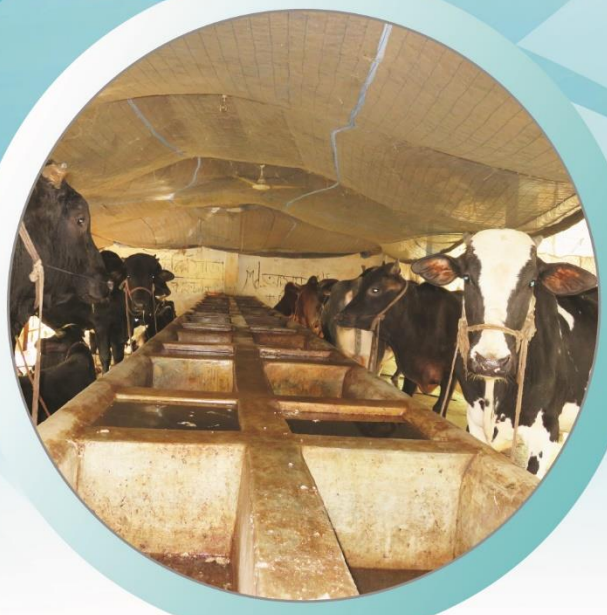
Department of Livestock Services
Ministry of Fisheries and Livestock
Government of the People's Republic of Bangladesh

Final Report

Environmental and Social Management Framework (ESMF) Small Ethnic Communities Development Framework (SECDF) and Resettlement Policy Framework (RPF)

for

Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project



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Abbreviations and Acronyms

AI	Artificial Insemination
AMR	Antimicrobial Resistance
BBS	Bangladesh Bureau of Statistics
BCM	Billion Cubic Meter
BCR	Benefit Cost Ratio
BDT	Bangladeshi Taka
BLRI	Bangladesh Livestock Research Institute
BNH	Bangladesh National Herbarium
BQ	Black Quarter
BSTI	Bangladesh Standard Testing Institute
CAP	Community Action Plan
CBR	Crude Birth Rate
CDIL	Central Disease Investigation Laboratory
CEAL	Community Extension Agent for Livestock
CEGIS	Center for Environmental and Geographic Information Services
DC	Deputy Commissioner
DEA	Detailed Environmental Assessment
DEM	Digital Elevation Model
DG	Director General
DLO	District Livestock Officer
DLS	Department of Livestock Services
DOE	Department of Environment
DMC	District Management Committee
DRMP	Development-based Dairy Revolution and Meat Productions
DTMT	Densified Total Mix Ration
EA	Environmental Assessment
ECA	Ecologically Critical Areas
ECP	Environment Code of Practice
ECR	Environmental Conservation Rules
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMDF	Ethnic Community Development Framework
EMP	Environmental Management Plan
ES	Environmental Screening
ESA	Environmental and Social Assessment
ESMF	Environmental and Social Management Framework
ETF	Effluent treatment facility
FAO	Food and Agriculture Organization of the United Nations
FIAC	Farmer's Information and Advice Centre

FMD	Foot and Mouth Disease
FSA	Food Safety Authority
GBM	Ganges-Brahmaputra-Meghna
GDP	Gross Domestic Product
GoB	Government of Bangladesh
GRC	Grievance Redress Committee
HFSNA	Household Food Security and Nutrition Assessment
ICT	Information and Communications Technology
IEE	Initial Environmental Examination
IMR	Infant Mortality Rate
INAPH	Information Network for Animal Productivity and Health
IPHN	Institute of Public Health Nutrition
IPM	Integrated Pest Management
IRR	Internal Rate of Return
IUCN	International Union for Conservation of Nature
LEA	Limited Environmental Assessment
LGED	Local Government Engineering Department
LGRDC	Local Government, Rural Development and Cooperatives
LIPP	Livestock Insurance Pilot Program
LRI	Livestock Research Institute
LTI	Livestock Training Institute
MOEF	Ministry of Environment and Forest
MoL	Ministry of Land
MoLF	Ministry of Livestock and Fisheries
MPO	Master Planning Organization
MSDS	Material Safety Data Sheets
NATP	National Agricultural Technology Project
NFP	National Food Policy
NGO	Non-Governmental Organization
NLDP	National Poultry Development Policy
NLID	National Livestock Identification Database
NLUP	National Land Use Policy
NPP	National Population Policy
NRDP	National Rural Development Policy
NWMP	National Water Management Plan
OIE	Organization for Animal Health
OP	Operational Policies
OTI	Officers Training Institute
PCU	Project Coordination Unit
PIU	Project Implementation Unit
PMU	Project Management Unit
PSO	Principal Scientific Officer

PWD	Public Works Department
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SEA	Strategic Environmental Assessment
SECDF	Small Ethnic Communities Development Framework
SEM	Small Ethnic Community
SME	Small and Mid-sized Enterprise
SPS	Sanitary and Phyto-Sanitary
SRDI	Soil Resource Development Institute
SSO	Senior Scientific Officer
STO	Senior Training Officer
TMR	Total Mix Ration
TOT	Training of Trainers
ULDC	Upazila Livestock Development Complex
ULO	Upazila Livestock Officer
UN	United Nations
UNICEF	UNICEF
UPCC	Union/Upazila Level Project Coordination Committee
USAID	United States Agency for International Development
USD	United States Dollar
VAT	Value Added Tax
VTI	Veterinary Training Institute
WARPO	Water Resources Planning Organization
WFP	World Food Programme
WHO	World Health Organization

Executive Summary

International perceptions of Bangladesh have undergone a remarkable change. The derisive 1970s imagery of an international 'basket-case' which for years dominated perceptions about Bangladesh is no longer in vogue. Increasingly, Bangladesh is being cited for its remarkable achievements on both social and economic indicators. The facts speak for themselves. Gender parity has already been achieved in primary and secondary school enrollment. More recently the resilience and potential of the Bangladesh economy is being noted in many leading global economic scenario exercises.[1] Child mortality has been more than halved over the preceding two decades.[2] Access to micro-credit has seen a quantum jump in women's gainful self-employment.[3] Work force in the readymade garment sector, the country's biggest export earner, is overwhelmingly female. Livestock and poultry sub-sector has already commanded silent leadership in employing 20% directly and other 50% indirectly in poultry and livestock subsector for their livelihoods in Bangladesh (Golam Rabbani Md. Et al. Annual Report. 2016-'17, DLS, P-630)[4] where again women are the majority.

Livestock Development-based Dairy Revolution and Meat Productions (DRMP) is a project of the Department of Livestock Services (DLS), Bangladesh with the support of World Bank. Expansion of dairy and meat production, processing, value addition, safety and quality, marketing, and increasing the consumption of milk and meat products are some major aspects of this project. The Project will be implemented almost all over the country. The site-specific intervention under different components of this project will be taken into account on the basis of geographical and environmental suitability and availability of natural resources. Sixty one (61) districts have been proposed to be included in the project.

The project has mainly four components, such as; Component-A: Productivity Improvement. Its sub-components are Support to Producer Organizations and Support to Improving Production practices. Component-B: Market linkages and Value-Chain Development. This has the subcomponents; Market linkages through Productive Partnerships (PPs), Critical Public Infrastructure for Livestock Development, and Consumer Awareness and Nutrition. Component-C is the Improving Risk Management and Resilience of Livestock Production Systems. It has the sub-components; Institutional Capacity Development and Knowledge Platform, Food safety and quality assurance, Livestock Insurance, and Emergency response to enable a rapid mobilization of funds. The Component-D is for establishing the Project Management Unit (PMU) at DLS headquarters, with eight Project Implementation Units (PIUs), one in each Divisional Livestock Office.

[1] Goldman Sachs, Global Economics Paper No. 153 *N-11: More than Acronym*, 2007; JPMorgan Emerging Markets Equity Research, *Ho Chi Minh Trail to Mexico*, 2007; Price Waterhouse Coopers, *The World at 2050: Beyond the BRICs: A Broader Look at Emerging Market Growth Prospects*, 2008

[2] UNDP/Planning Commission, GOB, 2009, MDG Needs Assessment and Costing 2009-2015 Bangladesh

[3] World Bank, 2008, *Whispers to Voices: Gender and Social Transformation in Bangladesh*

[4] Golam Rabbani Md. Et al. Annual Report. 2016-'17, DLS, P-630)

Each of the sub-components within four components will be implemented in several interventions i.e. all required activities (A to Z) will be executed to bring a revolutionary change in milk and meat production, processing, value addition, marketing, food safety, consumption, etc.

The Scope of DRMP

The project development scope extends to support small-holder farmers and agro-entrepreneurs to improve productivity, market integration, risk management, and resilience of selected livestock systems and value chains in target areas. Resilience will address the spectrum of risks facing value chains, including climate, markets, food safety, and public health. Climate resilience will be strengthened by mainstreaming Climate Smart Agriculture (CSA) practices approach investments and promoting the uptake of livestock insurance to protect the farmers against asset losses. The targeted species are cattle, buffalo, goats, sheep and chicken considered strategic for both food security/nutritional supply and for their comparative advantage on the regional markets and associated income generation potential. The project will target three value chain: dairy from small and medium-scale mixed crop-livestock systems; poultry from improved scavenging and semi scavenging systems, and semi intensified broilers systems; and red meat from small and medium scale cattle and small ruminant production units. These commodities are crucial for the food and nutritional security of the country.

The project has mainly four components, such as; Component-A: Productivity Improvement. Its sub-components are Support to Producer Organizations and Support to Improving Production practices. Component-B: Market linkages and Value-Chain Development. This has the subcomponents; Market linkages through Productive Partnerships (PPs), Critical Public Infrastructure for Livestock Development, and Consumer Awareness and Nutrition. Component-C is the Improving Risk Management and Resilience of Livestock Production Systems. It has the sub-components; Institutional Capacity Development and Knowledge Platform, Food safety and quality assurance, Livestock Insurance, and Emergency response to enable a rapid mobilization of funds. The Component-D is for establishing the Project Management Unit (PMU) at DLS headquarters, with eight Project Implementation Units (PIUs) one in each Divisional Livestock Office.

Each of the sub-components under four major components will consist of several interventions i.e. all required activities will be executed to bring revolutionary changes in milk and meat production, processing, value addition, marketing, consumption, etc.

The project Approach

The DRMP project, proposed to be financially supported with IDA resources, need to comply with the World Bank Operational Policies. Therefore, components and related activities will require furnishing the World Bank's safeguards policies, in addition to conformity with the legislations of the Government of Bangladesh on environmental and social fronts, associated with the Project.

However, since details of the sites and specific investments of the project are not available at this stage, the approach is to accomplish a framework analysis to guard against possible risks and negative impacts visualized through prognostic environmental and social assessment made with background knowledge and visions expressed by local experts and technical notes and findings of the World Bank Mission on DRMP project. The Project planning team will carry out detailed feasibility studies to determine the scope of environmental and social impacts assessment at the implementation level.

This environmental and social management framework (ESMF) has, therefore, been developed based on the ESA to guide further environmental and social impact study as well as environmental and social management plans.

The ESMF in Brief

In the process of the revolutionary changes in dairy and meat sub-sectors, a threat of environmental pollutions, public health concerns and social and small ethnic community problems may emerge. The World Bank's safeguard policies and the national legislations on environment and public health policies are, therefore required to be enforced strictly. The Government of Bangladesh has the directive to have the environmental clearance for livestock farming and processing industries. The Environment Conservation Rule 1997 (amended in 2002) describes the procedure of obtaining clearance for different categories of activities. This ESMF has suggested the guidelines to carry out activities to protect the environment from degradation and to stop or minimize the social and public health concerns.

Environmental Safeguard

The Environmental Assessment (OP/BP 4.01) and Pest Management (OP 4.09), of the World Bank safeguard policies has been anticipated to be triggered in the process of project development and implementation. Therefore, a detailed guideline on these issues has been provided in this ESMF.

Existing Legal and Policy provisions for environmental safeguards, SDGs, etc have been reviewed, The World Bank Environmental Safeguards have been pursued. Compliances have been made for which this ESMF provides EMF for this DRMP in Chapter-5.

Social Safeguards

The issues of Indigenous People (OP/BP 4.10) may not evolve normally because the three hill districts with 42% of the total small ethnic community populace of the country are outside the project area. But due to existence of few small ethnic communities in the project area, this framework provides basic guidelines as per World bank OP/BP 4.10. A framework for small ethnic communities has been furnished in Chapter-7 explaining their inclusion in project, involvement in consultation, avoidance of intervention in case they disagree on any component.

Land Acquisition and RAP

The project does not envisage private land acquisition. Therefore, no major issues on resettlement is envisaged to arise. But, in course of developing a project on sub-component like support to slaughterhouse modernization, quarantine facilities in the border check-post, creating facilities in any other interventions, resettlement issues may evolve incidentally. Therefore, the Involuntary Resettlement (OP/BP4.12) issues with guiding principles have also been included in this framework.

Gender Action Plan

Women are the important players in livestock sector in Bangladesh and contributing their most against many social, economic and cultural challenges. Economic opportunities and political empowerment are blooming slowly here as a social reality. But gender issues like access to resources, market, insurance, services etc. require adequate safeguard so that the project beneficiaries do not suffer set back due to lack of legal and economic incentives and support. The ESMF, therefore, provides

guidelines to ensure gender equity and balance while preparing and implementing the project. A tentative Gender Action Plan has also been provided for the planners and implementers to follow with necessary realistic adjustment over time.

Community Engagement and Labour Influx

For community engagement, this ESMF provides stakeholder consultation framework. It envisages that no labour influx due to implementation of project infrastructure will happen. Construction of some slaughter houses or renovation or improvement thereof or some link road or some other small structures will only employ local labour, skilled or unskilled.

Institutional Arrangement

An Institutional arrangement for planning and implementation of DRMP has been proposed in Chapter-6. This provides a Project Management Unit (PMU) at the center (DLS HQ) for coordination of different components, PIU for implementation of interventions through DLS. The Upazila agricultural outfit has been proposed to work (in line with NATP of the World Bank) at that level and at Union, Upazila, district and division levels. Responsibilities in line with the DRMP requirements have also been provided. The highlights of the institutional arrangement for implementation of DRMP is given as below:

Implementation of ESMF

The primary and direct implementing organization of this ESMF will be DLS. Few other organization/Institutions like BLRI, Universities, Trader's associations, manufacturers, processing companies, may also implement this ESMF as the basic guideline for their components of the project. The Institutions involved in DRMP project implementation and the institutional arrangement for Environmental Management with key roles and responsibilities are given below.

Project Management Unit (PMU) will be established at DLS headquarter and 6 (Six) Project Implementation Units (PIU) will be set up, one in each divisional office of the DLS.

The PMU will coordinate of the project activities while PIUs, while the PIU will implement the interventions through the DLS officials and also through other organizations (particularly NGOs) as decided by the Project Steering committee.

The Upazila is the basic administrative unit of the government. Each Upazila has got few unions having staff of various departments. Department of Agriculture, livestock and fisheries do not have their offices at union level but some functional units exist. Livestock department has some Artificial insemination centre at union level and also in some important places in the union. National Agricultural Technology Project (NATP), a World Bank supported Project of DLS, DAE and DOF has established 732 Farmer's Information and Advice Centre (FIAC) at unions of 120 Upazila. These FIACs are attended by 1280 Community Extension Agent for Livestock (CEAL). However, man-power constraints exist in the department of livestock services. Therefore, it is very difficult to ensure adequate quality services to the farmers. Hence, staff constraints (orthodox veterinarians and Animal Husbandry graduates) to implement the project activities may be addressed by new recruitments and assigning them with specific task for extension, regulatory functions to oversee the processing activities, quality certification, etc. Therefore, institutional arrangements for environmental management will be as below

Union level: Field Assistant/ Community Ext. Agents are the assigned person to carry out the activities. They will help in Monitoring and extending technical supports for adapting mitigation measures, Implementation of Environmental Codes/ best Practices and Enhancement Measures. Organizing awareness building programmes and training for the small holders

Upazila level: Upazila Livestock Officer (ULO)/ Vet. Surgeons are the focal person responsible for successful implementation of the project. Their main responsibility (in addition to their mandates) to this project are responsible for conducting environmental categorization of all sub- components under DRMP projects at Upazila level. Conducting LEA of low impact sub-components. Coordination, Monitoring of the implementation of mitigation measures, Environmental Codes of Practices and Enhancement Measures

District level: Assigned person is the District Livestock Officer (DLO)/ Asst. Director. He will Monitor and facilitate extending technical supports for adapting mitigation measures, Implementation of Environmental Codes/ best Practices and Enhancement Measures. Organizing, awareness building, programmes and training for the small holders.

