hindu. Atmospherically, the population is divided into; southern foothills, inner himalayas and highlanders. Southern foothills are more prominent in cash crop farming, horticulture and Rice cultivation. Inner Himalayas practice both varieties of cereal agriculture and cattle rearing. Potato and apple are the common cash crops in the inner himalayas. Highlanders predominantly depend on livestock (*Yak*) herding. Since 2008, the highlanders are allowed to harvest the Cordyseps grown naturally in the highland mountain areas for their cash crop. This project area does not cover the highlanders because the Geogs identified under Haa Dzongkhag are also in the sub-tropical zone.

By culture, each village community has their unique traditions to celebrate, mostly in the winter season after the harvests are over. Very remote place cultures like Doyaps in the Taba-Damti area of Amochhu valley, scattered between Phuentsholing Dungkhag (sub-district), Chukha Dzongkhag and Dorokha Dungkhag, Samtse Dzongkhag are given closer attention by the government for cultural conservation.

All agriculture crops and horticulture in Bhutan are vulnerable to windstorm, hailstorm, landslides, flash floods, floods and drought. Irrigation channels on the fragile hill slopes are always prone to soil erosions and landslides. Loss of soil fertility also is common in a mountain terrain fields. Heat-stress and malaria are potential issues to be considered in farming, water and work time management in the lower regions of Chukha, and Sarpang and Samtse Dzongkhags.

Concerns of negative environmental impacts such as dusts, smoke, noise and workers intervention from the emerging industrial and mining/quarry developments could be an issue in Sarpang, more so in Chukha and Samtse Dzongkhags. Most Industrial and mining activities are concentrated in Chukha and Samtse Dzongkhags.

Traditional agriculture practices increasingly are replaced with use of modern techniques and machineries. Power-tillers and Tractors are taking over bullock-draught culture and more and more rice mills, oil mills, flour mills, etc. coming into the villages. Mainly noise pollution could be an issue. Oil and lubricants spill over for soil and water pollution could arise to be an issue with increase in Power-tillers and Tractors. The diesel run generators for mills are increasingly replaced by electric motors for good.

3. ENVIRONMENTAL AND SOCIAL POLICIES AND REGULATIONS

Bhutan has its national policy and legislations on environment and social protections. The Environment Assessment Act (EAA), 2000 and the Regulation for the Environmental Clearance of Projects and Regulation on Strategic Environmental Assessment, 2002, usually referred to as "EC Regulations" are the most relevant policy documents to refer for environmental and social impact assessment and development of the ESMF for FSAPP. The other national policies relevant to refer in FSAPP are the Water Act, 2011 and the Forest and Nature Conservation Act (FNCA), 1995. The EAA, 2000, EC Regulation, 2002 are accessible on the National Environment Commission (NEC) website: www.nec.gov.bt and the FNCA, 1995 is accessible on Ministry of Agriculture and Forests (MoAF) website: www.moaf.gov.bt.

The World Bank has environmental and social safeguard policies accessible from the bank's website: www.worldbank.org. The Bank's operational policy OP/BP 4.01: Environment Assessment in particular is applicable to FSAPP in Bhutan. The other applicable policies for the FSAPP are the Forest, OP 4.36, Involuntary Resettlement, OP 4.12 and Pest Management, OP 4.09.

3.1 World Bank Safeguard Policies

Environmental Assessment, OP/BP 4.01, the Environmental Assessment is one of the 10 environmental, social, and legal Safeguard Policies of the World Bank. Environmental Assessment is used in the World Bank to identify, avoid, and mitigate the potential negative environmental impacts associated with Bank lending operations. In World Bank operations, the purpose of Environmental Assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted. The policy is applied to all elements of World Bank-financed operations. The policy requires that environmental assessments must be carried out at early stage of project preparation so as safeguard tools (such as Environmental and Social Management Framework, Environmental Impacts Assessment, Environmental Management Plan) can be determined and prepared in a timely manner to avoid or address potential negative environmental impacts. The Bank would not finance projects that, in the Bank's opinion, would cause adverse impacts to the environment in biologically important areas.

Forest, OP 4.36, Project will not implement any activities inside the forest or protected forests or no forestry activities are envisaged in the project. However, some activities such as irrigation schemes, market infrastructure development may involve some clearing of vegetation. Hence the policy is triggered. The ESMF will address any issues related to forest.

Pest Management, OP 4.09, The project is expected to have minor use of nationally approved pesticides and there are no significant issues of pest management and pesticide use to be addressed in the sub-projects. The procurement and distribution of pesticides in Bhutan is well controlled through a

centralized system and there will be no procurement of pesticides classified as Class Ia, Ib and II by WHO. However, in anticipation of higher yields, farmers could expand the use of chemical fertilizers, and pesticides more than what is recommended. Since the proposed FSAPP is expected to promote sustainable production practices as a part of project design, the above issues are not considered to be critical in the project. Thus, as a matter of precaution to address any potential and unforeseen issues of pest and pesticide management, OP 4.09 has been triggered. The ESMF will provide guidelines on safe use of agrochemicals and promotion of green agriculture technologies such as: (i) Integrated Pest Management (IPM); (ii) balanced fertilizer use to reduce the dependence on fertilizers; and (iii) composting.

Involuntary Resettlement, OP 4.12. The policy applies to all World Bank financed operations. It covers all social impacts as a result of land taking. It emphasizes on minimizing adverse impacts and, if unavoidable, a develop-oriented approach for restoration and improvement of livelihood for those affected. It sets out the objective, principles, planning procedures as well as monitoring requirements for planning of such efforts. The policy requires participation of the affected communities in such planning and implementation process, compensation at replacement cost as well as restoration of livelihoods for those affected.

Indigenous Peoples, OP 4.10. This policy applies to all World Bank financed operations and is triggered where indigenous peoples as defined in the policy are impacted by the project, either positively and negatively. It requires that the dignity, human rights, economy and cultures of indigenous peoples should be fully respected, that a process of free, prior and informed consultation should be undertaken with the indigenous people in the project areas regarding any projects for World Bank financing and that Bank-financed projects should also be designed to ensure that the indigenous peoples receive social and economic benefits that are culturally appropriate.

3.2 National policy and legislations

The most relevant national policy to this FSAPP are: Environment Assessment Act (EAA), 2000; Environmental Clearance (EC) Regulations, 2002; Water Act, 2011 and the Forest and Nature Conservation Act (FNCA), 1995.

3.1.1 Environment Assessment Act, 2000:

Section 7 - The Royal Government shall ensure that environmental concerns are fully taken into account when formulating, renewing, modifying and implementing any policy, plan or program, as per regulations that may be adopted according to Article 32.2.

Section 8 - The issuance of an environment clearance shall be prerequisite to the issuance of development consent.

Section 9 - A project of the Royal Government that does not require development consent may commence only after receiving an environmental clearance from the NEC Secretariat or the designated Competent Authority.

3.1.2 Environmental Clearance (EC) Regulation, 2002

Section 17 – When the location of a proposed project falls within one or more of the following sensitive areas, the Competent Authority shall require the applicant to undertake detailed Environment Assessment and acquire the official clearance of concerned agencies before submitting the application to the secretariat;

17.1 Within the boundary of a protected area,

17.2 Within 50 meters distance of a public park, human dwelling, hospital, school, or a sacred landscape, or site; and

17.3 Any other sensitive area designated by the Secretariat.

Section 18 – Section 17 shall also apply to projects listed in Annex 2.

Section 29 - If the Secretariat or Competent Authority requires the applicant to conduct the environmental assessment, the following provisions shall apply;

29.1 – Terms of Reference: the applicant shall draw up terms of reference for the report,

29.2 – Preparation and submission of the EA report,

29.3 – Public Notice of availability of the EA report, and

29.4 – Time limit for review and response to EA report shall be as specified in Annex 1.

3.1.3 Environmental Clearance (EC)

The Environment Assessment Act, 2000 and its EC Regulations, 2002 consider fully the environmental and social concerns. On screening for need of an EC for any developmental project, a detailed environment impact assessment (EIA), also referred to as Environment Assessment (EA), or an Initial Environment Examination (IEE) is mandatory, if an EC is required.

For FSAPP, the predictable potential environmental and social impact concerns are from the four irrigation subprojects. A detailed EIA or an IEE for each irrigation subproject activity subjected to screening and scoping outcomes will be necessary. For other project interventions like marketing infrastructures and micro-irrigation schemes, it is difficult to determine at this stage the need for an EC. Upon confirming the location, size and type of infrastructure once the project has been approved through a preliminary baseline study, the need for EC can be ascertained. Baseline information on the issues like; need for land acquisition, location of the activity, size and nature of infrastructure, type of raw materials to be consumed in the infrastructure development, nature of stakeholders involvement, and so on, will help screen the subproject activity for determining the need of an EIA, IEE or an EC.

3.1.4 Social Assessment

The Environment Assessment Act, 2000 and its EC Regulations, 2002 consider fully the social concerns although it is not explicitly spelled out. All the social issues are considered while obtaining stakeholder clearances for obtaining environment clearance. EAA, 2000, Section 16 specifically states, "the applicant of the project shall ensure that the concerned people and organizations are informed and consulted before submission of the environment assessment documents to the Competent Authority". Social issues of land acquisition, vulnerable groups, gender, and grievances are discussed and settled during public consultations undertaken prior to EIA or IEE. Possibilities for acquisition of government land can be considered in consultation with the Department of Forest and Park Services (DoFPS), MoAF and by obtaining a Forestry Clearance. Decision on acquisition of private land is determined during public consultation, especially with affected people and a "No Objection Certificate/Clearance (NOC)" is obtained.

Other social issues like inclusiveness of vulnerable families and individuals, gender and grievances are also discussed and agreements made in the public consultation of the affected societies. It is mandatory for public consultations minutes/agreements to be endorsed by the local government leaders; Chiog Tshogpa (elected village community representative) to the Geog Tshogdu (Geog Legislative Assembly), Gup or Mangmi (elected leaders) of the Geog Administration and representatives to the Dzongkhag Tshogdu (District Legislative Assembly) and finally by the Dzongkhag Administration. Such clearances/agreements are mandatory prerequisite to EIA/IEE and issuance of the EC. The EIA/IEE in Bhutanese context therefore is an Environment and Social Impact Assessment (ESIA) or Initial Environmental and Social Examination (IESE).

3.1.5 The Water Act, 2011

Water use priorities

Section 38 (a) - In dealing with applications under preceding sections, the Commission shall observe the following order of priorities:

- 1) water for drinking and sanitation;
- 2) water for agriculture;
- 3) water for energy;
- 4) water for industry;
- 5) water for tourism and recreation; and
- 6) water for other uses.

Section 39 - Allocation of water shall be done based on the principle that water is a resource owned by the State and that every citizen has an equal right to these resources.

Section 40 - Customary practices of water allocation may continue, provided that these are fair and equitable and do not result in denial of water to any individual or community, including downstream and upstream needs, and are acknowledged by a Water Users' Association or other local beneficiaries' groups in the area.

3.1.6 Forest and Nature Conservation Act, 1995

Extraction of any natural resources from the Government Reserve Forestland (GRF) is permissible only on obtaining permit from the Department of Forest and Park Services. The four irrigation infrastructures in particular will be in GRF.

3.3 Interim Guideline on Lease of GRF Land for Commercial Agriculture

a. The Royal Government of Bhutan (RGoB) shall encourage developing a long-term sustainable lease venture with an initial term of 30 years, which is subject to renewal.

b. Government shall have the exclusive right to take over the “land” in the interest of the nation. However, taking over of the land shall be done only under unavoidable circumstances. Compensation modalities for such acquisition shall be assessed by competent authority, such as Property Assessment and Valuation Authority (PAVA).

Table 4: Abstract of relevant national policies to address potential project impacts

Potential impacts	National Policy & legislation
Space occupation by infrastructure especially irrigation canals.	EAA, 2000, EC Regulation, 2002, and FNCA, 1995.
Resources use conflict especially water and land.	EAA, 2000, EC Regulation, 2002, Water Act 2011, FNCA, 1995.
Soil erosion/landslide.	EAA, 2000, EC Regulation, 2002
Extraction (excessive) of water and forest resources.	EAA, 2000, EC Regulation, 2002, Water Act, 2011 and FNCA, 1995.
Pollution (Land, Water & Air).	NEPA, EA Act, WA, and Waste Prevention and Management Act (WPMA).
Culture conflict between local residents and project workers.	The Constitution, EAA, 2000, EC Regulation, 2002,
Disturbance to wildlife habitat, migration, breeding and pollination.	EAA, 2000, EC Regulation, 2002, and FNCA, 1995.
Human and environment health degradation from agrochemicals	EAA, 2000, EC Regulation, 2002

4. THE ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK

The Environment and Social Management Framework (ESMF) has been developed for mainstreaming environmental and social concerns in the project. It lays out the following principles for the overall social and environmental management of sub-projects: (i) activities with severe negative environmental and/or social impacts will not be supported, and (ii) all eligible subprojects will be screened to identify and assess the associated environmental and social impacts.