Divisional Level: Deputy Director/ PSO will be the assigned person in Ensuring the Environmental and social screening process and implementation of ESMF for establishing PIU at divisional Livestock Offices. Provide technical supports to SME and Large enterprises of Livestock and Poultry production, processing, marketing and value addition activities and oversee the environmental issues of those activities

National level: A project steering committee at National level will be formed. DG (DLS) and Directors through sub-ordinate professionals will provide support to all concern in livestock and poultry production, processing, marketing and value addition activities and oversee all related environmental issues, such as; mitigation measures, enhancement measures, Environmental Codes of Practices, environmental monitoring, etc. Sole responsibility of any environmental issue arises due to implementation of DRMP project interventions. Accountable for all public, private or PPP enterprises of livestock and poultry

Grievance Redress Mechanism

The grievances whatever, emerging out of project activities, among affected persons are proposed to be redressed by a mechanism in Chapter 7. The key concern is from small ethnic communities and the mechanism is to redress through free, prior, inclusive and informed consultation.

Consultation and Participation of Stakeholders

- A consultation checklist with issues and objectives of consultation
- Objectives of participation are:
    - To find a forum of proponents to dispel the outcome of the Environmental assessment in the community as well as the impacts of the interventions.
    - To verify the consistency of the EA (Environmental Assessment) findings relating to the prevailing situations.
    - To ensure the involvement of the stakeholders including affected parties in various decision-making process in project interventions and also to let them express their opinion freely.

- A framework for future consultation has been provided including a framework where
- Information to be disclosed (results of LEA or DEA), at different project stages (during planning and design, implementation. Monitoring and evaluation) are indicated. Steps to be followed for consultation are also described

Disclosure requirements

The disclosure will include project's objectives, description, potential impacts and summary of EA). Representative of implementing agency, the government officials from different departments (DLS, DAE, DOF, department of Environment and Forest, department of Social welfare, etc) representatives from local government institutions, Ministries, NGOs, different professional groups, local elite of the civil society and journalist should be invited in the workshops to share the views and observations with the study team. Suggestions and recommendations on different issues from the participants would be incorporated in the environmental assessment study (LEA/DEA). The workshops will also help to resolve conflicting issues in the community.

Website and hard copies dissemination are next two instruments to exchange ideas and develop the ESMF if needed.

Monitoring and Evaluation

Environmental monitoring will be carried out during implementation of the sub-component at a regular interval. DRMP project will have a monitoring, evaluation and reporting system for assessing the environmental impact of the project. Regular monitoring will be carried out through internal monitoring process of the Project. This process will involve a rigorous checking of real indicator values on the ground against threshold values set at the planning stage of the project. Mid-term and Final evaluation should be carried out by the independent evaluator from external sources (Out-sourcing).

Regular monitoring will be carried out for:

- Consistency of ESMF with DRMP Project activities;
- Compliance of the ESMF having conflict/complain mitigation;
- Monitoring of civil work-related activities;
- Monitoring for environmental issues in the project areas.

Consistency of ESMF with DRMP Project Activities

DRMP project activities will follow ESMF guideline. Monitoring is needed to see that the negative attributes are excluded and the appropriate mitigation measures are in practices.

Compliance of the ESMF having Conflict/Complain Mitigation

Conflict/ complain mitigation should be the regular and important issue of monitoring during implementation of the project intervention. ESMF guideline will be followed to resolve the conflict/complain arises.

Monitoring of Civil Work-Related Activities

All civil work under DRMP project will follow the ESMF guideline. Monitoring will be carried out to assess the progress as well as to identify and mitigate any unwanted problems from the project activity. Safety level of the personnel will be ensured through designing and monitoring of the project activity on regular basis.

Monitoring for Environmental and Social issues

Monitoring of project activities will ensure that the exclusion of negative attributes is in practice. The following environmental and other issues need to be monitored for negative impact on regular basis:

a. Use of pesticides in fodder cultivation, feed storage, etc.
b. Use of chemicals, germicides, etc. in cattle sheds and milking equipment and utensils.
c. Water quality for harmful elements and bacteria.
d. Effluent treatment facility (ETF) to prevent water pollution due to project interventions.
e. Air quality to take mitigation measure for odor, dust, smoke, and other nonsense.
f. Noise from the machineries and equipment for smooth running and regular cleaning.
g. Solid waste to keep the surroundings clean and healthy.
h. Health and safety issues for the project personnel and to take necessary measures.
i. Quality assurance of the products for safe consumption.
j. Liquid and solid waste utilization for biogas production, composting or proper disposal.

Social Issues will be monitored and evaluated periodically against ESMF standards set for Social Management Framework given in Chapter 5 (Social Management Plan) and Chapter 7 (SECDF)

Monitoring and evaluation of the environmental impact will be carried out on regular basis by the internal monitoring cell for DRMP project. The local DLS officials will be involved to oversee the environmental impact situation in the locality due to implementation of the project interventions.

Capacity Building and Training

For ensuring good environmental and social response, training and capacity building has been included in this framework and presented in chapter 5. The scope and training plans have been identified tentatively which will be confirmed during detailed planning and implementation. Objectives of capacity building are outlined as below:

a) To have a healthy environmental safeguard system.
b) To make the producers, processors, sellers and traders aware of environmental soundness for public health interest.
c) To have healthy and safe food products in the market.
d) To get good congenial social environment to implement the project components
e) To avoid any conflict of interest among social communities having stake in project
f) To obtain policy support as a general enabling social environment for sustainability of the project outcomes

Budget for ESMF Implementation

Major items of expenditure for implementation of ESMF have been tentatively identified as below:

1. Capacity building training
2. Demonstration
3. Campaign on Environmental and Social issues
4. Video Development
5. Transportation
6. Honorarium for Trainers

1. Context Analysis

1.1 Background

In the context of increasing population pressure on land, nutritional status of people, particularly the children and mothers, the Government has realized that the expansion of dairy and meat production, processing, value addition, marketing, and consumption may be the important tools of sustainable economic development and poverty reduction strategy in Bangladesh. The livestock and poultry sub-sector has been increasingly playing a major role here. Livestock accounts for approximately 1.6% the national GDP with an annual growth rate of 3.32%. It shares 14.31% of the agricultural GDP (BBS, 2016-17) and has been emerging as a major growth driver during the last two decades compared to other Agricultural sub-sectors.

Livestock is an important component of agricultural economy of Bangladesh performing multifarious roles. It is the sustenance of landless people, livelihood options for the rural poor families and is potentially important for poverty reduction; income generation, contribution to food and nutrition security, employment generation, manure for cooking biomass, organic fertilizer for crop and vegetable productions, export earning, cultural and religious uses. The declining use of large ruminants over the past decades for land cultivation, post-harvest threshing and transportation has been sparing more animals for meat production. So, its importance is enormous.

The livestock and Poultry sub-sector plays an important role in food and livelihood security of the country's millions of small holders, livestock farmers and other stakeholders. Milk, meat and egg provide about half of all animal protein consumed in Bangladesh. Livestock and Poultry has a major role in employment, which the nation is facing dire necessity. Bangladesh is being popular for milk, meat and egg based solutions to address malnutrition and hidden hunger, particularly among poor women and children in rural areas.

In livestock sub-sector, backyard poultry, goat and sheep rearing are also the important practices mainly performed by the rural women. Gender discrimination and disparity prevalence among women particularly women of economic dependence, negative attitude to them, limited power exercise, lack of influence in decision making, etc. are the social realities in Bangladesh like many other countries.

Bangladesh government has ratified the UN convention of eliminating all forms of gender disparity in 1984 and therefore, has adopted the policies and plans to empower the women. Contribution of the women in family nutrition, and family income through chicken, ducks and small ruminant rearing activities are most common and conducive practices in Bangladesh.

Agricultural systems including livestock and poultry need to be strengthened to contribute adequately and efficiently towards meeting nutritional needs of the increasing population. Food systems must necessarily encompass activities related to production, acquisition, and utilization of food to prevent malnutrition in an economically, environmentally, socially and culturally sustainable way. Narrowing the nutrition gap is the challenge ahead– the gap between what foods are produced and available and what foods are needed for better nutrition – means increasing the availability, access and actual consumption of a diverse range of foods need for a healthy diet that necessarily include Milk, Meat or Egg.

The Government of Bangladesh recognizes the potential for the country to increase the value of its dairy and meat productions and processing through more sustainable management and in doing so, improve the lives of poor, subsistence farmers. Several key sector wise challenges necessitate government interventions and investments to enable responsible private sector-driven growth. These include: (1) The absence of effective regulatory Framework for post-harvest dairy and meat sector; (2) Limitation in the basic public infrastructure necessary to enable private sector investment; and (3) Limitation in both public and private sector capacity for improved livestock management and optimal productivity.

Most of the rural households are rearing livestock including poultry for ready source of cash and it provides them with employment. It is estimated that about 20% of employment is directly associated with livestock sub-sector and partly employment is about 50%. Cultivation of land by using cattle is about 50% (DLS-data sheet, 2016-17). In Bangladesh about 47.6 percent of the total labor force is engaged in agriculture sector for their livelihood that is predominantly poor (Bangladesh Economic Review, 2012).

Quality control is an important issue for the marketing of livestock products. Quality standards are controlled by the Bangladesh Standard Testing Institute (BSTI). The Local Government institutions such as city corporations and municipalities oversee the ante-mortem and post-mortem examination of slaughtered animals by the veterinarians of DLS deputed to work with them. Inadequate regulatory functions to ensure quality standard of livestock products is a great concern for consumer's safety.

Bangladesh has far to go to attain international quality standards for export of its livestock product. The country has not yet reached the full capability to meet the recommended safety level of the quality standard for livestock products for Sanitary and Phyto-sanitary (SPS) measures regulated by the World Organization for Animal Health (OIE) and Codex Alimentarius Commission.

Bangladesh is exporting mainly leather and leather products. During 2014-15, export earnings were BDT 30756 million [BBS Statistical Pocket Book 2016]. There is great potential to increase the export earnings and employment generation through processing of slaughter house byproducts (bones, horn, hooves, hair, etc) including Blood, Rumen and Visceral contents.

A major concern is also for environmental pollution due to indiscriminate disposal of slaughter house effluents, tannery wastes and chemicals, poultry slur and disposal of livestock farm wastes. A strong regulatory function along with awareness building in the society on environmental issues may be an important priority option for the planners because it is a major public health concern.

1.2 Overview and need of Dairy and Meat Sector Development

A study published by the WFP/UNICEF/ Institute of Public Health Nutrition (IPHN) on household Food security and Nutrition Assessment (HFSNA) 2009 found that nationally the rates of acute malnutrition is 13.5%, underweight is 37.4%, and stunting is 48.6%. The study estimated that more than 2.1 million children are acutely malnourished and 550,000 suffer from severe acute malnutrition. The prevalence of underweight children is 37.4%, above the WHO threshold (30%) and the prevalence of low birth weight is 36%, twice the WHO threshold level (15%) which indicates an alarming and challenging public health concern.

Since 1992 the prevalence of child malnutrition in Bangladesh has shown some decline. The stunting rate decreased remarkably from 71 percent in 1992 to 41 percent in 2011. Similarly, the underweight rates showed a substantial decline from 61 percent in 1992 to 36 percent in 2011. The rates still remain

unacceptably high (13.5%), just below the WHO emergency threshold of 15%, and indicates a critical situation for these acutely malnourished children under five years of age. This situation may deteriorate under any changed environmental condition, natural disaster influencing the livelihood of the people. Child malnutrition in Bangladesh has been found to be strongly associated with food insecurity. Therefore, it needs to be addressed with appropriate interventions.

An income stream from livestock rearing is generated through the production and sale of milk/ meat and eggs. Livestock rearing has additional benefit of improving the nutritional status of the farm household as the milk; meat and eggs are partly consumed by them and helps improving family nutrition. The nation feels it necessary that the production of animal protein Milk, Meat and egg is to be emphasized to ensure food and nutritional security in the country which has been reflected in the National Policies on livestock and poultry.

Livestock being the most important protein source providing about 44% of protein demand of the country, a ready cash source of the poor families and the sustenance of landless people, livelihood options for the rural poor families particularly women and is potentially important for poverty reduction, it is therefore, the most suitable intervention to address the malnutrition situation in the country.

The country's demand for milk, meat and eggs for about 165.49 million people (as in 2017, estimated based on Population and Housing Census 2011) is enormous. Demand for milk is 14.865 million MT (based on 250 ml/person/day), Production is 9.283 million MT. Thus, there is a production deficit of 5.582 million MT. Demand for meat is 7.135 million MT (based on 120 g/person/day), production is 7.154 million MT, having no deficit at present But, current production of these commodities need to be increased at least 2 times by the year 2021 (as indicated in 7th Five-year Plan 2016-20). Demand for eggs is 16941.6 million (based on 104 eggs/person/year), production is 14933.1 million, deficit is 2008.5 million. The availability per head per day of milk and meat is 157.97 ml and 121.74 gm respectively, and egg is 92.75 nos per head per year *(Source: Annual Report of DLS for 2016-17).*

Dairy animals comprise cows, buffaloes, sheep and goats. Bangladesh has one of the highest cattle densities (Karim, 1997), but with the lowest productivity of milk. The average weight of the local cattle is also low and ranges from 100-150 kg for cows and from 150-250 kg for bulls that are approximately 25-35% less than Indian cattle. Milk yield are also extremely low; 200- 250 liters during the 10 month lactation period in contrast to 800 liters for Pakistan, 500 liters for India and 700 liters for all Asia (National Livestock Development Policy, 2007). Appropriate research and dairy development interventions are needed to improve this situation and ultimately to improve rural livelihoods. The design of such development interventions requires detailed and up-to-date back ground information about the dairy sector.

The above noted realities are the indicators of the necessity for country's dairy and meat production, processing, value addition marketing and consumption development initiatives.

1.3 Environmental Vulnerability and the Sectoral Context

1.3.1 Environmental Vulnerability

The country has achieved a doubling of milk production during the last decade, but the growth rate has fluctuated considerably over the years – the main reasons for this are natural disasters, regular flooding and the severity of the monsoon. The long-standing floods in 1998 and 2004 and the super cyclone Sidr in 2007 affected milk production drastically. Crucially, the nationwide prevalence of

anthrax during the last quarter of 2010 dramatically decreased milk production from 5.4% in 2009 to 0.7% in 2010 (hemme,2010). The pest and diseases of cattle and poultry bird are also a potential threat to livestock productivity.

Impacts of climate change on livestock and poultry production is mainly related to reducing productivity, scarcity of animal feed production, outbreak of different emerging and re-emerging diseases, etc. Climate change impact on rising sea levels is a potential threat to livestock production system. Inundation of Charland (in estuaries in the coastal region) will reduce grazing facilities. Intrusion of saline water in coastal regions is not conducive for livestock rearing due to enhanced stress factors. Frequent tropical cyclones, tidal surges, and prolonged gusty rainy seasons affect livestock productivity.

Climate change is causing unusual behavior in temperature; rainfall, flooding pattern, cyclonic storm, tidal surges, etc. that favors and enhances the pests and other causal agents of diseases, saline water intrusion are affecting natural growth and damaging natural pasture grasses in the Char-land of the estuaries in the coastal region. Mighty rivers in the northern part of the country are becoming small stream due to lack of flow from the upper region and siltation in the rivers causes overflow (flooding) during monsoon. Changing behavior of the climate is enhancing desertification during dry season, adversely affecting the animal feed production, outbreak of emerging and re-emerging diseases, reducing the productivity of livestock and poultry birds. The environmental vulnerability is therefore, a concern of livestock productivity.

Necessary measures such as: i) Silage to preserve fodder to use during lean seasons and adverse environmental condition. ii) Good housing practices to protect animals and poultry birds from adverse environmental conditions. iii) Good feeding practices to ensure nutritional status of the animals and poultry birds iv) Good Health management practices to protect animals and poultry birds from emerging and reemerging diseases, etc. are the essential measure to uphold the productivity under climate change situations.

1.3.2 Sectoral context

Dairy

The dairy system in most of the South Asian countries including Bangladesh is characterized by small scale household operations, integrated with crops and other off-farm activities. Dairying is considered a major source of nutrition and income, and offers good opportunities for both farm families and non-farm rural and urban employment. The gradual shift from subsistence to market-oriented dairy units demand more advanced efforts in dairy technology. Dairy animals comprise cows, buffaloes, sheep and goats. Bangladesh has one of the highest cattle densities (Karim, 1997), but with the lowest productivity of milk.

Appropriate research and dairy development interventions are needed to improve this situation and ultimately to improve rural livelihoods. The design of such development interventions requires detailed and up-to-date back ground information about the dairy sector.

In terms of the regional share of milk production in Bangladesh, the northern part of the country produces nearly half of the country's milk, as a result of availability of fodder and the establishment of several dairy development programmes (Hemme et al, 2004).

Milk production in southern part of Bangladesh is not significantly increasing due to adequate attention and efforts to dairy production systems. However, the coastal region is an important hotspot

for Buffalo rearing. Buffalo milk and milk products are available in most part of Khulna, Bagerhat, Satkhira, Patuakhali, Borguna, Bhola, Barishal, Pirojpur, Jhalakathi and some other coastal districts like Noakhali and Laxmipur.

Agriculture, including livestock and fisheries, has emerged as a growth driver in the 21st century. The potential of the livestock sub-sector is much higher than generally estimated at present. Bangladesh has serious shortages of milk, as people want to consume it as nutrition for the whole family, not merely the children. Bangladesh, however, has to depend on imported milk products.

MoFL has formulated a Livestock Development Policy in 2007, which is now used as an operational policy document for the breeding of animals. Animal breeding strategy has been elaborately outlined in the National Livestock Development Policy 2007. A strong breeding strategy to preserve the positive qualities of native breed such as: considerable adaptability to adverse climatic conditions, surviving on poor nutrition with minimum management practices, resistance to many diseases, suitability to the economy of poor and subsistence farmers should be taken in to consideration under special programme of breeding.

Fodder and feed are the most important inputs of livestock rearing. High prices and shortage of feeds and fodder is one of the major constraints for development of the livestock sector in Bangladesh. Pasture land all over the country is being reduced significantly due to cultivation of High Yielding Varieties (HYV) of rice to meet the demand of the growing population. Besides, adulteration of commercial feeds and high price are the potential threat for livestock development. Therefore, key policy issues are to consider: creation of pasture land; training of farmers on fodder cultivation and fodder preservation; and quality control of animal and poultry feed.

Milk Consumption

Among the SAARC countries milk consumption in Bangladesh is 157.97 ml. per person per day (Annual Report of DLS for 2016-17), while it is 140 ml in Nepal, 142 ml in Sri Lanka, 188 ml in Maldives, 227 ml in India and 520 ml in Pakistan [World Milk Day seminar-2013]. So, there is a potentiality of increasing consumption as much as double or triple of the present situation comparing to other SAARC countries.

Limited coverage of animal healthcare by the DLS, lack of adequate quality control of vaccines, drugs, feeds and breeding materials and regular disease diagnosis and control programme along with inadequate support for livestock research, import of powdered milk, etc. are the key constraints in the country's dairy developments. Imported milk powder may be hazardous for public health due to presence of radio-active materials and high number of coliform bacterial content.

Country's milk production has increased almost three times during 2008-2016 and per capita milk consumption has increased at 157.98 ml (DLS estimation) from the earlier 38 ml. due to implementation of the artificial insemination programme extended efforts in extension and health care services to the dairy farmers.

Milk Powder Import in Bangladesh

Bangladesh now produces only 9.283 million tons of milk against the total requirement of 14.865 million tons. The deficit of milk is about 5.582 million tons annually. The demand is made by importing in the form of powder milk. In year 2015-16 about 0.13 million tons of milk powder has been imported from different countries [BBS Statistical Pocket Book 2016].

Poultry

Agriculture, Livestock and Fisheries remain the most important sector in Bangladesh's economy due to its role in food and nutrition security, employment and livelihoods. It contributes 14.31% in the agricultural GDP (BBS-2016-17) in employment generation.

According to the Poultry Sector Country Review (2008), the chicken population has steadily increased from about 143 million in 2001 to 195 million in 2006, And in 2016-2017 it stands to 275.18 million (Source: DLS) the duck population has similarly increased during the same period from 25.8 million to 38.1 million and in 2016-2017 it stands 54.02 million. In response to the increase in consumer's demand of poultry, meat there is a steady increase of annual broiler meat production at the rate of 2.5 percent since 2001, which was estimated at 55,000 tons in 2006.

With a growing population, Bangladesh expects the demand for poultry products to increase considerably in the future. The poultry industry in Bangladesh and poultry production contributes significantly to agricultural growth, household income generation, and improvements in the health and nutritional status of the population. It has also proved to be sustainable industry.

A number of constraints and weaknesses hinder the further development of the poultry sector. In particular, the growth and economic potential of the poultry sector has been seriously challenged by diseases are responsible for major losses, substantially reducing the cash earning potential for small holders.

Environmental Context (of livestock resources):

Livestock contribute both directly and indirectly to climate change through the emissions of greenhouse gases such as methane and nitrous oxide. Enteric methane emission in the rumen mostly occurs as a part of the natural digestive process of animals (enteric fermentation). Conventional livestock manure management, on the other hand, in addition to climate also pollute soil through solid storage on ground and water when it is disposed directly into water. Rural women are mostly responsible for the management of livestock manure, they prepare cooking biomass (dried sticks, cakes) out of it and use to expose them to black carbon while they cook family foods. Their children are also exposed to GHGs while they process fresh manure. The livestock (cattle and poultry) manure conventionally pollutes the environment and it can be converted into wealth through improved management. A survey research was conducted to determine existing manure management systems, their share in manure produced on farm and to quantify the extent of pollution through different systems. About 56.2 to 57.0% manure of large ruminants is kept in solid storage and 37.3 to 43.0% is used as burned fuel. Of the rest 4.80% is used in anaerobic digestion and 1.65% is lost as liquid slurry. The extent of manure used in solid storage was significantly ($p<0.01$) higher in commercial than subsistence farms irrespective of areas. The methane emission factor of dairy, other cattle (bulls & growing animals), buffalo, small ruminants and poultry was calculated to be 6.77, 6.41, 5.42, 0.203 and 0.024 Kg CH_4/head/year, respectively and the annual emission was estimated to be 62.98, 92.3, 7.97, 5.89 and 7.62 Gg methane, respectively. Farmers` unawareness and their weak capacity and credit problem are the major constrains to improved manure management. [Study on Existing Livestock Manure Management Practices in Bangladesh (K. S. Huque, et.el- 2017). Improved management of livestock manure through anaerobic digestion may open options for climate pollution reduction and diversification of livestock products and by-products such as, biogas, condensed biogas, organic fertilizer, power etc.

The enteric methane emission in the rumen affect the yield performances of animals. Feed optimization of ruminant animals reduce enteric methane emission in the rumen, especially better-quality protein source feed, and readily available energy sources may reduce at least 30% of enteric methane emission in the rumen. Thus, feed optimization is one of the important option for the reduction of enteric methane emission and as well as increasing of productivity of animals

Methane emissions from livestock are estimated at about 2.2 billion tons of CO2 equivalent, accounting for about 80% of agricultural CH4 and 35% of the total anthropogenic methane emissions. According to the second national communication of Bangladesh to the UNFCC (2012), estimated methane emissions from livestock and poultry for 2004-05 are 493.16 and 84.79 Gg, respectively; and together they account for about 36% of total estimated methane emissions from all major sectors (MoEF, 2012).

Environmental pollution and contamination and development of AMR microbes in nature through faulty disposal of carcass and other wastes, slaughter wastes, direct disposal of unprocessed wastes could be taken into consideration. Slaughtering and consumption of sick animal is another important agenda of human and environmental contamination.

1.4 Project Development Objectives

IDA assisted projects or programmes need to comply with the WB operational policies that must satisfy the WB's safeguard policies, and also conformity with national environmental legislations. Therefore, an environmental and social assessment and management framework is necessary for the preparation of detail Strategic Environmental Assessment (SEA), Site specific Environmental Assessment (EAs) and Environmental Management Plans (EMPs). The Project development objectives are to materialize the revolutionary interventions under the selected components. To mention specifically, the project development objectives are:

Objective 1: To increase milk production and processing, value addition, and marketing to ensure quality dairy products. To support rural small holders, traders and other stakeholders to ensure both producers and consumers interest as well as to generate employment opportunity for the sustainable livelihood.

Objective 2: To increase production of Meat (Beef, Mutton and Broiler) with special emphasis on hygienically processing, value addition and marketing and to prevent environmental pollution through utilization of Farm waste and slaughter house byproducts.

Objective 3: To support institutional capacity building that in turn translate into better services and economic prospects for the Dairy and poultry sector to ensure food and nutritional security in the country and generate employment opportunities.

Objective 4: To support in the process of gradual shifting from subsistence to market-oriented dairy and beef production that demand more advanced efforts in dairy and meat technology.

Objective 5: To monitor and evaluate the impact of the interventions for improving household, community level, regional, and national, food and nutritional security and livelihood status.

1.5 Project Beneficiaries

The projects will strengthen and support existing production, processing, marketing and nutritional activities to maximize nation-wide nutritional benefits. Dairy and meat production, processing, value

addition and marketing interventions will aim to demonstrate impact on improving nutritional status, employment generation and reduction of environmental pollution due to indiscriminate disposal of on-farm wastes and slaughter house byproducts.

Direct beneficiaries will be livestock and poultry farmers, a large majority of whom are rural smallholders, consumers, private entrepreneurs and traders, who will benefit from improved animal rearing practices and other interventions. DLS and technical institutions in the country, including Central Disease Investigation Laboratory (CDIL), Bangladesh Livestock Research Institute (BLRI) and universities, will get benefit from enhanced and improved capacity that should in turn translate into better services and economic prospects for the Dairy and poultry sector. Ultimate beneficiaries will be the people of Bangladesh, who will get benefit of improved production and supply of safe milk and meat, rural women will get support of renewable energy, more decent works and employment will be created, public health and soil fertility rsiks will be reduced and the pollution of environment of livestock origins will be reduced.

1.6 Broader Project Locations

The Project will be implemented almost all over the country. The site-specific intervention under different components of this project will be taken into account on the basis of geographical and environmental suitability and availability of natural resources. 61 districts have been proposed to be included in the project. The location wise interventions depending on environmental, social and cultural practices and suitability will be taken during selection process. The project location map is presented in Figure 1.1.

1.7 Project Component

COMPONENT A: Productivity Improvement

The component's objective is to raise on-farm productivity, and to increase efficiency, safety and profitability through climate smart livestock management, especially better approaches to animal health, nutrition, and breeding. It will comprise two sub-components:

Sub-component A1: Support to Producer Organizations, to support producers organized around a commodity of common interest and build their capacity in climate smart production management and marketing, etc.

Figure 1.1: Location Map of the Project

Sub-component A2: Support to Improving Production Practices to improve productivity, efficiency, safety, quality and climate smartness standards at producer level. These will cover: Feeding and nutrition, including: (i) feed and soil analysis facilities; (ii) an on-farm feed optimization and ration balancing program; (iv) training on production of fodder seed, fodder nurseries, fodder demonstrations, including climate smart alternatives; (vii) production of protein/mineral/vitamin mixes, and (viii) demonstrations for feed and fodder storage options. Disease prevention and control encompassing: (i) capacity development for production of key animal vaccines, disease surveillance, diagnosis and reporting; (ii) expanded capacity for biosecurity including border check posts, quarantine facilities, and facilities for producing semen, feed, and vaccines; (iii) capacity development for regular sampling, testing, reporting and certification of slaughterhouses, milk collection and processing facilities , and (iv) use ICT to enhance disease surveillance and to geo-referenced mapping of diseases. Breed improvement, including: (i) enhanced capacity for production of quality semen; (ii) expansion of semen delivery infrastructure; (iii) open nucleus improvement program for quality bucks and rams; (vi) capacity development for delivery of quality chicks. Housing and management including: (i) developing and promoting low-cost housing designs to improve productivity and reduce diseases; (ii) upgrading shelters; (iii) promoting manure management technologies, including biogas converters to manage manure; (iv) promoting processing options to reduce nutrient losses and add value to manure; (v) water analysis kits for low cost filtration equipment.

COMPONENT B: Market linkages and Value-Chain Development

The component's objective is to link producers to markets to increase the volume, quality and safety of livestock products being marketed and consumed by financing three major activities as follows:

Sub-component B1: Market linkages through Productive Partnerships (PPs) to consolidate the linkages between livestock POs and agribusinesses (ABs) including small and mid-sized enterprise (SMEs): traders, Financial Institutions (FIs), processors and other downstream ABs.

Sub-component B2: Critical Public Infrastructure for Livestock Development will finance public and collective infrastructure for value chain development to address the barriers to livestock processing, food safety and marketing including, *inter alia*: (i) climate smart transportation connecting production areas to markets; (ii) slaughterhouses; (iii) renewable energy installations (solar panels, bio-digesters); (iv) National Livestock Identification Database (NLID); and (v) Information Network for Animal Productivity and Health (INAPH), capturing information about Animal health, AI delivery, vaccinations, veterinary information, certifications, etc.

Sub-component B3: Consumer Awareness and Nutrition will undertake a robust behavioral change communication and public education campaign using traditional and new media tools to raise awareness on the dairy, beef, broiler management and processing, food safety, and better nutrition practices. The campaign will also target mothers and school children to change behavior regarding public health issues, and intake of nutritional food. In addition, a school milk program will be financed to further stimulate demand and behavioral change as it pertains to livestock product consumption.

COMPONENT C: Improving Risk Management and Resilience of Livestock Production Systems.

This component will finance the development of an environment conducive to a sustainable livestock sub-sector growth, by developing the capacity of public sector institutions and private sector partners, and promote viable risk management strategies through the following sub-components:

Sub-Component C1: Institutional Capacity Development and Knowledge Platform to strengthen the capacity of the Department of Livestock Services (DLS), and the overall institutional setup governing the sub-sector including: strengthening DLS to improve evidence-based policy formulation capacity at the Ministry of Livestock and Fisheries (MoLF) and elaborate related regulations, procedures and manuals,

Sub-Component C.2: Food safety and quality assurance to improve food safety and quality assurance, complementing on-going efforts of the Ministry of Food, the Bangladesh Food Safety Authority (FSA), and the Ministry of Health and Family Welfare, supported by the Netherlands, United States Agency for International Development (USAID), and the Food and Agriculture Organization of the United Nations (FAO) among others. The project will leverage ICT to address Food safety and environmental safety issues.

Sub-component C3: Livestock Insurance to support the GoB in creating an enabling environment to promote gradual uptake of livestock insurance by introducing a Livestock Insurance Pilot Program (LIPP) aimed to reduce farmer vulnerability to asset losses and building resilience to shocks, including extreme climate events. This will include support to DLS to establish preconditions for livestock insurance to ensure good quality data to develop effective insurance solutions.

Sub-component C4: Contingency emergency response to enable a rapid mobilization of funds in the event of an eligible crisis or emergency following an adverse natural or manmade situation.

COMPONENT D: Project Management, Monitoring and Evaluation

Component D will establish the Project Management Unit (PMU) at DLS headquarters, with eight Project Implementation Units (PIUs), one in each Divisional Livestock Office, and set-up adequate fiduciary, governance, audits and accountability systems; communication and monitoring and evaluation; coordination; and special evaluation studies. Learning from India, the PMU will also commission feasibilities studies for the possible establishment of new institutions to complement or reconfigure the existing institutional setup for livestock services delivery and strengthen the organizational and institutional framework of the sub-sector in Bangladesh. These feasibility studies will encompass: (i) Dairy Development Board to formulate and support implementation of policies on import and export of goods necessary for production and promotion of milk and milk products, etc.; (ii) Bangladesh Dairy Research Institute for a research devoted to pre- and post-harvest dairy development; (iii) Bangladesh Poultry Research Institute to conduct research on poultry meat processing, meat safety and quality issues; and (iv) Total Mix Ration (TMR)/Densified Total Mix Ration (DTMT) factory.

1.8 Objectives of the Environmental and Social Assessment and Management Framework

Livestock production system in Bangladesh is largely influenced by the environmental, social and cultural practices. The Projects are supposed to be implemented throughout the country having different ecological regions (Coastal, Hilly, Wet-lands, Flood- plain, etc.). Depending on the variation in atmospheric condition, geological realities and availability of natural resources, the agricultural practices including fisheries and livestock differ significantly. The environmental and social impacts are therefore, associated with the interventions. Conducting of Environmental and social assessment for such interventions are the requirement of the World Bank's Environmental and social safeguard policies. The ESMF describes the environmental and social safeguard, Institutional arrangement and

capabilities to ensure that the interventions meet the national and even the regional requirements and are consistent with the World Bank's safeguard policies. Specific objectives of the ESMF are:

- To assess the potential adverse environmental and social impacts associated with the interventions that guides to minimize, avoid or to resolve the adverse impacts.
- To develop Environmental Assessment the social Screening system to use in the future interventions.
- To develop the well-planned methodologies, for smooth implementation of the interventions.
- To specify the roles and responsibilities of the stakeholders, monitoring and evaluation and reporting procedure of interventions.
- To use the ESMF guidelines in resolving the environmental and social dispute whenever arises.
- To have a sustainable livestock and manure management for socio-economic gain accompanied by the reduction of pollution.
- To mitigate public health concerns, derive from livestock origin.
- To build awareness in the society.