4.1 Environmental and Social Management Procedure

The FSAPP will ensure the following procedures for environmental and social sustainability of sub-project interventions:

- Step 1: Review sub-project interventions
- Step 2: Review negative list of attributes
- Step 3: Determine EA categorization of interventions
- Step 4: Conduct environmental and social screening and develop Environmental and Social Code of Practices
- Step 5: Conduct IEE and prepare Environmental and Social Management Plan (ESMP), Gender and Vulnerable Communities Development Plan (GVCDP), and Land Acquisition and Rehabilitation Plan (LARP).
- Step 6: Implement ESMP, GVDP and LARP
- Step 7: Monitor the implementation of ESMP, GVDP, LARP

4.1.1 Review of interventions and negative list of attributes

The first step of environmental and social management procedure of FSAPP is to review the sub-project interventions. A tentative list of interventions are provided in Annex 6. The PMU needs to make sure that it does not fund any sub-projects that are:

- 1) Planned to be implemented within the boundary of a protected area (Wildlife Sanctuaries and National Parks);
- 2) Involves involuntary resettlement;
- 3) Within 50 meters distance of a public park, human dwelling, hospital, school, or a sacred landscape, or site
- 4) Requires clearing of forest or cutting of large mature trees;
- 5) Involves Genetically Modified Organisms (GMOs) that have not been approved by an independent panel of internationally recognized experts, and cleared by the World Bank and the RGoB;
- 6) Involves the use of pesticides under WHO Class Ia, Ib, and Class II.
- 7) Any other sensitive area designated by the Secretariat.

4.1.2 EA categorization of the interventions

Although, the specific design and location of sub-projects are yet to be identified, a tentative list of activities including soft and hard interventions under the three components has been identified. It is also expected that some of the soft interventions will not have any negative impacts but nevertheless present opportunities for enhancing social benefits. However, as already mentioned earlier, the sub-projects are expected to be small in size and local in nature inducing minor to moderate impacts. In order to prevent any adverse impacts, simplify the process of impact identification and mitigation, the FSAPP will follow the following process and categorize the activities in the following manner:

- **Category 1 (EA not required):** Some of the FSAPP interventions for agricultural productivity promotion are categorically excluded from requirements for an environmental assessment (EA). These are activities (e.g., trainings, capacity building activities) do not lead to any adverse environmental impacts but instead provide positive environmental and social benefits. Column 1 of Table 5 below includes examples of project activities that can be approved without environmental and social screening. These interventions do not require an Environmental Clearance from the Competent Authority.
- **Category 2 (Activities Requiring ESCoPs):** Subprojects that may have some minor impacts, not known yet, are grouped under category 2. Activities marked under Environmental and Social Code of Practices (ESCoPs) may or may not have environment and social impacts but are possible to be implemented by referring to available ECOPs. Since the environmental impacts of projects under this category are not fully known, but assumed to have minor impacts, an Environmental and Social Screening (ESS) has been suggested to be carried out at the planning stage (Refer to Annex 1). An ESCoP is to be developed and implemented for this category of interventions. A list of ESCoPs for Category 2 interventions has been provided in Annex2.
- **Category 3 (Activities Requiring IESE).** Sub-project activities that will have some minor to moderate impacts on the environment are grouped into category 3 and will require an Initial Environmental and Social Examination (IESE). Activities marked under this group are more likely to be activities requiring an EC. Under the FSAPP, it is expected that irrigation sub-projects will primarily require an IESE to obtain an EC from the Competent Authority. The main objective of this exercise is to collect basic information about the sub-project as well as potential environmental impacts to be generated by the sub-projects during the sub-project preparation stage (See Annex 3 for IESE format).

Table 5: Screening categorization of the project interventions

Category 1 (Excluded from EA Requirement)	Category 2 (Environmental Code of Practices -ECOPs)	Category 3 (Environmental Screening)
Increasing agriculture production		
		Support to irrigation channel construction
	Micro irrigation schemes (drip, sprinklers)	
	Agriculture diversification	
Support disease free seedlings / saplings		
	Electric fencing (wildlife mitigation)	
Strengthening farmers group and capacity building		
Strengthen producers groups / cooperatives		
Organizing farmers groups		
Capacity building of water user associations		
Training of extension agents		
Capacity building of producers groups		
Capacity building and exposure for exporters including facilitation of knowledge / information exchange		
Supporting market linkages		
Enhancing linkages between vegetable demand in schools and supply in local markets		
Support revision of school menu		
Exposure visits to successful home grown school feeding programs		
Conduct social marketing campaigns		
Market accessibility and value chain development		
Nutrient management practices		
	use of bio-fertilizers to improve soil fertility	
	Green house technologies	
	Provide small farm machineries (power tillers, mini threshers, reapers, ridgers, and weeders)	
	Value chain development for high value crops like preservation and connecting to appropriate markets	

Category 1 (Excluded from EA Requirement)	Category 2 (Environmental Code of Practices -ECOPs)	Category 3 (Environmental Screening)
Market infrastructure, value addition and ICT		
Conduct behaviour change analysis		
	Support value addition (drying technologies, zero energy cooling chambers, and weighing facilities)	
	Post-harvest, storage and packaging)	
Organise production clusters for export led chain		
	Piloting model farm shops	
ICT support		
Business development innovative facility		
Do not require an EA	Conduct ESS and Develop ECoPs (Annex 1 & 2)	Conduct IESE and develop ESMP (Annex 3)

The IESE is to be filled by the Environment and Social Focal Person (ESFP) who will be responsible for developing an Environment and Social Management Plan (ESMP). The ESMP along with the IESE will be attached to the sub-project proposals. During the implementation stage, Dzongkhags' Environmental Officer and ESFPs will routinely carry out compliance monitoring of the ESMPs.

Further, the said interventions in these different categories could have social impacts such as benefit disparity. Therefore, caution need to be taken to ensure inclusiveness of all the stakeholders irrespective of their influential status.

4.1.3 Anticipated issues, impacts and Suggested Mitigation Measures

The environmental and social issues, impacts and risks discussed here is purely from the perspectives of those potentially derived from project interventions, particularly physical investments like irrigation and water management and the marketing infrastructure.

As mentioned earlier, complex and environmental and social impact management with heavy cost implications are not foreseen under the project. Each subproject intervention will have its own minor and specific environmental and social impacts. However, nothing is foreseen to be significant enough to alarm and complicate ESMP management. Project sub-component 1A, irrigation and water management will require environment clearance. For other interventions, the requirement for EC can be determined from screening of the activity with a set of very preliminary information. However, it is quite likely that many of these activities will not require EC. Interventions can be implemented either with Dzongkhag/Geog administrative

approvals or clearances for the Right of Way (RoW) from the Department of Roads (DoR) and other stakeholder agencies.

The environmental and social issues, impacts and risks with irrigation interventions and potentially with the marketing infrastructures include; water use conflict, depriving environmental flow in the natural drain, instigating soil erosion/landslide, water resources drying up, removal and disturbance of trees and other forest resources, disturbance to biodiversity habit and migration path, etc. Irrigation infrastructure development could also involve land acquisition, equity and equality issues in water distribution.

Land acquisition

Land space needed for this project primarily is for the irrigation subprojects and potentially for the marketing infrastructures. Land occupation can be on two types of land: state forest land/government reserved forest (GRF) and private registered land. The government land occupation or usage for public purpose is permitted when the Forestry Clearance is issued by the Department of Forest and Park Services on assessing the impacts in accordance to the provisions of the Forest and Nature Conservation Act 1995 and its Regulations.

For privately registered land, acquisition is possible in accordance to the Land Act 2007, Chapter 7 either through land substitution or cash payment or both as compensation. In the rural communities, it is also possible to make internal arrangements or agreements to voluntarily donate private land for community benefit. All such social agreements need to be documented and recorded for submission to the Competent Authority as part of the public consultation outcome while obtaining environment clearance for any subproject activities.

Additionally, voluntary land contribution for rural community infrastructure, such as farm roads and irrigation canals, is a common and long established practice in Bhutan. World Bank financed projects, completed and ongoing, have followed the same practice. Implementation experiences so far indicate that this practice is generally accepted and practiced smoothly. It is expected that FSAPP, with its focus and support to community infrastructures, will continue to follow the same practice for its land needs. However, the following criteria and steps will be applied to any land contribution under FSAPP:

- The impacts of land contribution should be marginal (meaning that loss of productive assets should be no more than 25% of the total owned by the volunteer. Impacts do not result in displacement of households or cause severe loss of a household's incomes and livelihoods.
- Households making voluntary donations must be direct beneficiaries of the project
- Land donated should be free from any dispute over ownership, or any other encumbrances.
- Consultations with the donating households should be conducted in a free and transparent manner.

- An agreement in writing will be required for all land donation transactions between the project owner and the landowner;
- Transaction of the donation process will have to be properly documented;
- Assets that remain in the hands of volunteers should not be rendered economically unviable.
- People donating lands to the sub-project schemes should be informed of the procedures and entitlements laid out in the entitlement policy framework (See Table 6).

In cases where land is to be acquired, a Land Acquisition and Rehabilitation Plan (LARP) will have to be prepared to guide sub-project planning and implementation to deal the issue of land taking and possible impacts on structures as well as other possible damages, such as tree or crop losses. The LARP lays out the objective, principles to be followed, planning steps and possible approaches in addressing such impacts under this project.

The objective of the LARP is to assist the affected households losing properties to the project to restore and improve their livelihoods. To achieve this objective, the following principles will be followed:

- Minimize adverse impacts as much as possible, such as land taking and human displacement;
- Plan and implement necessary mitigation measures to address livelihood impacts as a result of land-taking
- Compensation will be paid at replacement cost and lack of title does not bar affected households from resettlement benefits;
- Consultations with and participation of the affected people should be mainstreamed in the planning and implementation process;
- Give special attention and adequate measures to assist the vulnerable households;
- Follow the prescribed planning procedures and criteria to make sure that land donation is truly voluntary without any use of pressure or influence;
- Put in place grievance and monitoring procedures.

Accordingly, an entitlement policy that is in line with the Land Act of Bhutan 2007 and World Bank OP 4.12 that covers direct livelihood impacts as a result of land acquisition, will be prepared as part of the LARP. All population thus affected and recorded in the impact inventory are eligible for and entitled to compensation and/or livelihood assistance. This is regardless of their legal status, titled or non-titled to the lands they are cultivating or occupying. Therefore the affected population could include, but not limited to, property owners, people occupying land in violation of the laws of RGoB, tenants with tenancy agreements, written or unwritten. The matrix below outlines generic resettlement entitlements. This matrix is developed on the basis of relevant government and World Bank policies as well as anticipated impacts under the proposed programs. It is expected that the project land needs will be marginal and are expected to be obtained through voluntary donation by individual households or communities, as practiced in earlier World Bank projects. However, in the unexpected cases where land donation cannot be agreed upon and acquisition is required, the following provisions of compensation and assistance will apply.

Table 6: Entitlement Policy Matrix

Type of Impact	Entitlement Unit	Entitlements
Loss of private lands	Affected HHs having ownership certificate issued by the RGoB	<ul style="list-style-type: none"> • Substitute lost lands or cash compensation as per the Land Act of Bhutan 2007. • Resettlement allowance in cash equivalent to the difference between compensation as per the Land Act of Bhutan 2007 and full replacement value as per current values in the same vicinity, plus value of all land transaction fees and charges. • Allotment of replacement land for families who become landless after acquisition as per provisions of the Land Act of Bhutan 2007
	Affected Vulnerable HHs	<ul style="list-style-type: none"> • Additional assistance to be identified most vulnerable groups to restore livelihoods. • Preferential treatment in employment in project activities • Skill training and income generation support • Priority in Poverty reduction/social development programs
Loss of residential structures	Affected person/families	<ul style="list-style-type: none"> • Cash compensation in line with Property Assessment and Valuation Agency (PAVA) Rates • To ensure compensation at replacement value, rehabilitation assistance in cash equivalent to cover depreciation over and above compensation determined on the basis of PAVA rates.
Loss of cash crops	Affected HHs	<ul style="list-style-type: none"> • Compensation for cash crops and trees calculated as per the Land Act of Bhutan 2007. 2009 (revised rates), including non-title holders shall be as per PAVA rates.
Loss of income	Affected person/Families	<ul style="list-style-type: none"> • Rehabilitation assistance for lost or diminished livelihoods. • Preferential treatment¹ in employment in project activities • Skill training and income generation support • Priority consideration in poverty reduction/social development programs • In the case of landless families who suffer partial or total loss of livelihood, measures need to be taken to restore their livelihood.
Loss of Community Resources	Affected institution/community	<ul style="list-style-type: none"> • Compensation for re-establishing or re-constructing lost community resources such as religious and cultural structures or providing alternatives in consultation with affected communities.
Temporary	Affected	<ul style="list-style-type: none"> • Cash compensation/transition allowance

losses	person/families	
Loss due to voluntary ² land donation	Donor HHS	<ul style="list-style-type: none"> • Preferential employment in sub-project construction work • Priority consideration in project assistance programs

Water Pollution, Water User Conflict and Use of Agrochemicals

Water is a scarce resource. As a result, in a fragile mountain ecosystem, water resources management is often challenging. Multiple water users exist for one perennial stream or even for spring waters and seasonal ponds. Assessment of different water users and those with prior mutual agreements in distribution or share of the water source is therefore essential to avoid post investment conflicts. Water for agriculture purpose is second in priority following the need of water for drinking and sanitation according to the Water Act, 2011.

Disparity in water distribution between the haves and have-nots and between the influential/vocal and the voiceless is likely if prior public consultations do not address the issue and/or have written agreements. The tendency of land holders and vocal figures to dominate the others is particularly high in the remote rural societies. The ESIA must assess this common social drawback and include comprehensively the needs or concerns of the vulnerable groups in the ESMP and hold the DoA/PMU and the local governments (Dzongkhag/Geog) responsible to implement the equity and equality measures outlined in the ESMP.