1.9 Due Diligence Principles

The basic principles followed in formulating ESMF are:

- Enhancement of food and nutritional security through, environmentally, socially, culturally and economically sustainable way.
- Accelerating in generating the employment opportunity through diversified activities on livestock and poultry production, processing, marketing and consumption process.
- Support to small holders, gender and vulnerable groups.
- Improving the environmental pollution generated from livestock activities
- Protection of water resources from getting polluted by the livestock production and processing activities.
- Dispute resolving for effective implementation of interventions.
- Nutrition for the children and mothers with an ultimate goal to create healthy nation.

1.10 ESMF Preparation Approach

Approaches in preparation of this ESMF includes: Discussion with the DRMP project team, review of the DRMP project components as well as sub-components; Establishment of baseline situation on physical, biological, and socio-economic environment of the project areas through data collection and analysis; Review of the environmental and social legislation, regulatory and institutional framework relevant to the project components; Consultations with the stakeholders including beneficiary/affected communities and developing the future consultation process; Generic assessment of environmental and social impacts including positive and negative impacts of the activities of DRMP project; Development of environmental and social management framework including environmental and social Screening, environmental management plans with environmental code of practices, social management plan with small ethnic communities development plan and resettlement policy framework.

1.11 Implementation of ESMF

The primary and direct implementing organization of this ESMF will be DLS. Few other organization/Institutions like BLRI, Universities, Trader's associations, manufacturers, processing companies, may also implement this ESMF as the basic guideline for their components of the project. The Institutions involved in DRMP project implementation and the institutional arrangement for Environmental Management with key roles and responsibilities are given in Implementation Arrangements under Chapter 6.

2. Introduction to Prevailing Environmental and Social Conditions in Project Area

2.1 Physical Environment

Physical environment refers to the physical and chemical features of an area. It includes the geographic and topographical characteristics, water resources, climate and all other natural resources within the area. The following sections provide analyses on different physical environmental features of the study area.

2.1.1 Geographic and Topographic Characteristics

Bangladesh is located between 20º34′ to 26º38′ north and 88º01′ to 92º41′ east in South Asia (Fig. 2.1). It has an area of approximately 147,570 sq km. (BBS, 2009) and is bounded by India in the west, north, and part of the east. The remaining part of the eastern border lies with Myanmar in the south-east. The Bay of Bengal demarcates the southern border. The Himalayas is close to the northern border of Bangladesh.

Bangladesh is the largest delta in the world with most of its parts, at low elevations. The main landforms in Bangladesh are ridges, basins, char lands, hills, terraces, rivers, and valleys. 80% of it is flood plain, 12% is hilly and the remaining 8% is under uplifted blocks (terraces). From the DEM it is found that around 75% land area has a very low elevation (<20 mPWD), whereas 20% has elevation between 20 to 100 mPWD. The rest 5% land area has an elevation above >100 mPWD.

The geographic location and topographical characteristic of the country favors the crop production, livestock rearing and fish production activities. The low laying swamps are the hotspot for duck and buffalo rearing.

2.1.2 Water Resources

The sources of water in Bangladesh can be classified as surface water, rainfall and ground water. Bangladesh, being the lower most riparian country in the Ganges- Bhramaputra- Meghna basins and crisscrossed by around 700 rivers including 57 transboundary rivers, shares its trans-boundary water resources with the upper riparian countries like Bhutan, China, India and Nepal. Out of a total catchment area of 1.72 million km2 of the Ganges- Bhramaputra- Meghna basins, only around 7% basin area falls within the Bangladesh territory (Amarsinghe and Sharma, 2010).The annual cross border river flows entering the river systems are estimated to be 1200 Billion Cubic Meter (BCM) (CEGIS), of which the three main rivers contribute some 981 BCM (i.e. almost 78% of the total cross border flow), 85% of which enters the country between June and October (Mac Kirby et al., 2014). Out of 981 BCM, some 54% is contributed by the Brahmaputra, 31% by the Ganges, nearly 14% by the tributaries of the (upper) Meghna and 1% is contributed by other minor rivers of the Eastern Hills. Only 15% of the total transboundary flow i.e. 148 BCM is available during the dry season (Mac Kirby et al., 2014) where only 1% (11 BCM) of the total flow (Ahmed and Roy,2004) is received in the critical month of February, thus showing the vulnerability of the transboundary flow to meet the water demand during dry season.

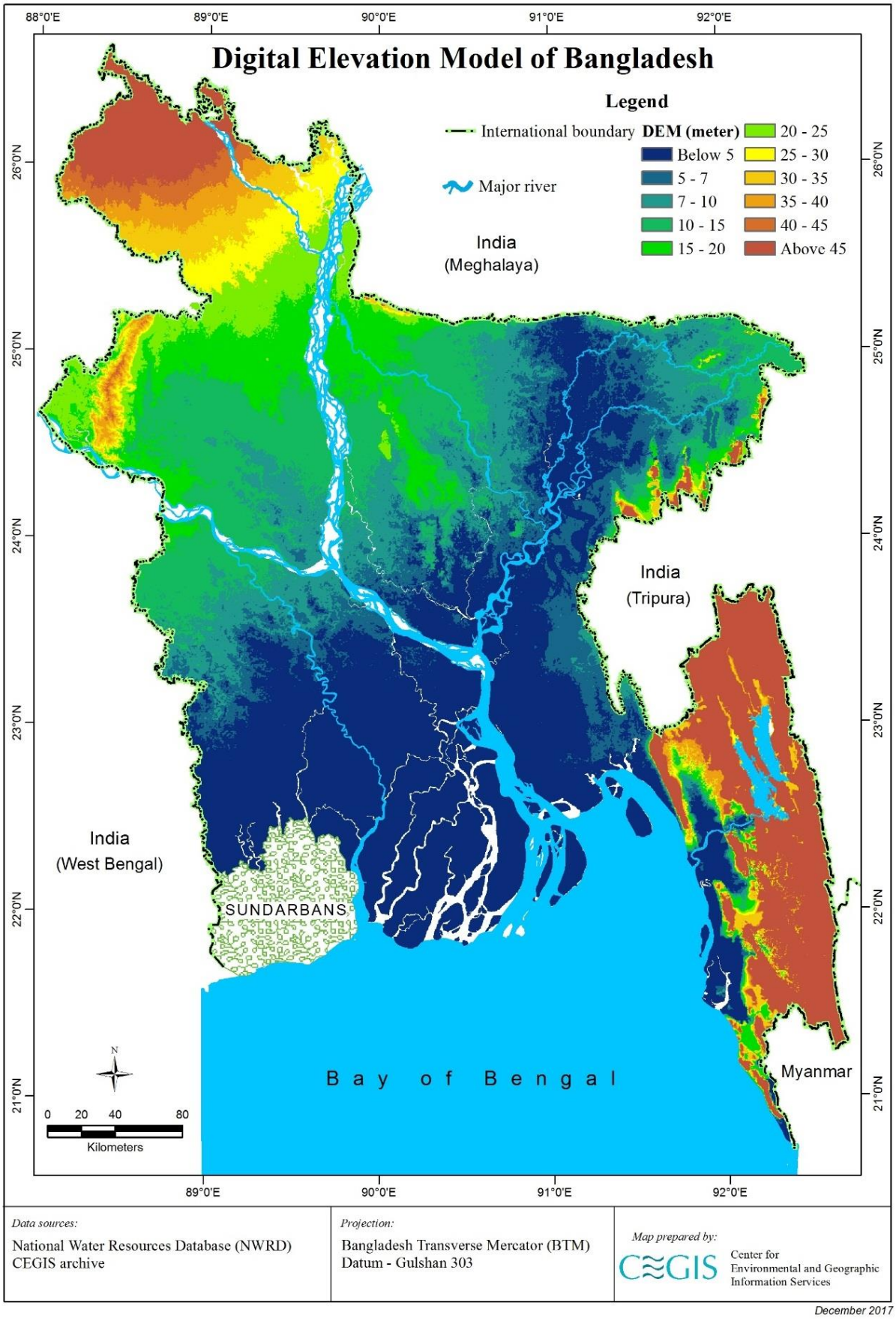


Figure 2.1: Topography of Bangladesh

The water availability of the country is also dependent on the rainfall which varies in wet and dry season. In Bangladesh, on the basis of water availability and demand, the period from June to October is called the wet or monsoon season while the period from November to May is called the dry season (NWMP, 2001). During the June-October monsoon, Bangladesh receives about 80% of annual precipitation, averaging 2300 mm, but varying from as little as 1200 mm in the west to 5800 mm in the east (Ahmed and Roy, 2004; Ali, 2006). About 20% of the average annual rainfall occurs in dry season (November-May) in northwest (NW) region with a highly uneven monthly distribution of rainfall (Ahmed and Roy, 2004). However, the annual average rainfall varies in six hydrological regions like 1927 mm in the north-west (NW) region, 1950 mm in the south west-south central (SW-SC), 2133 in the north central (NC), 2447 mm in the south-east (SE) and 3091mm in the north-east (NE) region (CSIRO, 2014).

Groundwater is an important source of drinking and irrigation water in Bangladesh. The major source of ground water is recharge from surface water in the unconfined aquifer. According to the Master Planning Organization (MPO, 1997) an estimated 21 BCM of groundwater resources is produced within the country. FAO estimated in 2008 that the total water withdrawal in Bangladesh was about 36 BCM, of which 31.5 BCM was for irrigation and 3.6 BCM for domestic water use and 0.8 BCM for industry. Seventy nine percent of this 36 BCM water was sourced from groundwater and 21 % from surface water.

2.1.3 Climate

Bangladesh, being at the outlet of the Ganges-Brahmaputra-Meghna (GBM) basin, has a sub-tropical monsoon climate, characterized by wide seasonal variations in rainfall, temperatures, and humidity. The climate of Bangladesh is generally sub-tropical in the north to hot humid in the south. The country has three distinct seasons: the pre-monsoon hot season from March through May (pre-kharif), rainy monsoon season (kharif) which lasts from June through October, and a cool dry winter season (rabi) from November through February. Besides, March may be considered as the spring season, and the period from mid-October to mid-November may be called the autumn. The southwest summer monsoon is the dominating hydrologic driver in the GBM basin.

During summer, the Asian continent develops low pressure as a consequence of heating and the air flows from the Indian Ocean to continental inland. This is known as the southwest monsoon, which controls Bangladesh climate. Moisture-laden air from the ocean moves inland where it rises over the terrain and produces extremely heavy rainfall. Apart from monsoon, the easterly trade winds are also active, providing warm and relatively drier circulation.

During the winter, the continent of Asia gets extremely cold and the Siberian high pressure develops and the air flow reverses. The northeast monsoon coming from the Siberian High is dry and cold. It is a massive collection of cold to very cold dry air that accumulates on the north-eastern part of Eurasian terrain. It conserves its inherent chilliness as it blows over Bangladesh. The effects of continental air are felt even in the estuarine and coastal areas along the Bay of Bengal. However, the coldness in the coastal region is slightly reduced due to the presence of large water bodies.

Climate change issues are a worldwide concern for its influences on every biological species. Bangladesh is not beyond this concern. The concern is mainly due to impact on crop, livestock and fish production.

Susmita Dasgupta (2014) in an article wrote that most research to date has focused on the long-run effects of progressive inundation from Sea Level Rise (SLR), along with associated losses from heightened cyclone-induced surges. Climate change will cause significant changes in river salinity in the southwest coastal area of Bangladesh during dry season (October to May) by 2050, which will likely lead to significant shortages of drinking water in the coastal areas, scarcity of water for irrigation for dry-season agriculture and significant changes in the coastal aquatic ecosystems.

Since the feed for livestock comes mainly from crop residues and naturally grown grasses (mostly seasonal) will certainly be affected with the scarcity of irrigation water for cultivation of rice.

However, probable impact of climate change on livestock has been envisaged as:

- Outbreak of emerging and re-emerging disease may be enhanced.
- Rise in sea level will inundate char lands reducing the grazing facilities.
- Intrusion of saline water in coastal region will increase stress factors and therefore, will not be conducive for livestock rearing.
- Vegetation will be destroyed leading to a serious feed scarcity resulting in reduction of livestock population and productivity.
- Frequent tropical cyclone and tidal surges, prolonged rainy seasons, will seriously damage the sub-sectors of agriculture including livestock and fisheries.

Temperature

The temperatures in Bangladesh are high in April and May, which decrease slightly during the monsoon and rise slightly in September or October when the rain begins to lower it. Mean daily maximum and minimum temperatures, recorded over the period 1984-2013, ranges from 34 to 38° and 10-15°C, respectively. During this period, incidence of maximum temperature ≥40° C was recorded in Rajshahi, Ishurdi and Jessore respectively 141, 95 and 62 times. The highest temperature of 44.0°C was recorded on 21 April 1989 in Bogra. Over the same years the highest number of days with minimum temperature ≤5°C was recorded in Ishurdi, Sreemangal and Dinajpur occuring 19, 14 and 9 times respectively in the month of January. The lowest temperature recorded was 3.0°C on January 10, 2013 at Sayedpur. Winter in Bangladesh is the coolest during November to February, when the average minimum and maximum daily temperatures are about 9.7°C and 26.6°C, respectively.

The temperature of Bangladesh varies in different seasons and generally ranges between 5 and 40 degrees Celsius. High temperature along with the high humidity favors different diseases of cattle. The winter temperature favors spreading of viral diseases of poultry birds. Temperature is directly related with the stress condition of the animals and poultry birds that ultimately influences their productivity and favors climate pollution of livestock origins. Introduction of climate resilient housing and management of farm animals may support production and productivity of livestock avoiding of the effect of extreme temperature during the summer and in the winter.

Rainfall

Rain generally starts in March-April and ends in October. The average rainfall is 1,500 mm per year in drier regions to 5,000 mm per year in wetter regions. Southwest monsoon influences the climate during June to October, and during the winter the climate is controlled by the northeast monsoon from November to March. More than 80% of the rainfall occurs during July to September. The north-western part is the drier region while the north-eastern part is the wetter region of the country. The

coastal region receives a total annual rainfall ranging from a little over 1700 mm in the southwest to 3200 mm in the southeast. Distribution of average annual total rainfall is presented in Figure 2.2.

In Bangladesh, flooding is associated with the rainfall and due to geographical location of the country, flooding is a yearly phenomenon causing much suffering of the livestock animals. Green forage and agriculture byproducts become scarce. High humidity favors infestation of parasites and spread of different diseases. Shortage of feed influences productivity. Conservation and value addition to roughages may support farm animal productivity through avoiding of mismatch of feed production and supply. During the monsoon small animals like goats and chicken suffer most. They need climate resilient shelter.

2.1.4 Salinity and Tidal Effect

The coastal zone of Bangladesh covers about 20 percent of the country and more than 30% of the cultivable land. About 1.056 Mha of land is affected by different degrees of salinity in 93 Upazillas under 18 districts in coastal areas. In the tidal areas, the surface water salinity generally increases with the increase in dryness, and reaches to its maximum during April-May and then decreases due to the onset of monsoon rainfall. The flow of sweet water from upstream reduces resulting in intrusion of saline water toward coastal agriculture fields. In dry season, some areas of South Central and South West regions are affected by soil salinity due to capillary raise of saline ground water which is unfavorable for crop production during dry season and remain fallow.

Soil Salinity Map of SRDI (2010) shows the distribution of soils with different degrees of salinity Figure 2.3). About 1.05 million out of 1.7 million hectares of land in the coastal areas is affected by soil salinity. About 0.328, 0.275, 0.189, 0.161 and 0.101 million hectares of land is affected by very slight (S1), slight (S2), moderate (S3), strong (S4), and very strong (S5) salinity respectively. Some of the new land in Satkhira, Patuakhali, Borguna, Barisal, Jhallakathi, Pirojpur, Jessore, Narail, Gopalganj, and Madaripur districts have been affected significantly by different degrees of soil salinity during the last four decades. A comparative study of the salt affected area between 1973 and 2009 shows that about 223 thousand ha (26.7%) of new land was affected by various degrees of salinity during the last four decades or so. It was also found that about 35.4 thousand hectares of new land was affected by various degrees of salinity during last 9 years (2000-2009).

The salinity intrusion in the coastal region of the country is a serious concern for livestock rearing activities in the country due to the following reasons:

- Salinity intrusion in southern and south-eastern region will reduce the existing grazing facilities for cattle.
- Widespread outbreak of emerging and re-emerging diseases will occur.
- Vegetation will be destroyed leading to a serious feed scarcity resulting in the reduction of livestock population.
- The Livestock option of livelihood of the people will no longer exist leading to a serious problem.

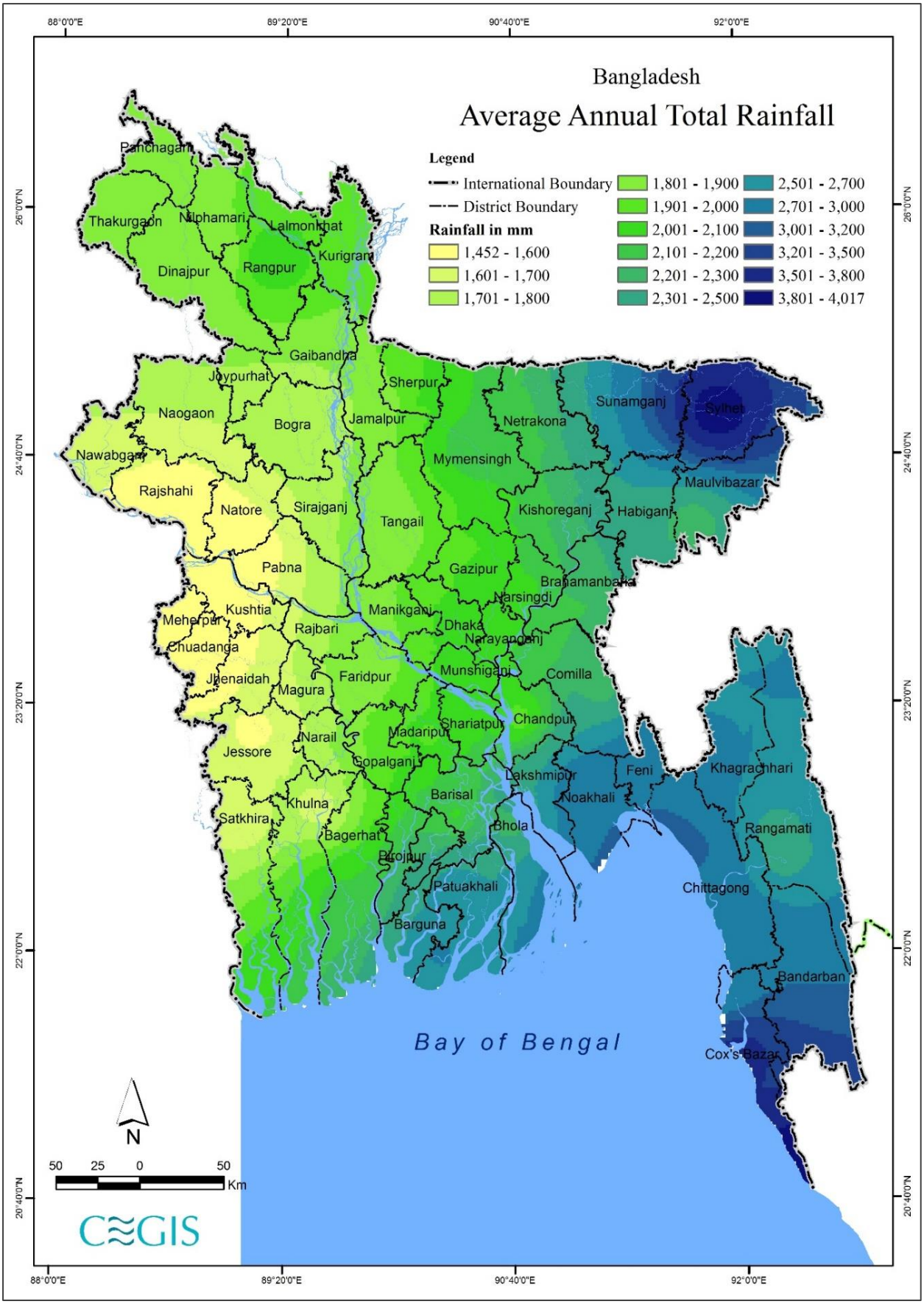


Figure 2.2: Distribution of Average Annual Total Rainfall of Bangladesh

- Building shelters (Kella) along with drinking water support may support increased production of farm animals in the region. Their climate resilience is higher than upland animals. Parasitic infestation makes animals more vulnerable to death. The project activity should include preventive measures for increase production and productivity of animals of the area.

2.1.5 Natural Hazard

Bangladesh is one of the most vulnerable countries of the world in terms of natural hazards. The geographical setting and meteorological characteristics has made the country vulnerable to different geo-hazards and hydro-meteorological hazards. The major disasters concerned in the country are floods, droughts, cyclones, tidal surges, river erosion etc. These events are termed as disasters when they adversely affect the entire environment, including human beings, shelters and the resources essential for livelihoods.

- Bangladesh is one of the most vulnerable countries in the world to Natural Hazard like heightened cyclone-induced surges, gusty and prolonged rainy season, Tidal flood, etc.
- Over 90 percent of fresh river water in Pirojpur, Bagerhat and in Barisal will be at risk. Under this worst scenario, river water (with salinity < 2ppt) will no longer be utilizable for dry season agriculture in Barguna, Bhola, Jhalokati, Khulna, and Patuakhali districts leading to a serious feed shortage for livetock in those districts.
- Salinity intrusion in southern and south-eastern region will reduce the existing grazing facilities for cattle.
- Vegetation will be destroyed leading to a serious feed scarcity resulting in reduction of livestock population.
- The Livestock option of livelihood of the people will no longer exist leading to a serious problem

- *Flood*

Floods are annual phenomena with the most severe occurring during the months of July and August. Regular river floods affect 20% of the country increasing up to 68% in extreme years. Agricultural crop production, specifically, rice crop, is lost frequently due to flash floods and drainage congestion. Flash floods are created mainly from the adjacent hills during pre-monsoon and monsoon seasons. About 20-25% of Boro crops are damaged by flood in most of the years in the north-eastern regions. Due to the devastating flood, the extent of crop damage may exceed 75%. Early floods and rapid rise of flood level, submerge mature Aus, jute, vegetables and spices and cause damage of these crops. Early floods destroy young plants of T Aman within few days of inundation. The damage also takes place in the seed beds and during early vegetative to tillering stage of growth throughout the country. The major floods that occurred in 1954, 1955, 1974, 1984, 1987, 1988, 1993, 1998, 1999, 2000, 2007, 2017 have been very destructive and caused serious threat to lives and economy. The 1988 flood affected about two-third area of the country. The 1998 flood alone caused 1,100 deaths, rendered 30 million people homeless, damaged 500,000 homes and caused heavy loss to infrastructure. The 1998 flood lasted for 65 days from July 12 to September 14 and affected about 67% area of the country.

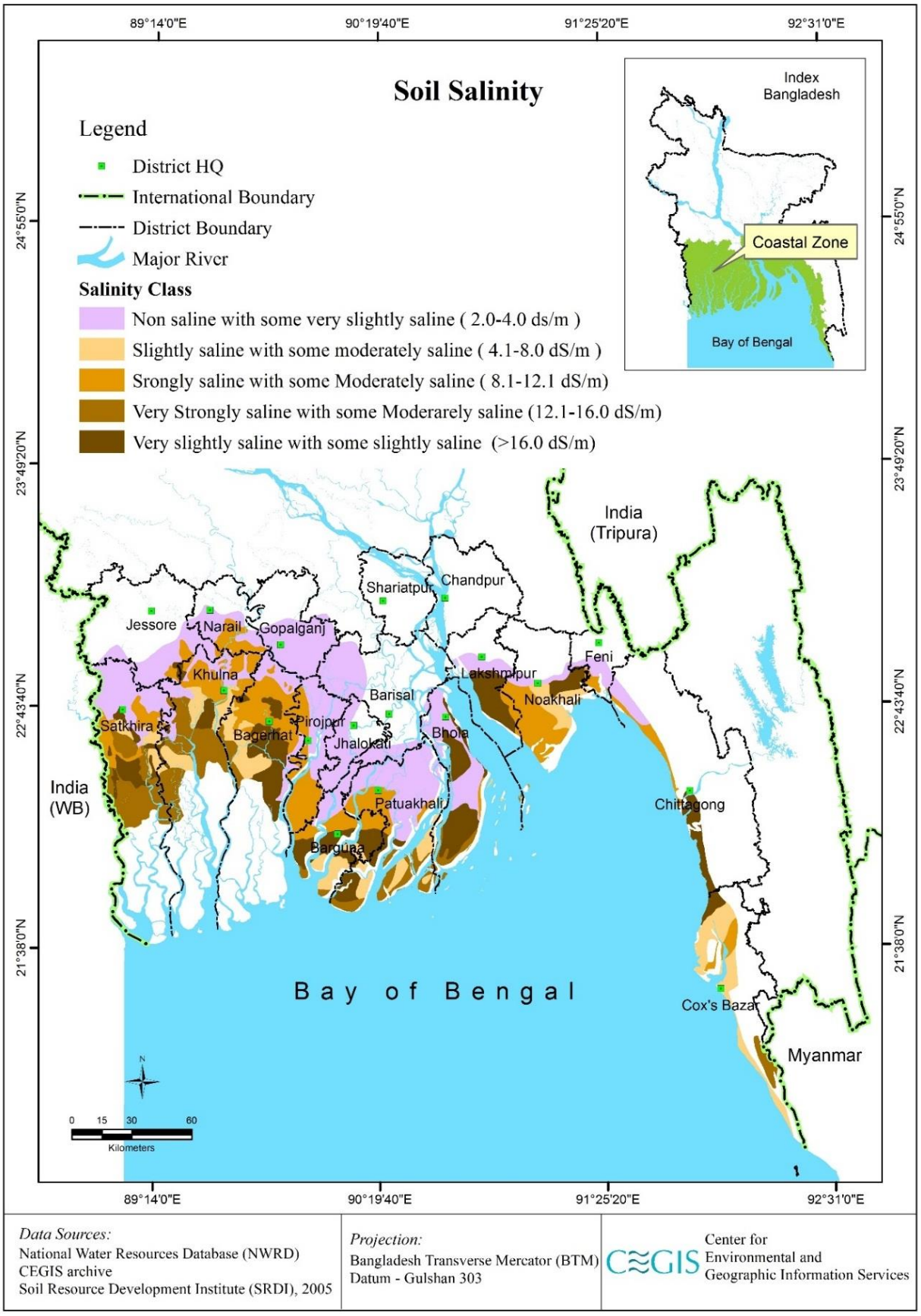


Figure 2.3: Distribution of Soil Salinity in Bangladesh

Flooding is a yearly phenomenon causing much suffering of the livestock animals. Green forage and agriculture byproducts become scarce. Shortage of feed influences livestock productivity. Outbreak of different diseases is a major concern of livestock rearing during the flood period. In some areas, manure is exposed to water and pollute the environment. Annual programme for parasite control may also support animals from production loss during different natural calamities.

Drought

Drought occurs when evaporation and transpiration exceed the amount of precipitation for a reasonable period. It is very difficult for land use management in the drought prone areas due to scarcity of availability of drinking and irrigation water. Drought causes the earth to parch and a considerable hydrologic (water) imbalance, resulting into water shortages, drying up of wells, depletion of groundwater and soil moisture, stream flow reduction, withering crops leading to crop failure, and scarcity of fodder for livestock. Drought is a major natural hazard faced by communities directly dependent on rainfall for drinking water, crop production and rearing of animals. In Bangladesh, drought mostly affects in pre-monsoon and post-monsoon periods. The hydrological and climatic conditions of Bangladesh are characterized by too much water in the wet monsoon season and too little in the dry months. The drought environment is further aggravated by the cross boundary anthropogenic interventions. Usually severe drought occurs in the north-western and south-western region of the country. Droughts occurred in Bangladesh 24 times between 1949 and 1991. Very severe droughts hit the country in 1951, 1957, 1958, 1961, 1972, 1975, 1979, 1981, 1982, 1984, 1989 and 1995.

Drought influences the fodder production and exerts stress factor and thus influences the productivity. During drought malnutrition is one of the common problems of livestock farmers, and most of the dairy farms raise their animals on concentrate feeds. Feeding higher amount of concentrate, especially of low quality, without sufficient appetite results in poor nutrition of animals and quality of products and affect reproduction efficiency of cows. Some mitigation options like conservation and marketing of roughage feeds may avert the drought period feeding problem of livestock.

Cyclone and Storm Surge

Cyclones, sometimes associated with storm surge have been a cause of concern for Bangladesh. Cyclone and storm-surges are common annual events during the pre-monsoon and retreating monsoon periods along the coastal belt of Bangladesh. The storm surges that accompany the cyclones of the Bay of Bengal cause more destruction in the coastal areas and offshore islands of Bangladesh than the very strong winds that are associated with the cyclones. Such destruction includes the widespread demolition of houses, uprooting of trees, damage of crops, roads, buildings and structures, and death to human and loss of livestock. It is much more devastating in Chittagong, Cox's Bazar, Barisal, Noakhali, Patuakhali, Barguna and Khulna. In the Meghna estuary, the 1970 Cyclone (Nov 12-13) with cyclonic surge of 3.05m to 10.6m high with wind speed of 222 km/h occurred during high tide causing most appalling natural disaster, claiming 0.3 million human lives. On the 29 April 1991 a devastating cyclone hit Chittagong, Cox's Bazar, Barisal, Noakhali, Patuakhali, Barguna and Khulna along with tidal bore of 5-8m high with wind speed of 240 km/h which killed 150,000 human beings, 70,000 cattle head, and the total loss was about Tk 60 billion. Tropical cyclone is associated with the tidal surge, intrusion of saline water, destruction of vegetation resulting severe shortage of cattle feed.

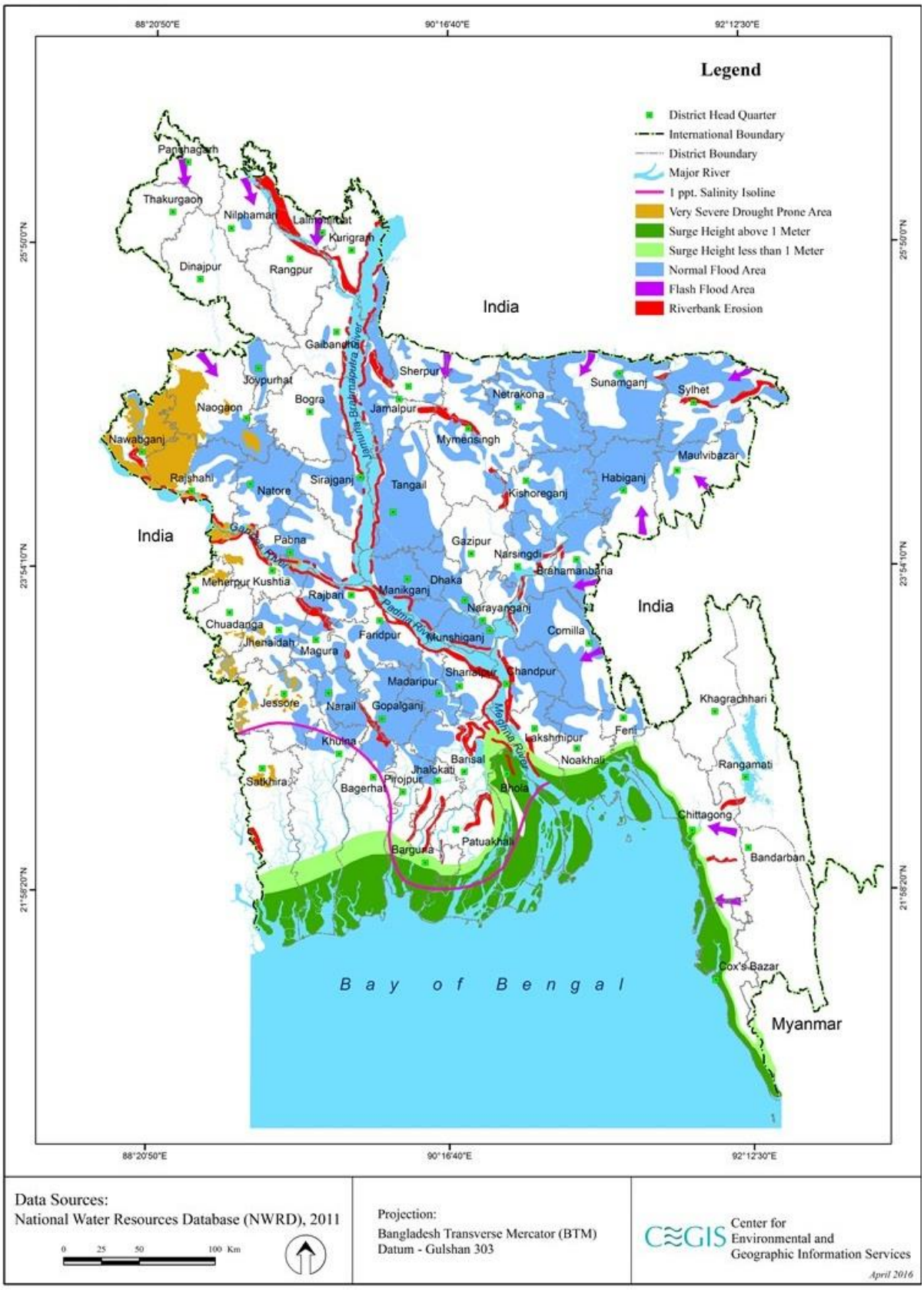


Figure 2.4: Major Natural Disaster in Bangladesh

All these natural disasters affect livestock production, especially, in the south delta. Upgrading shelters, the planned activity of the project, in the region along with drinking water support will make farm animal production system more resilient.