FSAPP does not support activities that agrochemical-related interventions. Therefore, water pollution with project supported agrochemicals is not an issue. However, in the process of undertaking ESIA/IESE, assessment of agrochemical consumption in the locality, especially the water source catchment areas and putting in place preventive measures is important. Agrochemical not only affect the environment but also has the potential to create human health hazards. As such, if there are any sources of water pollution, it must be immediately brought to the notice of the polluter or relevant authority to undertake immediate mitigation measures. Water Act 2011 has 'polluter pays principles' to guide in making necessary investments to mitigate the prevailing pollutions.

The FSAPP will not finance procurement and distribution of pesticides. In fact, the project in increasing agriculture productivity and nutrition security will discourage the use of agrochemicals but promote bio-fertilizers. The "Brand Bhutan Policy", further is stringent on promoting organic farm produces.

² Voluntary donation is accepted only if AP: (i) is subproject beneficiary and is fully consulted and informed about rights; (ii) doesn't fall below poverty line after land donation; (iii) donating up to 25% land holding; and (iv) freely willing to donate (with an agreement, including a "no coercion" verified by a third party) the remaining land should not be less than minimum size of plot or land as defined by Land Act of Bhutan 2007. No donation in case of impact on structure unless the house owner has more than none house in the same village.

The use of agrochemical as such is very minimal in Bhutan. The earlier records of fertilizers/pesticides consumption are evidential as presented in Table 3 in earlier section.

If necessary to manage agrochemicals, the Waste Prevention and Management Act 2009 of Bhutan in Section 22 (d) designates the Ministry of Agriculture as the implementing agency for ensuring waste prevention and management with respect to agriculture sector, and the Water Act 2011 Section 55 (c) states, the NEC may prescribe limitations to be observed within a water management area, iii) on application or storage of any chemicals, including pesticides or fertilizers. A list of permissible agrochemicals in Bhutan has been provided in Annex 5.

Promotion of green agriculture technologies(Bio-fertilizer& Compost)

Bio-fertilizers produced help in reducing the dependence on chemical fertilizers. Bhutanese traditionally collect leaf litters from the forest and retain hay for producing manure by mixing with cattle dung. Individual households register areas (Sokshing) for collection of leaf litters. The Land Act 2007 Chapter 11 specifically makes references relating to availing Sokshing plots.

Besides leaf litters, agriculture residuals, kitchen wastes among others are also stored in dug pits in the periphery of the fields. Animal dung and water is fed into the pit to induce decay and fermentation of the leaves and wastes. The bio-manure thus produced is later spread into the fields prior to ploughing or immediately after ploughing to fertilize the soil.

Water Resources and Minimum Environmental Flows

Mountain water resources mainly dependent on seasonal precipitations and the conditions of the catchment area requires ESIA/IESE to predict stability of the source to avoid mishaps of water source drying up in a short span of the project investment. A water resource drying up is notably perturbed or accelerated by climate change and deforestation in the catchment areas.

Water Act, 2011 authorizes NEC to set the minimum environmental flow of water resources and the Commission currently has set to maintain minimum 30% environmental flow in the natural water course. This is applicable to all developmental projects including hydroelectric plants and irrigation. Hence, consideration of 30% minimum flow in the natural drain has to be secured besides ensuring equal distribution of the water source to all the rightful users/consumers.

Soil erosion/landslide

Soil erosion/landslides in young Himalayas is common, natural and quite frequent. Soil erosion often results also from manmade interventions, especially irrigation channels that are very prone to soil erosions. Whether the soil erosions are instigated by the monsoon, loose hill slopes and other foreign interventions, they could affect the irrigation infrastructure. Water overflow due to excessive source

intake or blockage along the waterway could erode the downhill slope to wash away the irrigation infrastructure itself. Soil erosion at the water source tapping point due to water flow turbulence in monsoon, leading to malfunction of the irrigation scheme is almost normal in mountainous terrains. Therefore, ESIA/IESE must consider broad coverage of area stability study for irrigation infrastructure subprojects. Area stability study is equally important for all other FSAPP physical infrastructure interventions like micro irrigation scheme and the marketing storage and outlet infrastructures.

Exploitation of forest resources and Impacts on Biodiversity

Leaf-litter for manure, farming tools like ploughs and bullock yoke, firewood are always extracted from the nearby forests. Livestock grazing is normally open in the forestland. Irrigation channels could enhance or open accessibility paths to virgin forest resource areas for exploitation of endangered biodiversity species.

In reverse, irrigation channels and related infrastructure components could also block and deprive accessibility passages that local people are always dependent on. As such, the ESIA/IESE must assess all such potential impacts and put in place corresponding mitigation measures. Education, awareness and path blockages could also be some of the remedial measures that could be developed to prevent access to unprecedented resources. Likewise, constructing alternative path ways to existing routes blocked by the project intervention infrastructure are some additional options for consideration.

Encouraging leasing Sokshing for Dry leaf litters and pastureland for grazing from Department of Forest and Park Services (DoFPS) in accordance to provisions in Chapter 10 & 11 of the Land Act, 2007 is an alternative option for the farmers to continue practicing organic farming and livestock rearing.

During construction and more so during the post construction period, irrigation subprojects in particular will lead to disturbances to biodiversity, habitats and their movements. The impact will be more on movements of reptiles, insects and amphibians. Assessment of such potential impacts and consideration of biodiversity movement paths at interval spans along the irrigation channel length is strongly recommended.

Conflict of interest, Diseases and Social Conflicts

Influential and vocal personalities could derail the project interventions in part or in whole for example by diverting irrigation channels to either a totally new place or by changing the alignment of the irrigation channel to suit their interests. Often, flagging the challenges caused by the physical/topographical environment can help justify the choices/options. Regardless, it is important for the ESIA to carefully consider assessing all such social conflicts.

When the works/infrastructure procurement related to the project is on contract and the contractors import workers, spread of diseases, commonly sexually

transmitted diseases and cultural conflicts are bound to arise. The ESMP must strongly recommend maximum employment of local people during the construction period. Employment of local people may be a little more costly in terms of direct daily wage rates. However, the economic justification of not having to construct labourers camp, manage electricity and water supply at the site or transport workers from other places and not having to worry about their waste management makes it cheaper to employ people from the project locality rather than bring in outside workers.

Gender Related Impacts and Measures for Mainstreaming Gender Concerns

Owing to the socio-cultural practices such as inheritance of family land by women, participation of women in agricultural works, planning and meetings; equal access to productive resources and protection under the laws of the Kingdom, Bhutan comparatively has good level of gender equality. The Constitution of Bhutan, Local Government Act (2009), Labour and Employment Act (2007), and the Penal Code of Bhutan gives equal opportunity to women in education, employment and decision-making processes. However, disparity and abuse arises when it relates to job opportunities at the construction sites or in terms of extracting benefits like irrigated water.

Though the targeted project beneficiaries are the households, as the available agricultural manpower is mostly women, a Gender and Vulnerable Community Development Plan (GVCDP) is suggested for the following purposes:

1. Ensure participation of women during planning, implementation and monitoring of sub-projects
2. Ensure gender-equitable benefits to the households, and
3. Create provision for gender differentiated monitoring and evaluation.

The objective of GVCDP is to mainstream gender-related actions in the ESIA, the ESMPs and the overall implementation of project activities. As such, some of the actions to be included in the GVCDP include:

- Understanding of gender differences in the activities or sectors concerned;
- Adopting gender-friendly, participatory consultations while selecting and designing the various subprojects. Such consultations with the potential beneficiaries, both male and female during project preparation and implementation will enhance the project's gender equity focus. The project's gender sensitivity will be increase by specifying women as direct project beneficiaries along with men and recognizing women and men as equal actors in achieving project goals. Already, for the entire project, it is anticipated that at least 30 percent of the project beneficiaries will be women.
- Adopting a participatory planning approach to provide both men and women opportunities to identify their specific needs and priorities for selecting community-based infrastructure. This opportunity will provide space for women to identify and design supplementary investments in social infrastructure and economic activities which, combined with social mobilization will enable them to

- better access to markets and services they needed, thereby, reducing their drudgery and saving their time to involve in economically productive activities.
- Actions to empower women, economically and in decision-making by requiring that women are represented in all exercises of project designing, planning, implementation and monitoring. They should be represented with decision making position in the entire project induced community structures (subproject coordination/user committees, farmer groups, producer groups, irrigation user committees, water user association and committees, etc) to increasing women's access to project management.
 - Promoting employment of women in construction work, especially as it relates to irrigation facilities. Women can gain equal opportunities in project-related investments and work with equal pay in construction sites, but gender sensitization of project staff and contractors and special clauses in bidding documents are necessary to promote their employment in infrastructure projects.
 - Focusing on the social/community mobilization process to ensure women's overall participation by requiring irrigation and other user groups to comprise at least 40% women members, supporting some women-only groups, and providing gender sensitization training to all its members and leadership training for women to support their active participation.
 - Support for mechanization at the farm level to reduce the burden of labour on women.
 - Awareness raising for dietary diversity and nutrition - carried out through a network of community resource persons, particularly women of reproductive age who require additional nutrition awareness for their own health and to care for their children;
 - Training and capacity building activities on gender for Community Resource Persons and other project personnel at the central, Dzongkhags and Geog levels.
 - Provision for monitoring and evaluation of gender differentiated impact and participation.

Vulnerable Groups

Vulnerability is a multi-dimensional concept that needs to be defined within the specific contexts. In the context of FSAPP, vulnerability refers to the affected households and communities that have considerable difficulties in participating in the development process due to a series of factors, including geographical, economic, social and cultural. As it is often true elsewhere, Bhutan does not have ethnic minority groups that can claim vulnerable or disadvantaged as a consequence of their identity and ethnicity. Vulnerable households are often determined and identified in terms of low income, small or no landholding, high ratio of dependents, recurrent food deficit, and woman as family head due to death/ illness of husband or divorce. Such households spread across different ethnic groups and will need special attention to ensure that they benefit from the project activities and are not adversely impacted. The following categories of people are recognized as vulnerable households:

- Poorest of the poor, irrespective of caste/ethnicity, gender and class(based on local well being ranking)
- Women headed poor households
- Groups, if any, categorized by RGoB as being vulnerable
- Community members who are less able to support themselves without family and others supports
- Landless, squatters and encroachers identified by local government bodies with genuine reasons
- Marginal land owners, landless or very small land holding, agricultural labourers, and the disabled and elderly.

With regard to vulnerable groups, the purpose of the GVCDP is to guide subproject planning and implementation to identify and address impacts on vulnerable communities and make sure that they are consulted and benefit from the project. The specific objectives of the GVCDP are to:

- Ensure the participation of the affected vulnerable groups in the entire process of preparation, implementation, and monitoring of the project activities including specific sub-projects,
- Guarantee that sub-project benefits will accrue to vulnerable households, and any adverse impacts will be mitigated,

Principles to be followed and measures to be included in the GVCDP include:

- Vulnerable households will be identified during the social screening process undertaken at an early stage in all sub-projects to identify vulnerable households and assess any adverse impacts on them and also identify potential opportunities for their social and economic betterment;
- Project information will be shared with the vulnerable households through free, prior and informed consultations and their inputs would be sought during project planning and implementation
- Mechanisms will be designed to ensure their full participation in the project planning and implementation process;
- Adverse impacts will be avoided as much as possible on vulnerable households.

4.1.4 Potential mitigation measures for identified impacts and risks

Potential environment and social mitigation options against the anticipated impacts of each FSAPP project intervention are given below in Table 7.

Table 7: Potential mitigation measures against identified impacts & risks

Project Interventions	Identified impacts	Environmental mitigation	Social mitigation
Support to irrigation channel construction	<ul style="list-style-type: none"> · Tree cutting/ Forestry Clearance/ Exploitation of forest resources. · Water pollution with agrochemicals. · Over extraction of water /water resources drying up. · Soil erosion/landslide. · Biodiversity movement disturbances. · Water user conflict. 	<ul style="list-style-type: none"> · Prevent deforestation in the catchment areas, Avoid protected area, Plantation. Lease Sokshing for Dry leaf litters and pastureland for grazing in accordance to provisions in Chapter 10 & 11 of the Land Act, 2007. · Identify agrochemical in the catchment areas and bring to the notice of the polluter and/or relevant authority · Maintain minimum 30% environmental flow in the natural water course. · Study stability of the source to avoid mishaps of water source in a short span of the project investment. · Study stability of the area. · Dev. biodiversity movement paths at interval spans along the irrigation channels. · Identify water users and set prior mutual agreements. 	<ul style="list-style-type: none"> · Education, awareness, consultations and accessibility control. Private land acquisition in accordance to the Land Act 2007, Chapter 7.

Project Interventions	Identified impacts	Environmental mitigation	Social mitigation
Micro irrigation schemes (drip, / sprinklers for vegetables, citrus and cardamom)	<ul style="list-style-type: none"> · Equity and equality in water distribution. · Conflict of interest. · Diseases and social conflict. · Gender disparity. · Vulnerable group discrimination. · Land acquisition. 	<ul style="list-style-type: none"> · Identify water users and set prior mutual agreements. · Identify agrochemical in the catchment areas and bring to the notice of the polluter and/or relevant authority · Maintain minimum 30% environmental flow in the natural water course. · Prevent deforestation in the catchment areas. 	<ul style="list-style-type: none"> · Education, awareness and accessibility control. · Consultations with women and other vulnerable groups during the entire project cycle · Address conflict of interest in ESMP. · Maximum employment of local people. · Highlight special needs of the vulnerable groups and implement measures to address those needs. · Ensure participation of women in planning, and decision making of subprojects. · Inclusion of needs or expressions of the vulnerable groups in the ESMP for implement.
	<ul style="list-style-type: none"> · Water user conflict · Water pollution · Water resources drying up. 		

Project Interventions	Identified impacts	Environmental mitigation	Social mitigation
Agriculture diversification	<ul style="list-style-type: none"> · Equity and equality in water distribution · Conflict of interest. · Diseases and social conflict. · Gender disparity · Vulnerable group discrimination 	<ul style="list-style-type: none"> · Forestry Clearance. · Private land acquisition. · Identify water users and set prior mutual agreements. · Identify use of agrochemical and possible water pollution and bring to the notice of the polluter and/or relevant authority · Maintain minimum 30% environmental flow in the natural water course. · Study stability of the source to avoid mishaps of water source in a short span of the project investment. · Prevent deforestation in the catchment areas. · Study stability of the area. 	<ul style="list-style-type: none"> · Inclusion of needs or expressions of the vulnerable groups in the ESMP for implement. · Address conflict of interest in ESMP. · Maximum employment of local people. · Ensure participation of women in planning, and decision making of subprojects. · Highlight special needs of the vulnerable groups and implement. · Education, awareness and accessibility control. · Inclusion of needs or expressions of the vulnerable groups in the ESMP for implement. · Address conflict of interest in ESMP. · Maximum employment of local people. · Ensure participation of women in planning, and decision making of subprojects. · Highlight special needs of the vulnerable groups and implement.

4.1.5 Environmental and Social Impact Assessment

During the implementation of FSAPP, a full scale Environmental and Social Impact Assessment (ESIA) may be required if the DoA plans to implement a large scale irrigation scheme. According to EC Regulation, Section 17, a full blown ESIA is necessary for activities; i) falling within the boundary of a protected area, ii) within 50 meters distance of a public park, human dwelling, hospital, school or a sacred landscape or site, and iii) any other sensitive area designated by the Secretariat. The suggested outline for an ESIA process and report has been provided in Annex 7

4.2 Obtaining Environmental Clearance (EC)

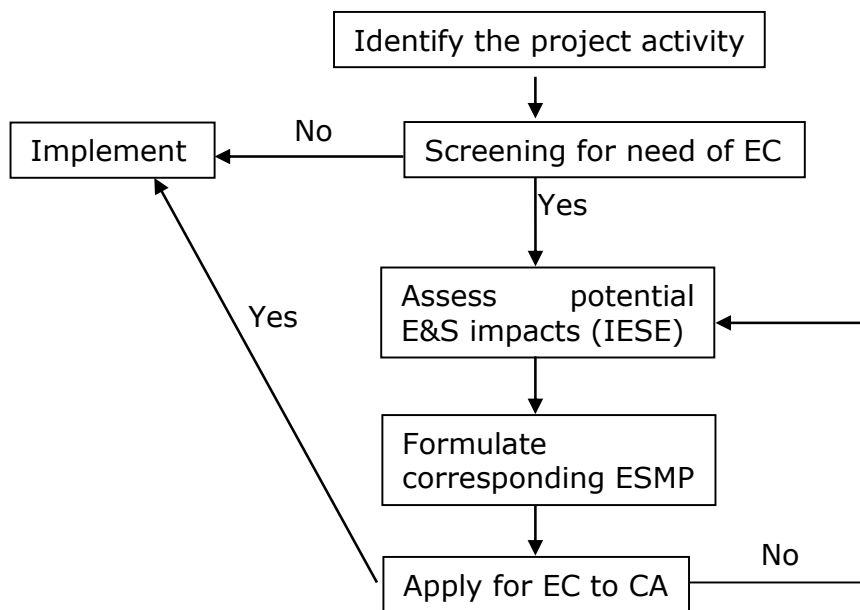
While processing the EC, the EAA, 2000 has designated the National Environment Commission Secretariat (NECS) as the apex institution for issuance of the EC to all developmental activities/projects within the Kingdom. The mandated ESIA/IESE and the EC also takes into consideration all the social issues.

Competent Authorities (CA) are designated in relevant line agencies and updated periodically as provided for in Annex 2 of the EC Regulations, 2002. List of activities are outlined under each CA for them to review ESIA/ESIE reports and issue EC. The DoA is the CA for; a) irrigation channels, and b) activities related to agriculture research and development. However, in accordance to Section 37 of the EAA, 2000, when the EC applicant is the CA, NECS will assume the role of the CA to issue EC. The CA cannot issue EC to itself. In fact, the NECS will be the CA to issue EC for: all the activities not listed under any of the designated CAs; not listed under the list of activities not requiring EC; and when the designated CA is not able to make decisions on an EC application/project proposal.

There is Dzongkhag Environment Committee (DEC) in all the 20 Dzongkhags which is also a designated CA.

In case of the FSAPP project activities, except for irrigation subproject activity, where DoA will be the CA, other activities requiring EC from screening could be cleared by the respective DEC. As such, the beneficiary Geog Administration with technical backstopping from the Project Management Unit (PMU) and Renewable Natural Resources (RNR) Sector shall be the EC applicant/project proponent for such activities. The PMU located at the DoA headquarters cannot be the EC applicant for irrigation subproject activities, but it can be the applicant for activities where DEC or NECS will be the CA.

Figure 3: An EC application processing flow diagram



4.3 Implementation of Environmental and Social Management Plan (ESMP)

The main expected output of an ESIA/IESE is an ESMP that also includes a monitoring plan and also an appropriate budget outlines for implementation of the ESMP. The ESMP will provide the reference guide to implement all the mitigation measures against the negative impacts of the project interventions. A list of potential mitigation measures against some of the potential negative social and environmental impacts has already been provided in table 7 in earlier section.

5. IMPLEMENTATION ARRANGEMENTS, MONITORING AND CAPACITY DEVELOPMENT

The project will be implemented by the Department of Agriculture. An independent Project Management Unit (PMU) within the DoA, MoAF will be established that will, among other things, be responsible for implementation and monitoring of the ESMF. The PMU will assign an Environmental and Social Focal Person (ESFP) who will be responsible for implementing and monitoring the ESMF, more specifically, guiding and overseeing environmental and social compliance by the workers, contractors, local government and the PMU officials.

5.1 Responsibilities for undertaking ESS/IESE and processing EC

DoA (PMU)/Beneficiary Geog –Beneficiary geog of a subproject activity with technical support from the Geog/Dzongkhag RNR Sector and the PMU shall be responsible for undertaking the screening, scoping (including formulation of draft ToR), baseline data collection, conducting ESS/ESIA/IESE, and preparing the management plans, including the ESMP. The PMU/Geog Administration as EC applicant will submit EC application with the report to the DEC for review and actions for the way forward. If necessary, the PMU/beneficiary Geog/Dzongkhag will hire consultants to conduct ESIA/IESE.

DEC – The DEC for activities not under its CA jurisdiction will review initially the ToR and later the ESIA/IESE report for its completeness in terms of documentation and forward the ToR/report to the relevant CA with its comments/observations and recommendations. If the activity is within the competency of the DEC, the DEC will first review and approve the ToR for the ESIA/IESE exercise. On receipt of the appropriate report, the DEC will review and scrutinize the information provided in the report and ask additional information, if required. When the information is complete and satisfactory, the EC will be issued with a set of Terms and Conditions. The proposal/application also can be rejected if the information is incomplete, not satisfactory or if irreversible impacts are foreseen. When there is no designated CA, the DEC will forward the ToR/report to the NECS.

CA – When the ToR and the ESIA/IESE report are forwarded to the relevant CA by the DEC, the CA will exercise the same procedure as mentioned above for the DEC. When the CA is not able to make decisions on an application/proposal, the proposal will be forwarded to the NECS. For FSAPP activities, the DEC or the DoA will review, scrutinize and ask additional information or issue EC when it is satisfied with the information in the report or from the additional information acquired from the applicant. In case the subproject activity issues are complex and beyond the capacity of the CA to review or make decisions, the report will be forwarded to the NECS with observation report and recommendations.

NECS – When the cases are referred by the CAs to the NECS, the NECS will assume the role of CA to review, scrutinize and make decisions to issue EC or reject the proposal/application.

Key responsibilities for implementation of an ESMF, ESIA and ESMP is outlined in Table 8.

Table 8: Key responsibilities for sub-project implementation

Project Phase	Department of Agriculture	Sub-project Applicant Dzongkhag / Geog
Planning and Screening	<p>Inform and advise applicants and other stakeholders of the ESMF procedures.</p> <p>Review Letter of Interest and screen for potential safeguard issues, and advise applicants regarding the nature and content of the safeguard documents and measures to be prepared.</p> <p>Advise applicants on safeguard issues, as needed</p>	<p>Assess any potential safeguard issues early in the preparation process, including screening for the presence of local peoples.</p> <p>Describe potential safeguard issues in the Letter of Interest.</p> <p>Undertake safeguard required processes, such as consultations with local communities, environmental review, and social assessment.</p>
Review and approval of sub-projects	<p>Review sub-project proposal for safeguard impacts and social risks. Assess the adequacy and feasibility of the safeguard assessment and consultation process, if needed, request further steps.</p> <p>Assess the adequacy and feasibility of the safeguard measures and documents, if needed, request appropriate changes to these and re-assess prior to final approval.</p> <p>If local peoples are affected, ascertain that they have provided their free, prior and informed consent to sub-project activities affecting them. Sub-projects affecting local peoples cannot be approved without such agreement.</p> <p>Assess the capacity of the applicant to implement safeguard measures.</p> <p>If applicable, publicly disclose safeguard related information on the web after sub-project approval.</p>	<p>Submit sub-project proposal with safeguard measures and documents (e.g. social assessment, environmental review), if required, to the competent authority (DoA).</p> <p>If requested by DoA, take additional steps to meet ESMF and safeguard policy provisions. Re-submit proposal with revised safeguard measures and documents, as needed.</p>

Implementation	<p>Supervise and review environmental and social safeguard documents and issues during sub-project implementation. If needed, request changes to safeguard measures and/or implementation of these.</p> <p>Review and approve Plan of Actions that are required to be prepared during implementation of sub-projects restricting access to natural resources (as will be described in the PF for sub-projects with potential impacts from such restrictions).</p>	<p>Disclose final safeguard documents if any, to affected communities.</p> <p>Monitor and document the implementation of safeguard measures. When local peoples are affected, include them in participatory monitoring and evaluation exercises. Prepare Plan of Actions for sub-projects restricting access to natural resources (as per the PF prepared). Monitor and document implementation of these plans.</p>
Monitoring	<p>Ensure inclusion and review of environmental and social safeguard issues and outcomes in mid-term and final sub-project evaluation and reporting, including concerning any lessons learned.</p>	<p>Evaluate the implementation and outcomes of safeguard measures. When local peoples are affected, include them in participatory evaluation exercises.</p> <p>The affected people will best know the impacts and the mitigation measures undertaken. Therefore, the evaluation of the impacts and mitigation measures has to start from the affected societies conducted by external evaluators.</p>

5.2 Monitoring

The ESMF requires regular supervision and monitoring of the impact of the project on the environment and social aspects. The project will plan and implement the following environmental monitoring programs to ensure environmental and social sustainability of livelihood programs: (i) compliance monitoring; (ii) quarterly progress monitoring; and (iii) third party environmental review/audit. The arrangements for supervision and monitoring include appointment/designating of an Environment and Social Focal Points at the PMU and vesting all the environment and social safeguards supervision and regular monitoring requirements at respective sites. Dzongkhag Environmental Officer will carry out periodical compliance monitoring. The NECS officials are expected to conduct adhoc/surprise monitoring.

5.3 Capacity Building

The Project implementing team (PMU, Dzongkhags and Geog agriculture officers, Dzongkhag and Geog engineers and RNRDC's engineers) have to have awareness, sensitization and skill regarding environmental and social aspects of the project for necessary sub-project planning and implementation. For sustainability of the

project benefits, implementation smoothness of the environmental principles and social safeguards, the implementers need adequate capacity building. As such, an awareness and capacity building training is proposed to be undertaken at the beginning of the project commencement.

The objectives of capacity building are:

- To orient MoAF officials, PMU officials, RNRDC's, Dzongkhags and Geogs officials (implementers) regarding ESMF and its requirements and procedures.
- To impart knowledge and skills and strengthen capacity of the PMU, RNRDC's, Dzongkhags and Geogs officials to enable them to integrate sound environmental and social management into the sub-projects.

Training Resources, Trainees and Budget

It is essential that the WB/PMU contracts resource persons (environmental and social experts) that would deliver the training in line with the project ESMF. The likely participants along with the likely numbers of trainees are the followings:

1. MoAF officials (from DoA, including engineering division and DAMC including Dzongkhag Marketing focal persons) – 13 persons
2. PMU officials – 3 persons
3. RNRDC officials – 9 persons
4. Dzongkhag Agriculture officers including assistants – 10 persons
5. Dzongkhag engineers – 10 persons
6. Geog agriculture extension officers – 24 persons
7. Geog engineers – 24 persons

It is proposed to deliver the training in batches of 6 in different venues: one at Thimphu for MoAF, PMU and RNRDC officials, and five others in each Dzongkhag (for Dzongkhag and Geog officials). Training at districts are proposed to minimise travel time for the trainees and also to reduce the cost on training. The details of the proposed training program are as follows:

1. Orientation to ESMF including mitigation plans
2. Preparation of environmental impact assessment (EIA) and environmental social management plan (ESMP)
3. Environmental clearance procedure
4. ESMP implementation

The estimated costs for the training are presented in table 9. It includes the costs for hiring the environmental and social experts (trainers), costs for hiring training halls, costs for training materials and daily subsistence allowances to the trainees.