River Bank Erosion

River bank erosion is common in Bangladesh. Every year, a significant area of fertile lands and settlements is being lost due to river bank erosion. The rivers of Bangladesh are morphologically highly dynamic. The main rivers are braided, and form islands or chars between the braiding channels. These chars, of which many are inhabited, "move with the flow" and are extremely sensitive to changes in the river conditions. Erosion processes are highly unpredictable, and not compensated for by accretion. These processes also have dramatic consequences in the lives of people living in those areas. A study concluded in 1991 reported that: out of the 462 administrative units in the country, 100 were subject to some form of riverbank erosion, of which 35 were serious, and affected about 1 million people on a yearly basis (NWMP, 2001). Kurigram, Gaibandha, Jamalpur, Bogra, Sirajganj, Tangail, Pabna and Manikganj districts lie in the erosion prone area along the Jamuna River. Erosion of total area and settlement is higher along the left bank than that of the right bank. Along the Padma River, there are the districts of Rajbari, Faridpur, Manikganj, Dhaka, Munshiganj, Shariatpur and Chandpur. A study of CEGIS (2005) shows that bank erosion along the Padma River during 1973-2004, was 29,390 hectares and along Jamuna River during 1973-2004, it was 87,790 hectares.

2.2 Biological Environment

Biological environment includes the influence of all biological factors such as warmth, moisture and humidity as well as the plant ecosystem in which the animal lives and the associated populations of vertebrates and invertebrates that compete for food and space and act as reservoirs for infectious diseases. Bangladesh is situated in between the Indo-Himalayas and Indo-Chinese sub-regions with distinct physiographic characteristics, variations in hydrological and climatic conditions and differences in the soil properties. These features contribute in developing diverse forms of ecosystems with rich flora and fauna. This country enjoys a diverse array of ecosystems and natural resources within a relatively small geographic boundary for which the biological environment is pretty enriched here. This wide range of ecosystems can be categorized as i) Terrestrial ecosystem: forest and hilly ecosystem, agro-ecosystem, homestead ecosystem; and ii) Aquatic ecosystem: seasonal and perennial wetlands, rivers, lakes, coastal mangroves, estuarine, coastal mudflats, chars and marine ecosystem. These terrestrial and aquatic parts of the country support a large number of diverse biological population, both flora and fauna. Thus, the overall biological environment supports a rich floral and faunal diversity in its unique geo-physical location, tropical climate and fertile land mass. Even this country acts as an important merging and sharing habitat, land making bridge and biological corridors of flora and fauna between the Indo-Himalayan and Indo-Chinese regions.

2.2.1 Floral Diversity of the Country

Considering the size of the country, Bangladesh is blessed with amazing floral diversity. The country possesses more than 5,000 species of angiosperms and many of which have several sub- species (Khan, 1991). Of these, around 160 species are being used as crops (Mondal, 1990). The major crops are rice, wheat, jute, pulses, oilseed plants, minor cereals, sugar crops, fruits, vegetables root tubers, spices, beverage crops, flowers, medicinal and aromatic plants, forest tree species and other wild plants. Diversified types of natural forests such as mangrove, semi-evergreen and deciduous forests are

richest in floristic composition and some 2,260 plant species are reported to be found at the Chittagong region which falls between two major floristic regions of Asia (DoE 2015). This diversified floral composition is yet to be entirely investigated. But a checklist has been developed by Basak and Alam (2015) which enlisted 1,048 tree species (gymnosperm, dicotyledons and monocotyledons) under 432 genera in 99 families that provides information of the majority tree species in Bangladesh. In the 'Encyclopedia of Flora and Fauna of Bangladesh' published by Asiatic Society of Bangladesh provides an enumeration of the plant and animal resources of the country (Ahmed et al. 2008, 2009). It recorded 3,611 taxa of angiosperms from the country. Exploration, identification and description of new species are being published by the Bangladesh National Herbarium (BNH). Another 64 angiosperms were added to the flora during June 2009 to June 2013 of which 8 species were described as new to science (Irfanullah, 2013) and BNH has reported 40 angiosperm species very recently (Ara and Khan 2015). A comparison of both the recorded and estimated number of flora of Bangladesh and the world is shown in Table 2.1.

Table 2.1: Status of the Recorded and Estimated Plant of Bangladesh and Rest of the World

Types	Bangladesh Status		Global Status	
	Recorded	Estimated	Recorded	Estimated
Algae	3600	6,000	40,000	200-350,000
Fungi	275	-	90,000	--
Lichens	51	--	13,500	20,000
Bryophytes	290	400	14,000	23,000
Pteridophytes	200	250	12,000	13,500
Gymnosperms	7	7	650	650
Angiosperms	3,723	>5,700	250,000	300,000

Source: Bangladesh National Conservation Study, 2016

The floral diversity of Bangladesh is one of the treasurers of herbal sources potential for using as feeds. They are rich in antioxidants that may be used for the reduction of enteric methane emission in the rumen, improvement of production and productivity of animals and the nutritional quality of produces. The project includes market oriented feeds and fodder production activities. These activities may include the production and marketing of quality feed of domestic origins. This will support, in addition to climate resilient feeding of ruminant animals, cost reduction of their produces through avoiding of global market competition for quality feeds. Moreover, the much talked people`s concern of AMR may be alleviated through introduction of antioxidant rich feed additives for meat and milk production.

2.2.2 Faunal Diversity of the Country

Considering the size and huge population pressure on such a small landmass this country is generally not expected to support a good assemblage of faunal diversity, but it is also blessed with this for its geographic location. Varieties of habitats and ecosystems made the country favorable for its diversified faunal species. The country possesses a wide range of invertebrates and vertebrates in its aquatic and terrestrial habitats. The invertebrate fauna of the country has not yet been fully recorded. However, there has been a fairly good stocktaking of the vertebrate fauna.

Invertebrate fauna of the lower invertebrates, some parasitic species of protozoans, freshwater and marine sponges and corals, and many parasitic nematodes and helminthes have been described. Among the homopteran insects only about 30 aphid species under 20 genera have so far been listed in the country. This group is of major economic importance both for the direct damage they cause to crops and for the viral diseases they transmit. Wind currents disperse winged adults. There are about 20,000 species of bees under 19 families worldwide. In Bangladesh 18 species have so far been reported, of which 4 are honeybees (Banglapedia, 2003[5]).

In terms of number of species, Coleoptera (beetles) is the largest order in the animal and plant kingdoms. About 35 species under 8 genera of scarab dung beetle fauna have so far been reported from Bangladesh, mostly of genus Onthophagous. About 30 species of leaf-eating scarabeids have also been recorded from Bangladesh. About 80 species of beneficial ladybirds and about 13 species of phytophagous ladybirds have so far been reported. There are about 2000 species of firefly worldwide belonging to 100 genera and seven subfamilies; about 280 species occur in Asia. In Bangladesh about 20 species have been recorded (Banglapedia, 2003[6]).

The mammals, Birds, Reptiles, Amphibians, Fishes, Crustaceans, and Butterflies live in all available natural habitats within the country with little exception of the estuarine, coastal and marine habitats. Natural habitats include major three types of forests namely semi-evergreen forest, mangrove forests, and deciduous forests along with other coastal and estuarine forests. Good number of fauna also lives in and around human habitations and crop fields as well.

This country has an estimated 7,497 km^2 of rivers, canals and streams, 6,102 km^2 of brackish water and mangrove areas, 1,142 km^2 of wetlands, locally called beels, baors and haors and 1,469 km^2 of ponds (Banglapedia, 2003[7]). These aquatic bodies are the abode for diversified aquatic faunal species. The coastal fauna of Bangladesh comprised of a total of 453 species of birds, 42 species of mammals, 35 reptiles and 8 amphibian species. A total of 301 species of mollusks and over 50 species of commercially important crustaceans and 76 estuarine fish species have been recorded so far in the coastal zone of Bangladesh (IUCN Bangladesh, 2015).

Several reports have been published comprising the number of wildlife and as per the latest published reports the country has remarkable faunal diversity consisting of over 1600 species that is depicted in the Table 2.2.

Table 2.2: Current Status of the Wildlife of Bangladesh

Group	Khan 1982	IUCN 2000	Khan MMH 2008	Encyclopedia of Bangladesh	Khan 2010	Chow and Hossain 2011	Khan 2015	IUCN 2015
Butterflies						300		305
Crustaceans				185				141
Freshwater		263		270				253

[5]http://en.banglapedia.org/index.php?title=Fauna

[6]http://en.banglapedia.org/index.php?title=Fauna

[7]http://en.banglapedia.org/index.php?title=Main_Page

Group	Khan 1982	IUCN 2000	Khan MMH 2008	Encyclopedia of Bangladesh	Khan 2010	Chow and Hossain 2011	Khan 2015	IUCN 2015
Fishes								
Amphibians	19	22	53	34	42		64	49
Reptiles	124	126	158	147	157		174	167
Birds	578	628	690	650	718		711	566
Mammals	119	113	121	120	124		133	138
Total	**840**	**889**	**1022**	**951**	**1041**	**300**	**1082**	**1619**

Source: IUCN Bangladesh. 2015. Red List of Bangladesh Volume 1: Summary

Farm animal genetic resource (FAnGR) conservation is one of the priorities of a country. The project aims at the conservation and improvement of goat and chicken for increased meat production. The conservation of Bengal Goats through community buck raising is one of the FAnGR programmes of the project. Continuous crossing of RIR and Fyoumi pure breed chicken during the past decades resulted in the degradation/dilution of their gene purity. The project also has activities for conservation and improvement of these two breeds. All these genetic resources are important for food and agriculture of the country, and support conservation of faunal diversity.

2.2.3 Protected Areas of Bangladesh

Protected Areas (PAs) are "Areas especially dedicated to the protection and maintenance of biological diversity and associated cultural resources, which are managed through legal or other effective means". According to the sub-section (43) of section 2 of the Wildlife (Protection and Safety) Act, 2012 (Act No. 30 of 2012) “protected area” means all sanctuaries, national parks, community conservation areas, safari parks, eco-parks, botanical gardens declared by the Government under sections 13, 17, 18 and 19 of Chapter IV and special biodiversity conservation area established under section 22 of Chapter V and national heritage declared under section 23 (BFD, 2017[8]).

Bangladesh currently has 40 protected areas (Appendix H). Seventeen National Parks, 20 Wildlife Sanctuaries, 2 Special Biodiversity Conservation Area, and 1 Marine Protected Area (MPA) have been declared as protected areas by the government to conserve wildlife and their habitats since 2010, after the submission of the Fourth National Report to the CBD. Protected Areas contain about 618253.49 hectares of forest land and represent 4.19% area of the country (BFD, 2017[9]). Besides, Department of Environment has declared 13 sites as Ecologically Critical Areas (ECAs) under section 5 of *the Bangladesh Environment Conservation Act, 1995*. The total area coverage of ECAs is 384,529 hectares or 2.60% of the country.

As per the Bangladesh Wildlife (Conservation and Security) acts, 2012, the marine protected area is 1,738 square kilometers, constituting 1.63% of total marine area (106,613 square kilometers) of Bangladesh. Moreover, there is another 582 sq kilometer marine area declared as protected under Marine Fishery Act. Therefore, the total marine protected area is about 2,320 sq kilometer which is about 2.17% of the marine area of Bangladesh. However, more than 10% of the country's reserved

[8]http://www.bforest.gov.bd/site/page/5430ce33-561e-44f6-9827-ea1ebaa2c00d/Introduction

[9]http://www.bforest.gov.bd/site/page/5430ce33-561e-44f6-9827-ea1ebaa2c00d/Introduction

forests has been maintaining the status of IUCN VI categories of Protected Areas because no extraction of trees are allowed from the reserved forests of Bangladesh. The inland water constitutes about 7% in which seasonal ban for fishing is in practice for the conservation of fish species (IUCN and BFD, 2016).

Generations after generations, lives and livelihoods in Bangladesh have been depending primarily on natural resources, based on diverse ecosystems. Diversity of ecosystems is under serious threat and tremendous pressure because of changing climate and anthropogenic disturbance in environmental flourishing. The biological diversity should be maintained properly by keeping the valuable areas protected. Involvement of local communities in preventing over-exploitation of biological resources is essential to ensure long-term sustainability of conservation initiatives. Above all, efficient governance through effective practicing of existing rules and regulations of the declared protected areas of Bangladesh may ensure the future sustainability of this populous nation.

Grazing land available in delta areas support extensive dairy and meat productions and this is considered one of the food-feed competitive milk and meat production systems. This also makes the system more efficient and resilient to climate and help conservation of pasture land in the coastal and river delta.

2.3 Socio-Economic Environment

2.3.1 Demography

The total population of Bangladesh was 144,043,697 in which 72,109,796 (about 50.06%) are male and 71,933,901(about 49.94%) are female, according to 2011 population census. The total household was 32,173,630 with an average household size 4.44. The literacy rate of population above 7 years was about 51.8% of which 54.1% were male and 49.4% were female. These calculations in this report are mainly based on the BBS data. The detail demographic feature of Bangladesh is given in Table 2.3.

Table 2.3: Demographic Feature of Bangladesh

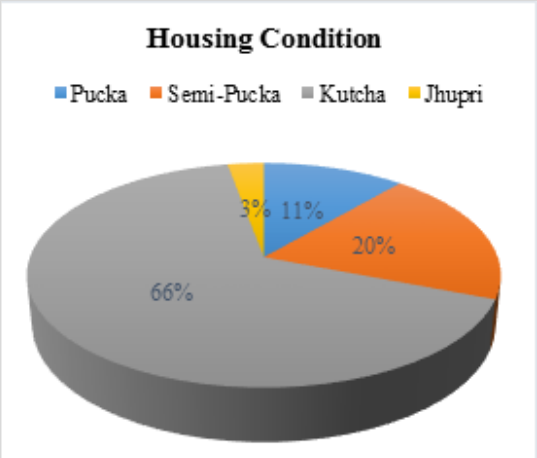
Area	Total Households	Population	Male	%	Female	%	HHs Size
Bangladesh	32,173,630	144,043,697	72,109,796	50.06	71,933,901	49.94	4.44

Source: BBS, 2012

Demographic variables have, however, changed over time since 2011. Total population for 2016 has been projected around 164.7 million (El-Shaharty et.al. Population projection and trends, 2011-2051, BBS) and household size is estimated at 4.5.

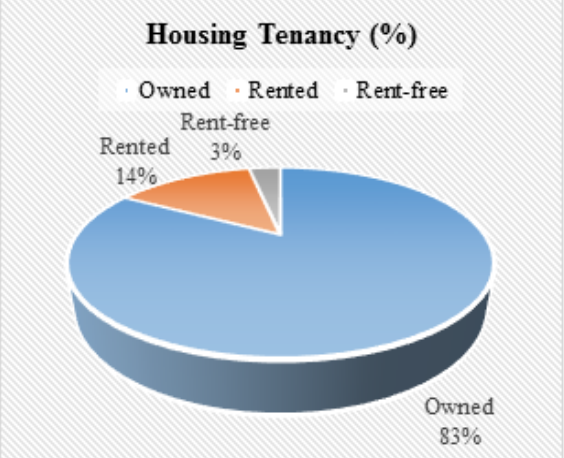
2.3.2 Housing

Figure 2.5 shows that the general housing condition of Bangladesh where 11% houses are pucka and 20% are semi-pucka, 66% are kutcha. A very few people still are living in *jhupris*.



Source: BBS, 2012

Figure 2.5: Housing Condition of Bangladesh



Source: BBS, 2012

Figure 2.6: Housing Tenancy of Bangladesh

Figure 2.6 reflects the housing tenancy of Bangladesh where 14% of households reside in rental basis. About 83% of households reside in owned houses and 3% households are rent free.

2.3.3 Gender Analysis

The total population of Bangladesh is 144,043,697 in which 72,109,796.00 (about 50.06%) are male and 71,933,901.00 (about 49.94%) are female (*Source: BBS, 2012). E*xisting situation of women participation in agricultural production system in Bangladesh are well recognized. Agricultural system of rural household is a mixed farming system where livestock plays an important role in supporting women and in improving their financial condition. Most of the households in rural areas of Bangladesh have poultry birds (chicken, ducks, pigeons, etc) and small ruminants (goats and sheep) taken care of by women in their homestead facilities for family consumption. They also share responsibilities with men and children in caring of their animals. The popular species and types of activities are more associated with women than men. For example, women have prominent role in chicken, duck or pigeons in backyard poultry rearing system. Marketing of poultry birds and animals are generally performed by the male members because of mobility constraints of women in Bangladesh. In general, the women in rural areas try to maintain personal small savings at home from selling of eggs and poultry birds. They also contribute in family nutrition using the household products of eggs, milk, and poultry meats. Female headed households are as successful as male-headed household in generating income from their livestock resources.