Table 9: Proposed Budget for Capacity Building on ESMF

Training Type	Training	Total	No. of	Indicative	Total
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	duration for each batch (Days)	training duration for all batches (Days)	participant	unit costs in BTN	Costs in BTN
Hiring of trainers (environmental and social experts – 2 persons)	Total duration of 22 days for each including travel time to the Dzongkhags			10,000 per day for each	440,000
Training materials				50,000	50,000
Logistical support (training halls and travel)				15,000	170,000
Orientation to ESMF	0.5	3	93	8,000	744000
Preparation of EIA and ESMP	0.5	3	93		
Environmental clearance procedure	0.5	3	93		
ESMP Implementation	0.5	3	93		
Total					1,404,000

6. CONSULTATION, PARTICIPATION AND INFORMATION DISCLOSURE

6.1 Consultations

During project preparation, a series of consultations were held with important stakeholders, including government institutions, NGOs, private firms, and youths both at the local and central levels. During project implementation, a qualitative assessment will also be carried out to understand the aspirations of women and men of various age groups. In addition, the PMU will develop a communication and information dissemination strategy to inform youths about the project. All publicity materials will indicate that the project is a pilot, and based on its success, there is potential for project funding to be extended to other Dzongkhags in subsequent phases. With regards to disclosure, the ESMF will be cleared by the Bank and disclosed in the Bank's Info shop and also locally with translation of the executive summary into Dzongkha.

6.2 Information Disclosure

The government (Ministry of Agriculture and Forests) shall disclose the ESMF on its website. The executive summary has been translated into national language (Dzongkha) and has been uploaded in the MoAF's website. If the document is revised, the revised version shall be uploaded.

The World Bank shall disclose the ESMF at the Infoshop.

6.3 Grievance Redress Mechanism (GRM)

The GRM for the project is based on Bhutan's existing dispute resolution mechanisms, both formal and informal, that relies on mediation and public hearing managed by local authorities. In addition, a Grievance Redress Committee will be established within the PMU comprising representatives from the MoAF and PAN to receive complaints unresolved through the traditional mechanism. Besides the national system, there is also the option to seek redress through the World Bank's Grievance Redress System and the Inspection Panel.

DoA/PMU's representative, Geog Engineer/Agriculture Extension Officer will be responsible for day-to-day supervision of contractor's environmental compliance. The PMU and the Bank will monitor periodically. When there are complaints, the DoA/PMU site supervisor together with the representative of the contractors will investigate the issues and agree on the corrective actions if necessary. The team will then follow up and document the corrective actions until the cases are completely resolved.

Construction supervisors will certify the environmental mitigation measures carried out by the Contractors in monthly payment request. The PMU/DoA makes the payment and can apply bonus/fines in accordance with the compliance framework.

The local community lead by the Chiog Tshogpa will be encouraged to participate in daily monitoring of contractor's environmental compliance. Communities can make complaints to the contractor's site Engineer, local authority or PMU representative or via telephone directly to the PMU. The PMU will coordinate with relevant parties to address the complaints.

7. ANNEXURES

Annex 1: Environmental and Social Screening of activities

1. Project Description
Sub-project Name:
Name of the Applicant:
Sub-project Location³: Village.....; Geog; and Dzongkhag.....

2. ELIGIBILITY SCREENING

No.	Screening Questions	Yes	No	Comments/ Explanation
	<i>Would the project activity be?</i>			
1.	Located or disturb a land area located within 50 meters from any primary forest, protected areas, national parks, nature reserve, specialised forest, areas biologically importance?			
2	Located or disturb areas of critical natural habitats, breeding ground of known rare/endangered species?			
3	Disturb areas having landscape or historical values?			
4	Require relocation of any known physical cultural resources such as			
	A <i>Lhakhangs, Chortens, Mani Dungkors</i>			
	B <i>Duthrues (Cremation grounds)</i>			
	C <i>Statues, monuments, historical sites,</i>			
	D <i>Community cultural centre</i>			
	E <i>buildings, sacred trees or objects having spiritual values to local communities</i>			

* If all answers are "No", project activity is eligible and move to Part 3

* If at least one question answered as "yes", the project activity is ineligible and will be excluded from FSAPP. PMU/DoA can reselect the site of project activity and do screening again.

³Attach: i) Topographical map 1:50,000, Google Image and sketch of the subproject area surroundings (at least 50 metres around) with subproject location and environmental features, and ii) photographs of the environmental sensitive sites.

3. Environmental Issues and Concerns	
Potential environmental risks. Will the sub-project and/ or its activity likely to affect or be affected by the following.	Yes/No
3.1 Would the proposed subproject result in the conversion or degradation of natural habitat or biodiversity corridor or a critical wildlife habitat?	
3.2 Does the subproject pass through or impact any known route of wildlife or wild bird movement?	
3.3 Would the proposed subprojects pose a risk of introducing invasive alien species?	
3.4 Would the proposed subproject pose risk that lead degrading soil, landslides and erosion prone areas?	
3.5 Does the project involve natural/primary forest harvesting or plantation development?	
3.6 Would the proposed subproject be susceptible to or lead to increased vulnerability to earthquakes, flood/river cutting, flooding to low lying area?	
3.7 Does the subproject pose risk to drying of water source/water bodies such as pond, Lakes, springs, drinking water sources?	
3.8 Does the subproject pose risk of disaster (such as from channel break, or from fire, or from landslides)?	
3.9 Will the proposed subproject involve the application of pesticides that have a known negative effect on the environment or human health?	
3.10 Is the proposed subproject likely to significantly affect the historical/religious/cultural sites?	
3.11 Will the proposed subproject significantly pose risk to aesthetically important places/landscapes	
3.12 Does the scheme's implementation increase the possibility of groundwater pollution?	
3.13 Does the scheme will generate any waste?	
3.14 Is there any waste management plan for the scheme if it generates waste? (please include the waste management plan)	
3.15 Is there any chance of increase public health problem by throwing waste into open water bodies?	
3.16 Will the proposed subproject result in increased health risks as a result of air and dust pollution in the project/subproject area?	
3.17 Is there any chance of tree cutting by the implementation of the scheme? (if yes than please specify the number of tree cutting)	
4. Social Issues and Concerns	
Potential social risks and benefits. Will the sub-project and/ or its activity likely to affect or be affected by the following.	Yes/No
4.1 Will the proposed subprojects have adverse social impact on vulnerable youths?	
4.2 Is the proposed subproject likely to directly or indirectly increase social inequalities now or in the future?	
4.3 Is the proposed subproject likely to negatively affect the income	

levels or employment opportunities of vulnerable youths?	
4.4 Does the enterprise have representatives from vulnerable youths in managerial/staff/decision-making levels?	
4.5 Is the proposed subproject likely to increase gender inequality?	
4.6 Would the proposed subproject exclude women in employment opportunities?	
4.7 Does the enterprise have women in managerial/staff/decision-making levels?	
4.8 Does the sub-project seek to benefit/provide employment opportunities for women and others from vulnerable youths?	
4.9 Does the subproject need to acquire lands, houses or other properties of the people for its improvement?	
4.10 Would the proposed sub project result in substantial voluntary or involuntary resettlement of populations?	
4.11 Does the subproject implementation lead to loss of agriculture lands, private property and local community infrastructures?	
4.12 Would the proposed subproject lead to displacement of poor households and deprive their traditional rights on land and natural resources?	
4.13 Is the proposed subproject likely to significantly affect land tenure arrangements and/or traditional cultural ownership patterns?	
4.14 Does the sub-project have adequate and effective strategy for consultation and information dissemination?	

Negative Impacts	
For any negative impacts identified above, please summarize the impacts:	Suggest Mitigation Measures

Positive Impacts	
For any positive impacts identified above, please summarize the impacts:	Suggest Enhancement Measures

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8. Suggested Environmental and Social Code of Practices

Please provide a list of environmental and social code of practices for enhancement of environmental and social benefits:

Prepared by:

Signature:

Designation:

Date:

Submitted to DAO

Endorsed and approved by: DAO

Signature:

Date:

Annex 2: Suggested List of ECoPs for Category 2 Interventions

Project Interventions (Environmental Code of Practices -ECoPs
Micro irrigation schemes (drip/sprinklers for vegetables, citrus and cardamom)	<ul style="list-style-type: none"> ✓ Do not overdraw water from the original gully. Leave minimum 30% environment flow. ✓ Construct proper outlet drain from the field to prevent overflow and seepage water from the field disturbing neighbouring fields and environment down the slope. ✓ Do not use chemical fertilizers and pesticides in the garden/field where micro irrigation is to be applied. ✓ Ensure there is equal distribution of micro irrigation goods & facilities to the rightful and deserving beneficiaries.
Agriculture diversification	<ul style="list-style-type: none"> ✓ Ensure researched and correct agriculture diversification supported. ✓ Ensure agriculture varieties are species which are productive, nutritious and market friendly. ✓ Ensure species are climate and draught resistant. ✓ Ensure equity and equality in distribution of seeds and facilities. ✓ Ensure, project support is not influential interest driven.
Electric fencing (wildlife mitigation)	<ul style="list-style-type: none"> ✓ The fencing should be risk free to lives of human and animals. It should only scare away the wildlife. ✓ For sustainability, the infrastructure should not be too dependent on imported raw materials. ✓ Electric fencing should not instigate social conflict in the society. ✓ The fencing should ensure to maximise beneficiary, in the sense the fencing should cover as many beneficiaries as possible. ✓ Ensure equity and equality distribution of materials and facilities to the rightful beneficiaries. ✓ Avoid influential interest driven support of the project.
use of bio-fertilizers to improve soil fertility	<ul style="list-style-type: none"> ✓ Project should not support chemical fertilizer distribution. ✓ Concentrate in capacity of farmers to produce bio-fertilizers for replication & knowledge sharing in other societies. ✓ Ensure equity and equality distribution of materials and facilities to the rightful beneficiaries. ✓ Avoid influential interest driven support of the project.
Green house technologies	<ul style="list-style-type: none"> ✓ The Greenhouse technology for sustainability should not be too dependent on imported raw materials. ✓ The project should focus on capacity building for replication & knowledge sharing in other societies. ✓ Ensure equity and equality distribution of materials and facilities to the rightful beneficiaries. ✓ Avoid influential interest driven support of the project.
Provide small farm machineries	<ul style="list-style-type: none"> ✓ For sustainability, the farmers also should be trained in operation and maintenance of the machineries. ✓ Capacity building must include understanding of negative impacts

(power tillers, mini threshers, reapers, ridgers, and weeders)	<p>of rampant disposal of oil, lubricants, plastic & metallic components, especially batteries.</p> <ul style="list-style-type: none"> ✓ Educate in control of noise, dust gaseous pollutions. ✓ Ensure equity and equality distribution of machineries and facilities to the rightful beneficiaries. ✓ Avoid influential interest driven support of the project.
Support value addition (drying technologies, zero energy cooling chambers, and weighing facilities)	<ul style="list-style-type: none"> ✓ For sustainability, the farmers also should be trained in operation and maintenance of the facilities. ✓ Capacity building must include understanding of negative impacts of rampant disposal of oil, lubricants, plastic & metallic components, especially batteries. ✓ Educate in control of noise, dust gaseous pollutions. ✓ Ensure equity and equality distribution of machineries and facilities to the rightful beneficiaries. ✓ Avoid influential interest driven support of the project.
Piloting model farm shops	<ul style="list-style-type: none"> ✓ Ensure land acquisition is either on government land or voluntary contribution. Project will not support private land acquisition. ✓ For sustainability, the farmers also should be made responsible for operation and maintenance of farm shops. ✓ Capacity building must include understanding of negative impacts of rampant disposal of solid wastes, oil, lubricants, plastic & metallic components, especially hazardous wastes like batteries and train them in management of wastes. ✓ Educate in control of noise, dust gaseous pollutions. ✓ Also, educate them in disaster risks like fire, soil erosion/landslides, windstorm, earthquake and roadside accidents. ✓ Ensure equity and equality distribution of plots, raw materials & facilities to the rightful beneficiaries. ✓ Avoid influential interest driven support of the project.

**Annex 3: Format: Safeguard Eligibility and Initial Environmental and Social Examination
(Category 3 Sub-Projects)**

PART 1: BASIC INFORMATION

1	Subproject name	
2	Type of construction:	New activity <input type="checkbox"/> Rehabilitate <input type="checkbox"/>
3	Project location: Chiog/Village : Geog : Dzongkhag :	
4	Design Parameters (area/length)	
5	Preparation period	
6	Construction	
7	Project completion and operation	
8	Is construction carried out in rainy season?	
9	Acquired land area	Permanently <input type="checkbox"/> Within ROW <input type="checkbox"/>
10	Total investment capital	

(Move to Part 2 after filling in all information in the table above)

PART 2: ELIGIBILITY SCREENING

No.	Screening Questions	Yes	No	Comments/Explanation
	<i>Would the project activity be?</i>			
1.	Located or disturb a land area located within 50 meters from any primary forest, protected areas, national parks, nature reserve, specialised forest, areas biologically importance?			
2	Located or disturb areas of critical natural habitats, breeding ground of known rare/endangered species?			
3	Disturb areas having landscape or historical values?			
4	Require relocation of any known physical cultural resources such as			
	A <i>Lhakhangs, Chortens, Mani Dungkors</i>			
	B <i>Duthrues (Cremation grounds)</i>			
	C <i>Statues, monuments, historical sites,</i>			
	D <i>Community cultural centre</i>			

No.	Screening Questions	Yes	No	Comments/Explanation
E	buildings, sacred trees or objects having spiritual values to local communities			

* If all answers are "No", project activity is eligible and move to Part 3

* If at least one question answered as "yes", the project activity is ineligible and will be excluded from FSAPP. PMU/DoA can reselect the site of project activity and do screening again.

PART 3: IMPACTS ASSESSMENT

Answer the questions below and follow the guidance to describe the potential impacts

No. S		Yes	No	Description of the potential impacts
1. PRE-CONSTRUCTION PHASE				
	<i>Will the project activity..?</i>			(the texts below are guidance)
1.1	Require <i>Land acquisition</i> for construction and or worker's camp, construction materials loading and storage, etc.			(Guidance: provide the information below) Total land areas to be acquired: Permanently: - Temporarily: In which: public land: Private land:
1.2	<i>Loss or damages to trees and existing vegetation cover due to site clearance, machinery operation or disposal of excavated materials?</i>			(Guidance: provide the information below) number of trees to be cut down: Total land area of vegetation cover removed:

No. S	Yes	No	Description of the potential impacts
2. CONSTRUCTION PHASE			
2.1			observe the area and describe where existing vegetation cover, trees will be affected during construction phase:
2.2			Identify source of dust and noise: loose construction materials, soil, sand blown by wind. Assess Level of impacts depends on weather (wet/dry), number and distance of houses from sites.
2.3			Identify possible sources: fuel burning , vehicle exhausts, toilets, domestic wastes from camp kitchen Assess level of impact: consider duration, intensity of smoke/smell taking into account wind directions
2.4			Identify sources: ground compaction (roadwork's, storage, drilling) Level of impacts: intensity of compaction, and strength of existing infrastructure
2.5			Identify sources of waste and wastewater generation, such as construction site, worker camps and quantify the waste/wastewater for assessing the level of impact, taking into account the distance from source to receptor (e.g. water bodies). Leakage of oil stored at the site may also cause soil and water pollution

No. S		Yes	No	Description of the potential impacts
2.6	<i>Localised flooding related to disturbance to existing drains, changes in ground elevation etc.</i>			Localised flooding may occur if existing/natural drainage path is blocked or disrupted. Consider the issues at construction sites, camps, borrow pits, quarries and disposal sites. If materials are bought from existing licensed borrow pits and quarries, the issues would not be considered in the project
2.7	<i>Sedimentation in areas next to construction site as surface runoff wash away loose materials from construction sites?</i>			Loose construction materials and excavated soil may be blown by wind or washed away by surface water runoff and cause sedimentation in existing drains
2.8	<i>Damage or interrupt operations of existing infrastructure (drain, powerline, roads, etc.)</i>			If not avoided, some project activities (road rehabilitation, construction of large storage facility) sited in areas where power line, irrigation canals, drains, roads, etc. exist, they may be affected or cause blockage
2.9	<i>Cause loss or damage to physical cultural resources, such as cremation sites, historical objects/structures, temples, religious sites (Ney), sacred trees, objects of spiritual important to communities, etc.</i>			If not avoided, some activities (road rehabilitation, construction of large storage facility, etc.) may cause loss or damages to physical cultural resources such as temples, chortens, mani dungkors, Neys, sacred trees, etc. Construction activities may also cause dust, noise, visual impacts to these sites.
2.10	<i>Disturb farming activities due to the presence of workers and machineries at the site, damages to crops:</i>			If construction takes place agriculture area, construction materials, waste, wastewater and surface runoff from construction sites, camps may enter rice or plantation nearby disturbed areas and cause loss or harm to plants, trees The presence and movement of machinery, construction materials, workers may disrupt access to or affect farming activities

No. S		Yes	No	Description of the potential impacts
2.11	<i>Social disturbance</i> due to construction activities and the presence of workers in the project area			Dust, noise, vibration from construction or interactions between workers with local people may cause nuisance and conflict between the workers and local community. In some cases, workers may also involved in "social evils" in the project areas such as gambling, drinking, drugging, etc. to have bad impacts on local people, particularly where ethnic minority groups present.
2.12	<i>Safety and health risks for workers</i> (loading and unloading of construction materials, excavated areas, fuel storage and usage, electrical use, machinery operations etc, adequacy of accommodation etc.)			There are some safety risks for workers related to transportation and loading of construction materials, working high above the ground or in canals where slopes are unstable, machinery operations, electrical uses for office, camp and construction
2.13	<i>Safety risks for community</i> (related to loading and unloading of construction materials, excavated areas, fuel storage and usage, electrical use, machinery operations etc, adequacy of accommodation etc.)			If local people presence at or near construction site, they would be exposed to safety risks related to construction
2.14	<i>Disturb traffic and/or cause traffic safety risks</i>			Rehabilitation of access road to farms may disrupt traffic. Transportation of construction materials and wastes, temporary loading of materials in other subprojects may also disrupt traffic and/or cause traffic safety risks
2.15	<i>Others (specify)</i>			<i>Identify and describe site-specific and type-specific issues, concerns, risks, potential</i>

No. S		Yes	No	Description of the potential impacts
				impacts
3. OPERATION PHASE				
3.1	Cause dust, noise during operation phase (e.g. from pumps)			Dust and noise along access roads
3.2	Safety risks for community			(considers those related to electrical poles, falling into canals, traffic safety etc)
3.3	Water pollution?			
	Others impacts (specify)			

ENVIRONMENTAL MANAGEMENT PLAN

Environmental issues/problems	Mitigation/enhancement measures/ESCoPs	Implementation Schedule	Monitoring Plan (timing/frequency)	Cost	Responsibility

Environmental and Social Screening prepared by:	Competent Authority for the subproject is NEC or DoA, MoAF, or
Name:	Reviewed and endorsed by (PMU):
Signature:	Name:
Date:	Signature:
Approved by (Competent authority):	Date:
Name and organization	
Signature:	

Date:	
-------	--

Annex 4: Format: Environmental Compliance Monitoring Form

Project Activity/Contract package:

Monitoring Officer:

Name:

Mobile phone number:

email:

Date of reporting:

	Environmental issues	Description of Mitigation Measures implemented	Evaluation 1=good; 0 = acceptable; -1 = bad
1	Dust, smoke		
2	Noise, vibration		
3	Disturb vegetation cover, cut trees		
4	Waste generation		
5	Water pollution		
6	Localised flooding		
7	Traffic disturbance		
8	Public health and safety		
9	Damages or disrupt operations of existing infrastructure		
10	Disturb Socio economic activities		
11	Social impacts related to mobilisation of workers to the site		
12	Impacts on physical cultural objects		
	Others (specify)		

Signature:

(Consultant / PMU or Dzongkhag/ Geog)

Name and Designation:

Annex 5: List of Permissible Pesticides in Bhutan

Insecticide

1. Chlopyrifos 20 EC
2. Cypermethrin 10E
3. Dimethoate 30EC
4. Fevelerate 0.4D
5. Malathion 5D
6. Malathion 50 EC

Fungicide

1. Carboxin 75WP
2. Captan 50WP
3. Carbendazin 50WP
4. Copper Oxychloride 50WP
5. Hexaconazole 5EC
6. Mancozeb 75WP
7. Metalaxyl 8%
8. Propiconazole 25 EC
9. Sulfur 80WP
10. Tricylazole 25 WP

Herbicide

1. Glyphosate 41 SL
2. Metribuzin 70WP

Rodenticides

1. Zinc Phosphate 80W/W

Acaricides

1. Dicofol 18.5 EC

Non Toxic

1. Sticker/spreader (sandovit)
2. Tree spray oil (TSO)

Bio- pesticide

1. Trichoderma viride

Source: National Plant Protection Centre, Department of Agriculture, MOAF, Thimphu

Annex 6: Project Interventions by Components and Sub-components

Component 1: Strengthening Farmers and Producers Groups– (US\$1.08 million)

1. The objective of this component is *to strengthen farmers' and producers' groups to better enable them to implement and sustain project interventions*. It is designed to address one of the key constraints to improved agricultural productivity and socio-economic conditions of farmers - weak farmers' groups that lack necessary and relevant skills, knowledge, practices, quality inputs and appropriate technologies.

1.1 Farmer Group Strengthening and Formation

2. The project will reach out to 10,400 farmer households and facilitate the formation and strengthening of 300 new and existing FGs in identifying and participating in project supported activities for increased productivity and enhanced market access. With the approach that every farm should be run as a profitable business (in which the cost of production is low and harvest losses are minimized), FGs will be re-oriented towards an enterprise and business planning model. Component 1 will build on and further strengthen the existing mechanism of FG formation and capacity development, relying on gewog RNR officials for the delivery of project interventions at the community level. It will include capacity building of FGs on various aspects of farm business management such as business orientation, financial literacy, book-keeping, and market assessment. The project will provide TOTs to RNR officials and community resource persons on this thematic area under the FAO TA (see FAO TA section).

1.2 Strengthening Producer Groups

3. The project will also support the formation of 30 PGs. Using a cluster-based approach, PGs will be organized into a business enterprise capitalizing on opportunities for product aggregation, value addition, and marketing in promising value chains. The project will build on DAMC's approach to cooperative and producer group strengthening and provide support to the PGs in areas such as organizational governance, value chain analysis, business development, quality control, access to finance, and marketing. The PMU's marketing/value chain expert will coordinate these capacity building activities in close collaboration with DAMC. Through the DAMC and FAO-TA, this component will also strengthen the capacity of project staff in group formation, governance, enterprise development, and commercial operations. The component will support the groups in: (a) consolidation of functional producer group clusters through effective constitutions, governance and operations; (b) strengthening of commercial farm management and business skills, especially production planning and supply to markets, schools and farm shops; and (c) developing marketing skills for effective engagement with upstream value chain actors and improving their bargaining power in getting better prices for

their produce.

4. Raising awareness on nutrition will be addressed through capacity building of FGs in conjunction with other training activities. The project will actively promote nutrition awareness among the targeted population through a BCC approach using the FGs as an entry point. CRPs will be trained in BCC to facilitate households' understanding of improved nutrition and actions needed to improve diets, using communication materials developed through a participatory diagnostic analysis of dietary behaviors. CRPs' role at the community level will be coordinated with other capacity building activities targeting the FGs, capturing all potential windows of opportunities throughout the project to address nutrition issues.

1.3 Contributing to Improved Nutrition

5. In an effort to ensure that production and income increases encouraged through the project also contribute to improved nutrition, activities will focus on raising awareness about the need for dietary diversity and nutrition among farming communities, especially women of reproductive age. The project will support a series of targeted, integrated interventions to encourage dietary diversification, by instigating demand and instilling value for a balanced diet that includes a variety of pulses, vegetables, cereals and animal-based foods. As such, the project will complement ongoing 'nutrition-specific' interventions that focus on activities to render the project 'nutrition-sensitive', taking a food-based approach. Project interventions also will take into account that food security and nutrition are contingent on people's practices, including choices at the market, food processing, and serving customs, and that food 'choices' are partly driven by knowledge, and partly by the habits and preferences rooted in cultural norms and values as well as the broader food system which makes certain foods more or less available and accessible. Beyond imparting messages however, the project will follow a BCC strategy that includes an in-depth diagnostic, development of materials, community mobilization, and participatory training⁴.

6. Activities will be based on a thorough BCC analysis, which will help to determine what motivates people to change their dietary habits, the information to which they are receptive, and the skills needed to act on nutrition messages. This diagnostic will inform the design of materials and identification of effective media and complementary activities such as pictures, info-graphics, audio and text messaging, cooking demonstrations, discussion groups, and/or video. In-line with the Lead Farmer model, this material will be disseminated through a network of CRPs, particularly women of reproductive age together with community leaders. To ensure coverage and outreach to at least 60percent of project households (6,000 individuals), 3 to 4 CRPs from each Gewog will be invited to a 4-day training session in an RDC on agriculture-nutrition linkages and the importance of dietary diversification. These CRPs will be given a set of materials and trained in the use of

⁴ See Nutrition Toolkit- Using Communication to Improve Nutrition: <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTNUTRITION/0,,contentMDK:20205536~menuPK:282580~pagePK:148956~piPK:216618~theSitePK:282575,00.html>

these materials and activities, which they will then screen or conduct on a regular basis in their respective communities. Refresher training will then be organized every 4 months to collect feedback and provide further materials to the CRPs. One key resource persons will be selected from each of the 5 Dzongkhags and invited to participate in an exposure visit abroad to learn from effective BCC interventions for nutrition. This kind of network of CRPs can help establish a platform for further nutrition interventions.

Component 2: Enhancing Farmer Productivity (US\$ 5.21 million)

7. The objective of this component is to improve agricultural productivity vital for improving food security and nutrition. The component will promote climate smart agriculture through: (a) the productivity enhancement of rice, vegetables, pulses, and potatoes for improved food security and nutrition, (b) improving the productivity of key high value crops such as spices (specifically large cardamom and ginger), vegetables, and citrus for local and export markets, and (c) behavior change communication for production and consumption of nutrient rich food. Overall, the purpose is to expand the cultivated area, increase climate smart cropping intensity, improve nutrition awareness, and increase productivity and production for potential commercial surplus. The approach under this component is holistic and area-specific, providing an integrated package of interventions based on relevant farming systems and specific crops appropriate to the priorities of the farmers, farming systems, and overall production potential in selected area.

8. Paddy and maize are two most important dietary staples of Bhutan. However, domestic production (estimated at 77,038 metric tons in 2014) falls short of meeting the local food demand and therefore the country has to import almost an equal amount of rice, largely from India. Despite best efforts, production of major cereals in Bhutan remains low, an estimated 2.92 tons per ha (World Bank, 2015). Constraints to production include limited availability of cultivable land (only 2.7percent of the total country area); lack of irrigation, use of low quality seeds and planting materials (for cardamom and citrus), pest and disease problems, inadequate extension services, and small and fragmented landholding. This is further compounded by a declining farming population, which is creating labor shortages (and high wages) and lack of post-harvest technologies.