DRMP project has the programme of Consumer Awareness and Nutrition targeting mothers and children particularly in school milk feeding programme to change behavior regarding public health issues, and intake of nutritional food. So, the women have certain role and responsibility in these aspects of DRMP project. The rural homestead production system has some implication in the DRMP project interventions particularly in production of milk and meat as well as consumption patterns.

Livestock rearing and dairy farming has been a traditional occupation of the rural homesteads of Bangladesh, often managed by women. But many parts of the country, specially the north and northwest regions face many challenges that hinder the success. Poor cattle breeds, low milk yields compounded by inadequate infrastructure, inadequate input supply and service provisions for the

small holders have held the sector in a vicious circle. Women's potential strength in making a break through out of this circle has been subjected to many negative externalities. Women are, therefore, integral to the livestock sector in Bangladesh. Women present 68 % of agricultural labor force and they are mainly involved in livestock and poultry sectors. They are usually involved in livestock rearing activities, mainly at home (in many areas, now a days, even outside home) such as feeding and milking of cows as well as raising small ruminants and backyard poultry. Women's livestock farmers are not traders. Their involvement in marketing livestock products is limited due to traditional norms that restrict their mobility outside home. Women face constraints in terms of economic opportunities, voice and agency, mobility and access to inputs, services and technology. In addition, heavy workloads, lack of decision making power as well as physical and social abuse are obstacles and challenges to women's involvement in economic activities.

Economic opportunities and political empowerment of women are blooming slowly as the social reality. Gender parity has already been achieved in primary and secondary school enrollment. Child mortality has been more than halved over the preceding two decades.[10] Access to micro-credit has seen a quantum jump in women's gainful self-employment.[11] Work force in the readymade garment sector, the country's biggest export earner, is overwhelmingly female. Livestock and poultry sub-sector has already commanded silent leadership in employing 20% directly and other 50% indirectly in poultry and livestock subsector for their livelihoods in Bangladesh (Golam Rabbani Md. Et al. Annual Report. 2016-'17, DLS, P-630)[12] where again women are the majority. More recently the resilience and potential of the Bangladesh economy is being noted in many leading global economic scenario exercises.[13] With stable and broad-based growth above 5 percent holding on even in the wake of the recent global recession[14] and highly favourable long-term demographics, a projection exercise on alternative growth scenarios up to 2030 shows that an acceleration in current growth rates by 2-3% to a medium-high annual rate of 8% is quite feasible if pre-conditions on political and policy reforms are met.[15]

[10] UNDP/Planning Commission, GOB, 2009, MDG Needs Assessment and Costing 2009-2015 Bangladesh

[11] World Bank, 2008, *Whispers to Voices: Gender and Social Transformation in Bangladesh*

[12] Golam Rabbani Md. Et al. Annual Report. 2016-'17, DLS, P-630)

[13] Goldman Sachs, Global Economics Paper No. 153 *N-11: More than Acronym*, 2007; JPMorgan Emerging Markets Equity Research, *Ho Chi Minh Trail to Mexico*, 2007; Price Waterhouse Coopers, *The World at 2050: Beyond the BRICs: A Broader Look at Emerging Market Growth Prospects*, 2008

[14] Hossain Zillur Rahman & Salehuddin Ahmed, 2010, *Resilience amidst Uncertainty*, PPRC, Dhaka

[15] Hossain Zillur Rahman, 2010, *Bangladesh 2030: Strategy for accelerating inclusive growth*, PPRC/DCCI

At the same time, about 44% of women in reproductive age in Bangladesh have anemia[16] that is a risk factor for preterm delivery and subsequent low birth weight[17]. In the Global Gender Gap Index[18,] Bangladesh ranked 72 out of 144 countries with good progress in education and health, but still weaker in economic opportunities and political empowerment which have to be enhanced further.

Bangladesh Seventh Five Year Plan (2016-2020) gives importance to reduce gender based inequalities all along the food production chain and emphasizes the active engagement of women at all levels of decision making as it necessary for attaining food and nutritional security. Bangladesh Country Investment Plan for Agriculture, Food Security and Nutrition monitors the gender related expenditure by food and nutrition security related ministries. The World Bank's Country Partnership Framework FY16-20 underlines importance to create rural livelihoods opportunities through community based development and agribusiness. Also, WBG's South Asia Regional Gender Action Plan (RGAP) FY16-FY21 emphasizes among other things need to increase remuneration of rural women's labor and number of female traders and entrepreneurs[19].

Understanding the continuing trend of women's growing capacity and country's expressed programs to develop it further, existing gender gaps are prominent still which have to be addressed through actionable policies and programs: (i) women's role in decision making, encountering social barriers, reducing household workload and opening access to economic activities has to be realized through making them empowered; (ii) role of women in the value chain has to be formally recognized and measured and (iii) women's stronger mobility and involvement in livestock sector has to be encouraged and realized[20].

2.3.4 Small Ethnic Communities

Bangladesh is a country of ethnic harmony. There are 27 small ethnic communities in Bangladesh. Their habitation is almost area-specific and their culture differs significantly from others in project area. The number of such small ethnic communities are 15, 86,141 and comprises only 1.01% of total population of the country (BBS-2012). The approximate Population of small ethnic communities is presented in Table 2.4. A separate chapter on small ethnic communities have been included in Chapter 7 under caption Small Ethnic Communities Development Framework.

Table 2.4: Community Wise Ethnic Population

Sl.No	Ethnic Community	Population	Sl.No	Ethnic Community	Population
1	Chakma	444748	15	Ushai	347
2	Marma	202974	16	Rakhain	13254

[16] IFPRI.2015. Bangladesh Nutrition Country Profile.

[17] Allen, Lindsay. 2002 Anemia and iron deficiency: effects on pregnancy outcome1,2,3. The American Journal of Clinical Nutrition.

[18] http://reports.weforum.org/global-gender-gap-report-2016/economies/#economy=BGD

[19] WB Mission-30 Sept, 2017, Technical Note-Gender for DRMP project

[20] ibid

3	Tripura	133798	17	Monipuri	24695
4	Mroa	39004	18	Garo	84565
5	Tonchongya	44254	19	Hajong	9162
6	Bom	12424	20	Khasi	11697
7	Pankhoa,	2274	21	Mong	263
8	Chak	2835	22	Oraon	80386
9	Kheang	3899	23	Bormon	53792
10	Khumi	3369	24	Pahari	5908
11	Lusai	959	25	Mal pahari	2840
12	Koch	16903	26	Munda	38112
13	Santal	147112	27	Kohl	2843
14	Dhalu	806			

Source: A programme for vulnerable community of Indigenous People by PKSF (a foundation for facilitating rural Employment), May 2016

Small Ethnic Communities in national context

The government of Bangladesh recognizes 27 Ethnic communities in the country. Ethnic community people constitute about 1.10% of the total population of the country (as per census of 2011) and are spread over different pockets of the hilly zones, and other areas of the plane lands of the country. Their historical background, economic activities, social structure, religious beliefs and festivals make them distinctive.

The small ethnic communities inhabiting in different parts of the country have their distinct ethnic traits, social institutions and cultural traditions. Most of them are accustomed with agricultural activities like crop production, cattle, small ruminant and poultry rearing activities along with their distinct traditional practices. However, the socio-economic condition of Bangladeshi people is moving forward positively. But some of the study on ethnicity and poverty indicates that the poverty reduction achievement among the small ethnic community people is less than the national average. The extreme poor in total population were 17.6% in 2010; 13.1% in 2013; and 12.4% in 2014 (Sen and Ali-2015).

Eminent economist Barkat el- 2009 and few others found that low economic opportunity, specific geographical location, exclusion, deprivation, and dispossession of lands are the main driver of poverty among the small ethnic communities in Bangladesh. They found that 60% of the small ethnic communities in Northeast and central North region (greater Sylhet and Mymensingh district) were absolute poor compared to only 39.5% among rural Bengalees. Hardcore poverty among plain land small ethnic community people was 24.6% than hardcore poverty in rural Bangladesh is 17.9 % which is significantly higher among small ethnic communities. Other social index like health, education, etc. is also strongly associated with the poverty situation.

Small Ethnic communities in Project areas

Bangladesh is the dwelling place of different ethnic communities and is a country of ethnic harmony. Their historical background, economic activities, social structure, religious beliefs and festivals make them distinctive. Small ethnic communities are located mainly in the border areas of the country. 58% of small ethnic communities will be involved in proposed project areas and are located in different areas of the country. The remaining 42% are mostly concentrated in three hill districts: Khagrachori, Rangamati and Bandarban. The area wise major small ethnic communities people are as follows:

Table 2.5: Region Wise Small Ethnic Communities

Sl.	Area	District	Small ethnic communities
1	North-Western Region	Rajshahi, Naoga, Chapai-nawab gonj, Natore, Sirajgonj, Pabna, Joypurhat, Dinajpur, Thakurgaon, Rangpur, Bogra and Gaibanda.	Santal, Onrao, Munda, Mahato, Paharia, Rajbongshi, Rajoar, Kormakar, and Telli
2	North-Eastern Region	Sylhet, Sunamgonj, Hobigonj, and Moulabhi Bazar	Khashi, Patro, Monipuri, Garo, Tripura,
3	Central Region	Gazipur, Tangail, Sherpur, Jamalpour, Netrokona and Mymensings,	Garo, Hajong, Koch, Banai, Rajbongshi, Dhalu, Bormon, and Hodi
4	Southern Coastal Region	Potuakhali, Borguna, Chandpur, Chittagog, Cox's Bazar, Khulna, Satkhira	Rakhain, Tripura, Munda, Bono and Bogbania

The small ethnic communities in the project area can largely be minority and marginal groups in terms of their occupation, land holding, and cultural norms and other vulnerabilities. However, their indigenous social status of these small ethnic communities will be reviewed in the implementation level for site specific interventions under the project with respect to the four characteristics given under the World Bank Operational Policy on Indigenous Peoples (OP/BP 4.10). According to the OP 4.10, indigenous peoples are those with self-identification as a distinct community with respect to majority of the population; having collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories; with customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and having a distinct language, often different from the official language of the country.

2.3.5 Poverty

Bangladesh has experienced fall in poverty rate, measured both at usual and extreme scales, as published by BBS[21]. Present (2016) national poverty rate is 24.3%, while extreme poverty rate is 12.9% and globally it is 13.8%. Between 2010 and 2016 poverty fell significantly but in recent years the rate of poverty reduction has slowed down. Poverty fell faster in rural areas. Urban poverty rates declined from 21.3 to 18.9 percent, while rural poverty decreased from 35.2 to 26.4 percent. Since 2010, 8 million Bangladeshis moved out of poverty.

2.3.6 Health

Fertility

The most basic measures of fertility is the Crude Birth Rate (CBR) which is a ratio of births occurring during a year to the total mid-year population, multiplied by 1000. It shows the number of births per 1000 population per year and indicates an overall effect of fertility upon the growth of population during a year. Bangladesh showed a clear reduction in CBR during the last three

[21] BBS, Household Income and Expenditure Survey, 2016

decades. At the national level, the CBR obtained from the sample survey was 17.9 whereas from the SVRS it was 19.2 per thousand populations. The rate was 34.4 in 1982. (*Source: BBS, 2012)*

Mortality

Infant Mortality Rate (IMR) is an important indicator of the infants under 1 year of age. The IMR is usually computed as the ratio of deaths of live-born children below one year of age, that is, who have not yet reached their first birthday (infant deaths) for a calendar year to the number of live-births during the same year. The rate is generally expressed by 1000 live births. During the period (1981-2011) the IMR was decreased due to the improvement of health care facilities day by day. (*Source: BBS, 2012)*

2.3.7 Household Income and Expenditure

The Household Income and Expenditure Survey-2016 of BBS found that the monthly income and expenditure per household is BDT 15,945 and BDT 15,715 respectively.

2.3.8 Access to Electricity, Drinking Water and Sanitation

Electricity

Electricity is the key to modernization and development. Almost 48.8% and 88.7% household have access to electricity facility in rural and urban area respectively. (*Source: BBS, 2012)*

Drinking Water

Distribution of sources of drinking water of total households by residence is shown in Table 2.5. It is observed in 2011 census that proportionally more households (38.3%) use tap water for drinking in urban area than the rural area. About 91.1% of the households use tube-well in rural area as against 58.6% in urban area as main source of drinking water. The households depend on rivers, canals and streams for drinking water are 6.6% and 3.1% in rural and urban areas respectively in 2011.

Table 2.6: Source of Drinking Water of Total Households by Residence, 2011

Residence	Total Household	Tap Water		Tube-well		Others	
		Number	%	Number	%	Number	%
Bangladesh	32173629	3436774	10.7	26865659	83.5	1871196	5.8
Rural	24671589	566087	2.3	22466775	91.1	1638727	6.6
Urban	7502040	2870687	38.3	4398884	58.6	232469	3.1

Source: BBS 2012

Sanitation

Sanitation is another major indicator of measuring standard of living. In rural area about 35.1% households use non-sanitary/Kutcha latrines, 22.9% households use water-sealed sanitary latrines and 33.9% households use without water-sealed sanitary latrines. About 8.2% households, having no sanitation facility at all. In urban area about 16.2% households use non-sanitary/Kutcha latrines, 48.2% households use water-sealed sanitary latrines and 33.5% households use without water-sealed sanitary latrines. About 2.0% households, having no sanitation facility at all. (BBS, 2012)

2.3.9 Livestock Situation

In livestock sub-sector, backyard poultry, goat and sheep rearing are the important activities mainly performed by the rural women.

Bangladesh government ratified the UN convention of eliminating all forms of gender disparity in 1984 and, therefore, has adopted the policies and plans to empower the women. Contribution of the women in family nutrition, and family income through kitchen gardening, chicken, ducks and small ruminant rearing activities are most common and suitable practices in Bangladesh.

Livestock population

Livestock population has been estimated to comprise 23.94 million cattle, 1.48 million buffaloes, 25.93 million goats, 3.40 million sheep in year 2016-17. The poultry population has been estimated to comprise 275.18 million chickens and 54.02 ducks in the same period (DLS Annual report 2016-17). The livestock and poultry population has increased gradually due to increase in domestic demand for meat, eggs and milk and milk products.

Livestock Products

Milk, Meat and Egg production in Bangladesh for the 2014-16 is presented below:

Table 2.7: Production of Milk, Meat and Eggs in Bangladesh for the Period 2014-16

Products	Unit	Amount/quantity (in millions)		
		2014-15	2016-17	2016-17
Milk	Million Tones	6.970	7.275	9.283
Meat	Million Tones	5.860	6.152	7.154
Eggs	Million number	10995	11912	14933

Sources: DLS, 2016-'17

3. Environmental and Social Legislations, Regulatory and Institutional Framework Relevant to the Project Components

3.1 National Policies

Government of Bangladesh has adopted few policies and promulgated acts to enhance livestock production, processing, marketing, consumption, generation of employment and to ensure public health, safety and environmental issues. All of these policies, acts and regulatory arrangements are directly and/or indirectly related to the project components of this study.

3.1.1 National Environment Policy-2013

The Environment Policy- 2013 describes Bangladesh as a vulnerable nation to natural disaster due to its geographical location. In addition, environmental pollution is a great public health concern. Therefore, the action plan of the policy has been elaborated under different issues like land uses, water resources, air quality, food and potable water, agriculture, fisheries and animal resources, health and health care provision, industry, economic development, etc.

The key elements of this policy are: (i) maintenance of the ecological balance and overall progress and development of the country through protection and improvement of the environment; (ii) protection of the country against natural disasters; (iii) identification and regulation of all types of activities, which pollute and degrade the environment. Therefore, sustainable use of all-natural resources and "*Ensuring proper Environmental Impact Assessment prior to undertaking of industrial and other development projects*" is under compulsion.

Linkage to Project Components: Yes (Directly)

National environment policy obliges to protect environment in every aspect of development. Therefore, this policy links to the project **Component A** - dairy products enhancement in a safe and healthy environment. In addition, enhancing livestock production, climate smartness standards comply with the national environment rules as emission from livestock wastes, food and fodder processing. Sustainability in all the aspects of the development is necessary.