9. The food crisis during the period 2008-2009 highlighted Bhutan's vulnerability in terms of its reliance on imported staple foods, particularly rice, maize and pulses. The RGoB is thus committed to increasing the production of staple foods to reduce the country's reliance on external resources and increase the production and quality of cardamom and citrus - two important cash crops.

10. Although yields of most cereal crops are low, there is proven potential to increase productivity with irrigation and improved production technologies, compared to rain-fed cultivation. For example, the rice paddy yield in Samtsi (1,250 kg/acre) was only 54percent of that of Paro (2,329 kg/acres) where farmers have adopted as an integrated package, irrigation, mechanization, and improved production technologies, including more productive and disease tolerant seed

varieties, planting materials, integrated crop nutrition, and pest control. While cardamom and citrus enjoy good regional markets, the producer farmers have not been able to exploit their full potential due to the lack of value addition opportunities. Thus, one of the critical areas of intervention for cardamom and citrus would be to provide technology and required skills for adding value.

11. Component 2 will also address one of the main constraints to agricultural production and productivity in Bhutan, the inadequate supply of water for irrigation and deficient irrigation facilities, and other factors that impede rural farmers such as labor shortages, mountainous topography, and human wildlife conflicts. To increase farm production and productivity, the project will provide FGs with key farm infrastructure, productive assets (farm machinery, greenhouses, protective electric fencing, and planting materials), training, and extension services.

12. The project will provide these services and assets in a coordinated and integrated package with other project interventions. Some of the services and assets will be provided on a cost-sharing basis in accordance with MoAF norms. Based on this approach the component will focus on three key areas of intervention: water use efficiency, improved farm management and technical and institutional capacity building, and improved agri-inputs and technologies—all aimed at enhancing productivity.

2.1 Water Use Efficiency

13. Irrigation in Bhutan has been characterized as a traditional farmer-built open channel flow system using locally available materials. These irrigation channels are solely designed for paddy cultivation. Farmers carry out the operation and periodic maintenance of the irrigation channels themselves, although they may receive some government funds for maintenance and emergency repairs. Traditionally, water is diverted into the canals by raising the water level in the streams using the tree branches, bamboos, stones, etc. which get washed away during the flood events. The planned irrigation development using engineering design started from the first five-year plan in 1960. Most irrigation systems are made of earthen channels without lining and therefore suffer from high conveyance losses due to excessive seepage. Such irrigation infrastructure currently covers about 50 percent of paddy land and the rest depends upon monsoon rains. The number of control structures is low and most of them are traditional structures, which lead to poor control and low efficiency. All of these factors culminate in inadequate water supply and low agricultural productivity.

14. The National Irrigation Policy (1992), emphasizing community irrigation, tried to lay a foundation for a sustainable approach to irrigation development through the effective participation of the water users. The policy was revised (National Irrigation Policy of Bhutan, Revised 2012) to address the earlier policy, which focused solely on paddy cultivation and did not provide clear directions for a holistic irrigation development. The 1992 policy also ignored the importance of irrigating perennial and cash crops that would help farmers improve their livelihood and income. Irrigation technology and on-farm water management has not improved

over the years and remain rudimentary. The new policy, among others, emphasize: (a) diversification of irrigation for crops grown on both Chuzhing and Kamzhing; (b) assured irrigation water supply for Chuzhing cultivation and protection of prime agricultural land; (c) enhanced water management and productivity; and (d) revitalized institutional arrangements for improved irrigation services delivery.

15. More than 1,800 acres of land were provided with an irrigation facility under DRDP in the past decade mostly in the gewogs of Chukha and Dagana Dzongkhags. Under the current RRCDP, the project has a plan to provide irrigation facility in Samtse (65 km, 987 acre), Chukha (38.5 km, 345 acre), Dagana (53 km, 705 acre), and Haa (18.7 km, 138 acre), which are also the selected Dzongkhags of the proposed FSAPP project.

16. The project design of FSAPP thus takes into account: (a) new construction using pipe conveyance system; (b) greater returns on irrigation investment by raising other crops after the paddy season focusing on crop diversification, and (c) supporting WUAs on improved agronomic practices and providing them training on operation and maintenance of irrigation systems.

17. The project intervention on irrigation and water management therefore consist of construction of irrigation facilities in selected project gewogs of the project Dzongkhags. The interventions will include:

- (a) Infrastructure development– intake structures, pipe systems, and distribution systems;
- (b) Pilot micro-irrigation systems with linkages to cluster sites with other commodity-focused interventions

18. Under this project, irrigation and water management facilities will be developed on 1,346.33 acres (545 ha) of land for increasing the production and productivity of cereals, potato, vegetables, and oilseeds as well as encouraging planting of secondary and cash crops in the irrigated command area. In addition, about 250 acres (100 ha) of land will be provided with a micro-irrigation system for horticulture and cash crops. Four irrigation schemes have been identified in four project gewogs in two Dzongkhags for providing irrigation water. The gewogs include: Dekiling and Gakidling gewogs in Sarpang dzongkhag as well as Norbhugang and Dophuchen gewogs in Samtse dzongkhag. The schemes identified are: (a) Ratey khola, 338 acres (Dekiling); (b) Laring khola, 310 acres (Gakidling); (c) Tarey khola, 648 acres (Norbhugang); and (d) Birkulo-Somlachen, 50 acres, (Dophuchen). Micro-irrigation systems will be piloted in appropriate gewogs in all project dzongkhags. As part of capacity building and institutional support, 4 water users' associations (WUAs) in the command area of 4 irrigation schemes and 20 water users' groups in the high efficiency irrigation area will be strengthened in the operation and maintenance of irrigation systems. Accordingly, the project will provide project staff with appropriate technical and capacity development opportunities.

19. In addition, certain high value crops and crops in the dry land and water-

stressed areas are proposed to be irrigated using high efficiency irrigation system such as drip, sprinkler or other easily adaptable flow control systems (Gated pipe, e.g.). These micro-irrigation systems will cover 250 acres in the project gewogs as per the demand of the farmers.

20. Detailed surveys of the proposed schemes have been carried out, and the design of the schemes are in progress. Detailed design and cost estimates for all four schemes have been completed and the bidding process for these schemes will start after the signing of the project grant agreement.

21. The pool of knowledgeable irrigation engineers that existed in the MoAF/DoA during the 1990s no longer exists. This fact is recognized and amply stated in the revised Irrigation Policy (2012). The earlier Irrigation Policy (1992) and the Procedural Manual with eight different modules provided the knowledge base and training to the engineers and the WUAs on community irrigation. Because irrigation is again the priority agenda of RGoB, as fully reflected in the 11thFYP, building the capacity of the DoA engineers in irrigation will be an important activity. Thus, the DoA/ED includes a proposal on capacity building.

2.2 Improved Farm Management and Technical and Institutional Capacity Building

22. As part of this sub-component, the project will provide FGs with training and extension services and necessary technical assistance to respond to priority farming and production needs. As described below, the project will also provide institutional strengthening support provided to selected agricultural institutions (that is, the Engineering Department, NSC,, NPHC of the MoAF) to sustain the project investments and to ensure that the farmers' increasing demand for quality agri-inputs is adequately addressed. This sub-component will also provide the necessary technical assistance for the introduction of new farming technologies in response to priority farming and production needs of the farmers.

23. *Support to Agricultural Institutions.* The NSC will be supported to produce and supply disease free large cardamom and citrus saplings to the farmers. For quicker multiplication, the project will also support FGs in the production of large cardamom, citrus, and vegetable seedlings. The project will also secure germplasm from Sikkim for developing healthy high yielding cardamom varieties, which will be made available to farmers after they are being tested for suitability and adaptability. The RRCDP-supported National Propagation Center (NPC) at Bhur is also expected to supply healthy planting materials of large cardamom to farmers. The NPC has the capacity to produce 60,000 and 103,000 saplings of citrus and cardamom respectively per year. Due to increasing demand for citrus, the project will finance strengthening of the National Citrus Repository at Tsirang. Along with the provision of healthy saplings, this Repository will provide technical and outreach services to farmers.

24. *Capacity Building for the DoA.* Building the capacity of the DoA engineers on irrigation scheme design, costing, civil works and contract management will be an important activity. The DoA/ED will be given the opportunity to update knowledge and skills through the provision of short training courses on irrigation (including high efficiency micro-irrigation) and exposure/institutional visits for the central and RDC-based engineers.

2.3 Improved Agriculture Inputs and Technologies

25. The need for the use of farm machinery (suitable for small farmers, especially women in the mountainous terrain of Bhutan) is becoming especially important with the declining farming population, rising cost of farm labor, and diminishing returns from farming. Due to the small and fragmented landholdings, the project will promote smaller farm machineries and equipment such as mini power tillers, mini threshers, reapers, ridgers, weeders, rice transplanters, seed/fertilizer dibblers, mulchers, and balers. Business functions (renting of farm machineries and services) of the Agriculture Mechanization Center (AMC) have been transferred to a newly established state owned enterprise Farm Machinery Corporation Limited (FMCL). The AMC will now concentrate on: (a) training, (b) research and development, and (c) recommendation of standards for importing machineries and implements. The establishment of FMCL is expected to provide services for maintenance of equipment and machineries at the grassroots level. The project will, on a cost-sharing basis, provide farm machineries and equipment to eligible farmers groups who will be selected based on an established criteria and will be required to provide either a monetary contribution towards the cost of farm machineries/equipment or an in-kind contribution consisting of the labor required for the installation of equipment in accordance with criteria set forth in the Project Operations Manual.

26. Other farm infrastructure and assets such as electric fencing, low-cost greenhouses, and planting material will also be supported on a demand basis in consultation with the district agriculture extension officer. Low-cost greenhouse demonstration will be organized in order to promote high value and off-season vegetables, which will fetch both cash income and household nutrition needs.

27. Technical support and training will include: (a) support for quality seed production and distribution; (b) improved climate-smart farming practices such as soil fertility management, integrated pest management, nursery management, improved cultural operations; (c) promotion of improved cropping pattern based on availability of water; (d) aligning production with market demand; (e) basic maintenance and operation of farm equipment; and (f) business planning and nutrition awareness. The project will also build the technical capacity of agriculture extension agents and district officials on required skills.

Component 3: Enhancing Access to Markets – (US\$1 million)

28. The component aims to *promote value chains for select high value nutrient-rich crops and enhanced linkages to domestic and export markets.* The primary

focus will be to: (a) reduce post-harvest losses, (b) strengthen nutrition sensitive value chains of selected crops; and (c) enhance producers' knowledge, bargaining power, and access to agri-markets. It will include strengthening local producer-consumer linkages, and establishing productive relationships with public and private market players, school meal programs, and exporters. The overall commodity selection strategy will follow the OGTP approach of the MoAF that focuses on the top three commodities as per the current production scale. Component 3 include two sub-components, described below.

3.1. Post-harvest and Market Infrastructure Support

29. Part (a) of this component will provide guidance, inputs, and support to farmers to minimize post-harvest losses; improve shelf life; and enhance product quality, storage and packaging, and transportation to ensure higher market value. It will include training, exposure visits, and provision of appropriate technologies and tools in line with the cost sharing policy of DoA (monetary contribution towards the cost of technology/equipment or in-kind contribution consisting of the labor required for the installation in accordance with criteria set forth in the Project Operations Manual). The trained lead farmers and CRPs will provide technology services, training and back up to the farmers against a fee, following sound business principles. PGs will be provided training in entrepreneurship, business planning, book keeping, accounting, and capacity building support for commercial operation and equipment operation and maintenance for post-project sustainability.

30. Part (b) will provide support to five food-processing groups for preparation, packaging, and marketing of hygienically safe nutritious food to domestic markets. It will include market research, training, exposure visits, and skills enhancement in hygienically safe food preparation, packaging, labeling, pricing, and marketing; lab testing for food composition and food safety; and provision of appropriate technology, equipment, and tools in line with DoA's cost sharing policy.

31. Part (c) will support the construction and rehabilitation of five farm shops as a pilot for commercially viable model enterprises. The shops will increase timely availability of quality agri-inputs to farmers, link small producers to agri markets, and provide a buy back facility for selected crops. The component will work closely with the DAMC and FCBL and provide the necessary inputs and technical support to develop and operationalize these shops as commercially viable enterprises and to incorporate lessons learnt from this pilot in other farm shops being rolled out.

3.2 Linkage to Domestic and Export Markets

32. Small farmers are constrained by limited information, knowledge, and access to domestic and export agri-markets. The existing DAMC-managed market information system (the AgMarket website and IVR system) remains sub-optimally developed and under-utilized, especially by the small producers. In order for local farmers and producers to have regular information and updates about the demands and prices of agri-produce in local and distant markets, and to help them make informed decisions to adequately reap market benefits, this sub-component will

provide support to DAMC to assess and upgrade the current system into a user-friendly agri-market information system which producers and other stakeholders are able to easily access through computer and mobile technology. The purpose is to: (a) improve the flow of market information from local auction yards and distant markets to producers; and (b) systematically improve production planning and management of commodities. This platform can also be used to facilitate regular dissemination of information on agriculture-nutrition linkages, as supported in Component 1. In addition to supporting the DAMC portal, the use of mobile technology will strengthen producer linkages, knowledge sharing, and enhanced interactions among local producers, middle men, traders, and agri markets, thus allowing producers to have regular knowledge of local market dynamics and prevailing prices.

33. This sub-component also addresses high value export commodities, which are constrained by limited access to international markets and inadequate backward linkages with producers. The component will: (a) facilitate knowledge and information exchange between producer groups, traders, exporters, and key stakeholders for maximizing foreign exchange returns – by arranging regular buyer-seller meetings and dissemination of critical information on production, market, policies, etc.; (b) inform exporters about international trade practices, trade negotiation, and other issues, and link them with producers and intermediaries for efficient value chain functioning.

34. Lack of access roads and inadequate transport facilities is a major barrier for small farmers in getting agri-inputs and taking their produce to the market. The project will promote an entrepreneurial approach to enhance small producers' collective bargaining power as a business unit and engage in collective transportation, selling, and buying. Where appropriate, the project will support producers/individual members/youth to set up transport enterprises for back and forth transportation of agriculture inputs and produce from farm to market.

35. As part of sub-component 3, the project will link PGs to the school meal program. In the wake of limited availability of local agri-produce primarily due to high prices, local preferences, limited seasonal availability and weak supply chain, the school meal programs- an entitlement of every boarding student in Bhutan - find it hard to provide a balanced and nutritious diet to students. Integrated homegrown school meal programs can help increase farmers' incomes leading to a higher propensity to invest in food expenditures and help drive changes in consumption practices of future buyers by exposing children at a young age to a balanced diet and concurrently engage the community. The project will facilitate productive linkages between the producer groups and schools so that the schools can purchase seasonal vegetables, fruits, and pulses from these groups. The project will develop the capacity of: (a) PGs, in establishing partnerships with schools and accessing local markets to sell their produce, as needed; (b) schools, to improve their menus based on the crop calendar to help the PGs plan supplies accordingly; and (c) school cooks, to make use of seasonal foods and increase nutrient retention. The project also will support exposure visits to successful home-grown school feeding programs

36. The following table identifies some of the possible schools in the selected Dzongkhag's that could link with local farmers. These schools can serve as a pathway to connecting with other local institutions, improve livelihoods of individuals in farmer's group, and contribute to the improvement of diets among school children and the local community if complemented by effective capacity development and BCC.

Table 1: Prospective Schools Linked to Local Farmers

Dzongkhag	Gewog	Name of School	No. full board	No. of HH	Estimated Population
Dagana	Drujeygang	Drujeygang HSs (RGoB)	352	397	1,985
	Lhamoizingkha	Lhamoizingkha MSs (RGoB)	267	314	1,570
Haa	Gakiling	Rangtse PS (WFP)	154	200	1,000
	Uesu	Tshaphel LSS (WFP)	185	255	1,275
	Samar	Gyengkha PS (WFP)	212	325	1,625
Chukha	Bongo	Pakshikha Central School (RGoB)	457	663	3,315
		Bongo PS (WFP)	50	n/a	n/a
		Chungkha Ps (Both WFP (RGoB)	78	n/a	n/a
	Dungna	Dungna LSS (WFP)	205	167	835
	Getana	Getana Ps (WFP)	104	152	760
Samtsi (nutrition officer is also present in this area)	Dophuchen	Dorokha Central School (RGoB)	503	1045	5,225
		Sengdhen LSS (RGoB)	400	788	3,940
		Denchukha LSS (RGoB)	140	550	2,750
		Mindruling PS (RGoB)	72	924	4,620
	Tading	Tabadramtoe PS (RGoB)	160	n/a	n/a
	Tendruk	Tendruk HSS (RGoB) & Soeltapsa PS (WFP)	268	n/a	n/a

37. Activities on linking producer organizations with school meal programs to improve dietary diversity will mainly include: (a) strengthening contractual arrangements between POs and schools, and (b) linking production calendars with seasonal school meal requirements, and (iii) training of school cooks. The acceptability of the meals in schools will be regularly examined, and regular cooking demonstrations will be conducted together with associated appropriate BCC materials. Contractual arrangements will also need to be monitored.

Component 4: Project Management (USD 0.710)

1. This component will support all aspects of project management and implementation including M&E, communications/knowledge management, baseline studies and policy analysis.

2. The key functions and activities would be to: (i) provide overall governance and direction to the project; (ii) provide strategic and operational level guidance and support to the project staff for the achievement of the PDO, outcomes and outputs; (iii) regularly monitor and analyze the overall and component specific: implementation progress, budget and expenditures, and address any issues, bottlenecks and gaps to ensure that project implementation progress is on track; (iv) conduct a capacity needs assessment of project staff and provide requisite knowledge, management skills, exposure visits, and specific thematic/technical training; (v) establish a robust M&E System, including baseline surveys, mid-term assessment, and end of project evaluation; (vi) strengthen project communication and knowledge management as well as document, collate and disseminate project experiences and learning; and (vii) support studies and policy analysis that would contribute to the long-term agriculture, food security and nutrition policy of the country.

Annex 7: Suggested Outline of an Environmental and Social Impact Assessment

At the implementation of FSAPP, a full scale Environmental and Social Impact Assessment (ESIA) will be required if the DoA plan to implement a large scale irrigation scheme. According to EC Regulation, Section 17, a full blown ESIA is necessary for activities; i) falling within the boundary of a protected area, ii) within 50 meters distance of a public park, human dwelling, hospital, school or a sacred landscape or site, and iii) any other sensitive area designated by the Secretariat. The ESIA process comprise of following key steps:

Scoping: This process is to establish the environmental and social priorities and the tier of the study; whether a full blown ESIA or an IESE or whether the activity can be implemented by following some ESCOPs. Scoping also sets the boundaries for the assessment and the magnitude of the study by developing a Terms of Reference (ToR) be it for the ESIA or IESE. Main component of the ESIA/IESE will be an Environment and Social Management Plan (ESMP) which includes monitoring plan, vulnerable community development plan (VCDP) and gender development plan (GDP), as appropriate.

Baseline data generation: This process is to facilitate assessment of anticipated environment and social impacts due to the project activities. It is important to have information on the prevailing status of environmental and social in the subproject area and the periphery. Data can be both primary and secondary.

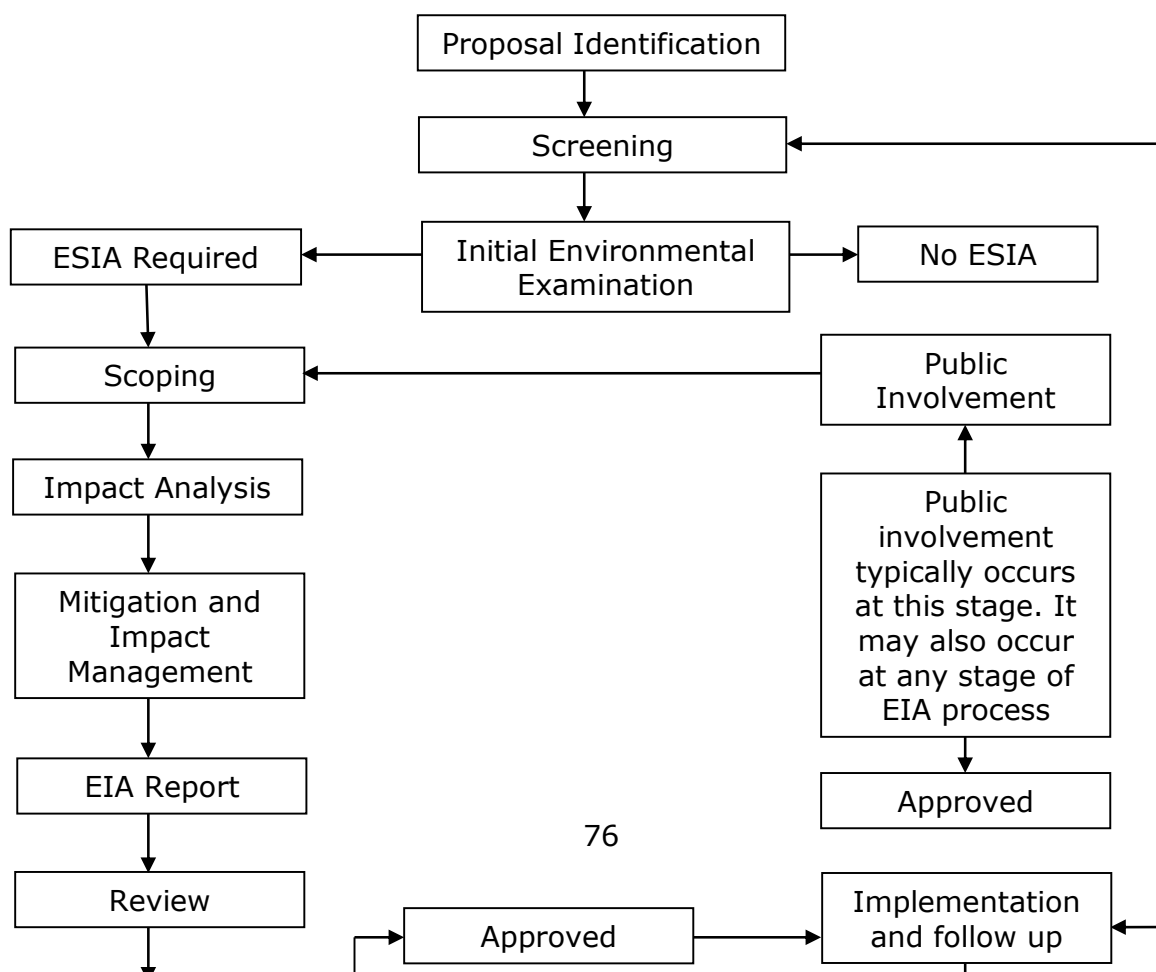
Impact assessment: This is the main exercise of the ESIA/IESE to identify, evaluate and predict the characteristics of potential impacts due to the planned/programme subproject activity using the baseline information on one hand and the potential features of the project on the other hand. Normally, impact assessments are undertaken applying standard methods, technology and models. At times, it also is important to conduct extensive consultation with local experts and elders on historical and precedent incidences in the locality to determine potential impacts.

Researching mitigation of impacts: This is the desired/objective output of the entire ESIA/IESE assignment in realizing best and possible options of preventive, remedial and compensatory measures against each identified adverse impact. Local and indigenous mitigation knowledge again becomes very useful to address certain impacts if local elders are consulted. There also could be referable national, regional and international good practices (Environment and Social Code of Practices) in mitigation actions.

Environment and Social Management Plan (ESMP): This part of the process is to translate recommendations of mitigation measures with monitoring plan and budget outlines to be adhered to by the project applicant/proponent.

A flow diagram on the process of undertaking an ESIA is given below in figure 4 for an instant guidance.

Figure 4: An ESIA process flow diagram



An ESIA and ESMP should include the following:

- The environmental and social management plan to be realized during the life of a project (i.e. pre-construction, construction, operation phases) in order to enhance benefits and minimize adverse environmental impacts.
- Description of the detailed actions needed to achieve these objectives, including how they will be achieved, by whom, by when, with what resources, with what monitoring/verification, and to what target or performance level. Mechanisms must also be provided to address changes in the project implementation, emergencies or unexpected events, and the associated approval processes.
- Clarification of institutional structures, roles, communication and reporting processes required as part of the implementation of the ESMP.
- Description of the link between the ESMP and associated legislated requirements.
- Description of requirements for record keeping, reporting, review, auditing and updating of the ESMP.

Common Elements of an ESMP and its Contents

A) *Introduction:* This should provide brief but concise information on:

- *the ESMP context:* describe how the ESMP fits into the overall planning process of the project, listing project activity environmental studies.
- the ESMP's connection with the ESMF (if relevant) and the project.
- *the objectives of the ESMP:* describe what the ESMP is trying to achieve. The objective should be project specific, not broad policy statements. The activity-specific ESMP shall form part of the project contract specifications.

B) *Project description*

The project/activity objective and description should be provided in sufficient detail to define the nature and scope of the project. These should include:

- *project location:* site location should be described with location of the activities provided including location maps showing location in the project area
- *Construction/operation activities:* the description may include a brief description of construction and operation processes; employment numbers and type; the plant and equipment to be used; the location and site facilities and worker camps; bill of quantities for civil works.
- *timing and scheduling:* anticipated commencement and completion dates should be indicated. If the project is to be completed in stages then separate dates for each stage should be provided.

C) *Baseline data*

This should provide key information on the environmental background of the project activity as well as its connection with the project area, including maps. Focus should be given to provide clear data on topography, major land use and water uses, soil types, flow of water, and water quality/pollution. Brief description on socioeconomic condition and environment (if relevant) should also be provided. Photos showing existing conditions of project sites should be included.

D) *Potential impacts and mitigation measures*

An ESMP identifying specific activity potential impacts and corresponding mitigation measures referring to ECOP, if available, should be developed for this Section.

E) *Monitoring*

Monitoring of ESMP implementation would encompass environmental compliance monitoring and environmental monitoring during project implementation as described in details below:

Environmental and Social compliance monitoring: this should be the responsibilities of Site supervisors, PMU, DoA, and benefited Dzognkhags, Geogs and communities.

F) *ESMP Implementation arrangements:* *Institutional Arrangements should be in line with the ESMF. Discussions should cover the following aspects:*

- Responsibility for ESMP implementation.
- Incorporation of ESMP into detailed technical design and bidding and contractual document.
- Environmental and social compliance framework.
- Reporting procedures.

G) *Institutional Strengthening Plan:*

The institutional strengthening plan (capacity building along with the proposed budget) is elaborated in subsequent section)

H) *Estimated Budget for ESMP Implementation:*

Conventionally the costs of implementing ESMP are estimated individually to each subproject activity on determining need of the ESIA and environment clearance and also the complexity nature of the activity. When a mitigation measure is incorporated into engineering design, it becomes easier to estimate the cost of the ESMP.

I) Consultation, Disclosure of the ESMP:

Describe the consultation and disclosure activities carried out during sub-project implementation as guided in the ESMF.