3.1.2 Dairy Development Measures

The dairy development process is driven by the underlying fundamental changes in economic growth, with the value of resources, consumer demand, public policies, interventions and investment decisions shaping its development trend (Staal et al, 2008). Because of increases in population (1.8% annually), rapid urbanization (15% annually) and rises in absolute income, the demand for animal products (mostly milk and milk products) has been increasing rapidly in Bangladesh (Jabbar et al, 2005; Hafez, 2004). Some strategic measures are in action as part of a policy framework aimed mainly at increasing milk production and targeting small farmers owning crossbred cows (Vivien, 2005). These strategic measures have included:

- Provision of on-firm training in the vaccination of cows and free distribution of vaccines produced by the Livestock Research Institute (LRI) until 1998 (thereafter recovery cost for the vaccine was charged);

- Provision of direct cash incentives at a rate of BDT 3000 per cow giving at least five liters of milk per day (US$1 = 68 BDT). The maximum cash incentive is BDT 15000 for up to five cows.
- Milk processing plants now receive a subsidy of 20% towards their electricity bill, compared with a 15% subsidy until 2004 (Mainuddin, 2004);
- Pasteurized milk is exempted from value added tax (VAT) while milk products are taxed (Mainuddin, 2004);

Linkage to Project Components: Yes (Directly)

Subsidy, incentives and skill development ultimately enhances investment as well as production of dairy products across the nation. Therefore, this safe guard policy originally supports the small and large-scale dairy farmers to keep pace with markets, to increase the production, to improve the quality and meet the demand of dairy products for the nation. With the growing population and meeting the nutrients demand, this policy is too much effective and supportive to the investors. However, this safe guard measure has an immense drawback in providing subsidy, incentives and training timely. This safeguard measure has direct linkage with **Component A**.

3.1.3 National Livestock Development Policy (2007)

The current Livestock Development Policy 2007 has come into force in 2007. The first one was formulated in 1992. The main issues focused in the first policy were: (i) dairy development and beef fattening; (ii) poultry development; (iii) breeds and breeding; (iv) feeds and animal management; (v) veterinary services; (vi) institutional analysis of DLS and BLRI; (vii) marketing of animal products and (viii) international trade.

The first policy was not translated into an operational action plan and was lacking some activities like processing, value addition, consumption, etc to meet the existing demand. Therefore, National Livestock Development Policy 2007 has been adopted with the following 10 critical areas:

- Dairy development and meat production
- Poultry development including duck
- Veterinary services and animal health
- Feeds and fodder management
- Breeds development
- Hides and skins
- Marketing of livestock products
- International trade management
- Access to credit and insurance
- Institutional development for research and extension

All the above areas of policy issues have been explained in the NLDP 2007 with short policy frame work.

Linkage to Project Components: Yes (Directly)

This policy takes care of nationwide livestock development in Bangladesh. More importantly, NLDP 2007 protects almost every possible aspect (**Component A, B and C**) of livestock except very few (Component D). For instance – year-round monitoring and evaluation of the activities and

performance regarding livestock development nationwide is still in lacking in Bangladesh which is actually **Component D** of this project.

3.1.4 National Poultry Development Policy, 2008

This Policy has been created in the light of NLDP-2007 with a view to accelerate production, employment generation and entrepreneurship development, promoting extension and research. The strategies of poultry production have been outlined as:

Commercial Poultry Production

In which, policies have been mentioned regarding location and isolation distance for establishing commercial and breeding farms; to ensure bio-security measures before establishing a poultry hatchery; hygienic way for farm waste disposal.

Backyard Poultry Production

Improving productivity of local stock through existing system of crossing; strengthening extension activities of DLS; research through conservation of biodiversity and their genetic potentiality; increasing duck production and to encourage private sector entrepreneurs; training on hygienic system of farm-waste disposal.

Poultry feed Production and import

Support to produce balanced, nutritious and cheaper poultry feed production from local ingredients; supporting research on unconventional feed ingredients; use of certified bone meal for its safety issues; restriction of bone meal from swine origin and tannery wastes has been emphasized in policy framework.

Entrepreneurship Development

Government of Bangladesh has decided to provide incentive for implementing the programme on poverty reduction, investment, credit and insurance facilities and marketing of products. Encouraging for value addition and exporting of poultry product has also been emphasized.

Extension

Prevention and control of poultry diseases; manpower development; institutional capacity building; research and development have been emphasized to ensure a quality extension service.

Quality Control

Quality standard for the inputs of poultry production such as chicks, poultry feed, poultry vaccines and medicines, etc. has been suggested in the policy framework.

Linkage to Project Components: Yes (Directly)

Likewise, NLDP 2007, this National Poultry Development Policy 2008, as well empowers poultry production across the whole country. This policy encompasses **Component A and C** where the dairy production improvement and the sustainable poultry industry expansion through insurance and quality control safeguard is being implemented. Including production enhancement, this policy addresses the waste disposal protocols for safe bio-hazard management and waste disposal from specifically poultry farm, poultry feed and processing industry.

3.1.5 Animal Breeding Policy (in the NLDP 2007)

A science based well organized and pragmatic breeding policy has not been formulated in Bangladesh. However, MoFL formulated a Livestock Development Policy in 2007 and now being used as an operational policy document for breeding of animals. In this policy document, animal breeding guidelines and directives are being considered as 'Animal Breeding Policy'. In the NLDP 2007, directives for breeding animals have been outlined categorically.

Artificial Insemination (AI) of cattle and buffalos are now in practice but it is not yet for goat and sheep in Upazila and District level offices. There are 3212 numbers of AI sub-center and AI points all over the country. During FY 2013-14 (up to Feb 2014) about 1.85 million cows have been inseminated artificially.

No regulatory function to oversee the consistency of policy directives in animal breeding practices by NGOs. This is why the breed development requires systematic and well-organized breeding approach.

Breeding technology for livestock development in Bangladesh is just coming across the rudimentary stage. Available seed materials are imported from exotic origin. But not all of the exotic breeds are well adoptable under Bangladesh climatic condition. A very little effort has been extended by the Government (DLS, BLRI or Universities) to conserve, develop and utilize the potentiality of local breed of cattle.

Linkage to Project Components: Yes

Among all the components, there is only one single **Sub-component A2** (under Component A), which is matching with the goals of the Animal Breeding section under NLDP, 2007. Breeding improvement protocols have got full emphasis in this policy and which been explained as Sub-component- A2 of this study.

3.1.6 Vision 2021

Livestock sub sector has a set of targets for the Vision 2021 of the nation with a view to ascertain the food and nutrition security of the country. The targets are:

- To meet the demand of standard nutrition for 85% of the population and the per capita availability of milk 150 ml/day, meat 110 gm/day and eggs 104 pieces/year;
- Number of unemployed people will be reduced to 24 million from 28 million by 2013 and to 15 million by 2021. Job opportunities to create for 11.2 million of people;
- The livestock sub-sector to contribute toward reduction of poverty and extreme poverty by 25% and 15% respectively;
- Information technology to use in livestock sub-sector significantly to increase the income of poor;

Vision 2021 has the goal to turn Bangladesh into a middle-income country. The agricultural sector needs to be enhanced through increasing productivity of its all sub-sectors (crop, fisheries, livestock and forestry). Livestock sub-sector deserves special attention for its economic, cultural and religious importance. It is the sustenance of landless people, livelihood options for the rural poor families and is potentially important for poverty reduction; Income generation, contribution to food and nutrition security, employment generation, land cultivation, post-harvest threshing, draft power for transportation, fuel for cooking, manure for crop and vegetables, export earning, cultural and religious uses etc.

Linkage to Project Components: Yes (directly)

All the components of this study are complying with this vision 2021 of Bangladesh regarding dairy production, to meet nutritional demands, employment generation and information technology.

3.1.7 National Livestock Extension Policy 2013 (Draft)

National Livestock Extension Policy 2013 (draft: submitted for Govt. approval) reflected the increasing trend of livestock production related service demands; increasing trend of investment; veterinary public health, food security and food safety issues; effective extension service; supply chain development; dissemination of models and technologies; strong linkage among research, extension, education and farmers; impediments of farmers access to services; increasing demand of organic products; family level small scale farming; and also other driving factors.

The country imported milk products worth US$ 214 million in 2012-13 and import figure is staggering. This warrant rethought and proactive action through a pragmatic National Livestock Policy. The ambitious plan could not achieve the desired targets mainly due to financial constraints or limited allocation of budget. It requires using more funds to improve service delivery and technical inputs like vaccines and improve diagnostic services and establish effective public–private partnership.

Linkage to Project Components: Yes (directly)

This policy takes care of nationwide livestock development in Bangladesh. More importantly, this national livestock extension policy protects almost every possible aspect (**Component A, B and C**) of livestock development except the institutional arrangements development for effective monitoring, evaluation and gap fillings for future protocols to safe guard livestock sector in Bangladesh.

3.1.8 The Seventh Five Year Plan (2016-2020)

In the context of agriculture, the development vision under the 7th Five Year Plan would be to ensure food and nutritional security, through sustainable intensification and diversification of climate resilient agricultural systems that are better integrated in local and global market in order to enhance the livelihood of rural women, men and communities.

In the context of agriculture sector development, the overall goal under the 7th Five Year Plan would be to sustainably intensify and diversify agricultural production to meet the nutritional needs of the increasing population in the country. The strategic goals in this regard would be to:

- Intensify production as needed to address the caloric requirements of an increasing population, diversify production as needed to ensure balanced nutrition for all and maximize rural incomes;
- Promote sustainability of natural resources use for sustainable agricultural growth;
- Promote adaptation to climate change of agro - food systems to enhance resilience of agriculture based livelihood systems.

Strategies for Livestock sub-sector development has been suggested as follows:

Developing good quality breed and feed for poultry and dairy: With regard to poultry, disease control and maintaining feed qualities are important strategies. Adoption of cross- breeding of local poultry with suitable exotic breeds will remain a priority. Food safety in poultry meat and eggs should be targeted through quality assurance of poultry feed stuff, hygienic processing of products and

environmentally safe disposal of wastes. For small scale commercial poultry farms, strategies should ensure the supply of quality day-old chicks, training on appropriate feed mixture, vaccination and adherence to bio-security guidelines. Introduction of insurance schemes should also be an important consideration.

In dairy production, Bangladesh is far from being self-sufficient. The strategy should be to address the main determinants of production, namely ensuring that cattle are disease free; well fed with cost effective and balanced forms of animal feed, of an appropriate breed for high yielding dairy production; manage lactation process efficiently through artificial insemination; and maintaining a hygienic system for timely milk collection and processing. BLRI will provide breeding services at farmer's level and also for commercial entities. DLS may monitor and provide technical support to feed mills at regional and local level.

Improving management in the production and marketing of livestock products: Given the very limited scope for open grazing land, one strategy for raising improved breeds of cows will be to replicate successful home based dairy farming with few animals based on stall feeding with limited grazing of fodder. To ensure reasonable returns to investment, produced milk can be linked to local supply chain to school milk distribution programmes. The broad strategies adopted for dairy animal development are largely applicable to meat animals as well. Additional interventions will be required to ensure meat quality through strict adherence to science based prescriptions for fattening animals, hygienic slaughter and marketing during peak demands. With technical support from DLS, DAM will work to facilitate farmers' market access.

Linkage to Project Components: Yes (directly)

This policy enhances the achievement the goals of 'Seventh Five Year Plan'. More specifically, these protocols care about the dairy and poultry production, disease control, ensure feed qualities, bio-security, milk collection and processing, hygienic slaughter, market policy, product value chain and safe guard of the environment from by-products from livestock origin. Therefore, **Component A, B and C** are the components that corresponds with this plan.

3.1.9 Livestock Related Acts

The government of Bangladesh has adopted few regulatory measures on livestock related activities; such as production, processing, marketing, export and importing, etc. and promulgated different Acts those have been explained in the following sections.

Animal and Animal Products Quarantine Acts-2005

This Act has been promulgated with a view to protect the livestock resources of the country from Trans- boundary diseases and for public health safety.

It is mandatory to obtain a quarantine clearance for importing any live animal of animal product to use in the country. This includes:

- All mammals except human being
- All kinds of birds' species
- All kinds of reptiles
- All kinds of fisheries species except fish
- Any other species that the Government decides through gazette notification

Almost all items of animal products and by-products including breeding materials (Semen) have been included in this Act. The term 'Import' has been defined as any of the above-mentioned items coming inside the country using the Sea, land or air routes; and the 'Export' means that are going outside using those routes.

Diseases of Animal Act- 2005

The Government of Bangladesh has promulgated this act in order to control the transmission of animal diseases. Like any other countries, there are many animal diseases prevailing in the country in sporadic form. Incidence of epidemics in large and small ruminants are not reported in near past. Epidemics in poultry birds, however, were reported for Avian Influenza of strain H_5N_1 in different districts.

The country is under threat of getting outbreak of different emerging and re-emerging diseases including Trans-boundary transmissible diseases. Controlling of these diseases is prerequisite for livestock and poultry development in the country.

The Acts have been promulgated to ensure healthy veterinary services in the country. A list of bacterial, viral, protozoan and parasitic diseases of large and small ruminants and poultry birds have been included in the Act.

The Act has the provision of imposing ban on sale, slaughter or marketing and also on movements during outbreak.

Linkage to Project Components: Yes

The diseases transmission and its prevention law is being operated by this act. However, in the components of this study has the provision of animal product marketing, transportation of inputs, anti-mortem and post mortem inspection of animals etc. will be taken care under this law.

Fish Feed and Animal Feed Act-2010

This Act has been promulgated to ensure quality of feed using in fisheries and livestock sub-sectors and came into effect in 2010.

In the Act the term 'Animal' includes: All mammals except human being; all kinds of birds' species; all kinds of amphibian reptiles; all kinds of fisheries species except fish; any other species that the Govt. decides through gazette notification.

The term 'Fish' includes: All cartilaginous or boney fish; salt or sweet water prawns or shrimps; all kind of amphibians; all species of Tortoise/turtles; all crustacean species; all species of molluscs; all echinoderms (sea cucumber); frogs and any stage of their life-cycle; any other species that the Govt. decides through gazette notification.

Animal feed has been defined as any item or its mixture prepared artificially or in any other ways that the animals consume to live on or that nourishes the animals.

License from the appropriate authority (DG of DoF or any first class category officer empowered by DG in case of fish feed; and DG of DLS or any first class category officer empowered by DG in case of animal feed) is mandatory to involve in the commercial operation of the above activities. Violation of this Act is punishable.

Linkage to Project Components: Yes

Animal feed production and marketing, feed analysis, quality control etc. are very much related with this act.

3.1.10 National Land Use Policy-2001

The Ministry of Land (MoL) has prepared the National Land Use Policy (NLUP) to fill up an important policy gap in the country. The NLUP deals with land uses for several purposes including agriculture (crop production, fishery and livestock), housing, forestry, industrialization, railways and roads, tea and rubber, etc. The document basically identifies land use constraints in all these sectors.

3.1.11 National Water Policy-1999

The National Water Policy of 1999 was adopted to ensure efficient and equitable management of water resources. Availability of fresh water is a prerequisite of any sorts of Agro-processing plant/industry and effluent/industrial waste-water disposal is a major concern of environmental pollution. Therefore, Zoning for location of new industries in consideration of fresh and safe water availability and also with effluent treatment plant (ETP) facility; Effluent disposal monitoring to prevent water pollution; and the standards of effluent disposal into common water courses to be set by WARPO in consultation with DOE; and imposition of penalty has been suggested in the strategic priorities/policy issues.

3.1.12 National Water Management Plan-2001

A pragmatic and sustainable water management plan in the light of National Water Policy 1999 has been adopted by the National Water Resources Council of Bangladesh. This plan is a framework plan within which the line agencies and other organizations are expected to plan and implement their own activities in a coordinated manner. Population growth; urbanization; Poverty alleviation; economic growth and development; employment; public participation; education and public health; Food security etc. are some of the important socio-economic context of this policy.

3.1.13 National Food Policy, 2006

The Ministry of Food (MoFood) has prepared the National Food Policy (NFP) with FAO support. The NFP clarifies three basic concepts: food security for all people, access to food depending on household income and food prices and health care taking care of nutritious food and improvement of health care system.

The Plan of Action of the NFP (2008-2015) translates the provisions of the NFP into 26 areas of interventions and priority actions, providing a comprehensive framework for identifying investment and priorities for policy actions required to achieve food security. National food policy aims at 3 main objectives and describes strategies to achieve the objectives as follows:

- Adequate and stable supply of safe and nutritious food
- Increased purchasing power and access to food of the people
- Adequate nutrition for all individuals, especially for women and children

3.1.14 National Population Policy (NPP)

The major policy objectives of NPP is to address the future challenges of maternal and child malnutrition; promote and actively support programs for elimination of gender disparity in education, health and nutrition and empower women (mostly involved in the off-farm backyard poultry and small ruminant rearing practices; malnutrition and slow pace of progress in the health and nutrition sectors; environment for improved quality of life for the people; and also on air and water pollution.

3.1.15 Industrial Policy 2005 of Bangladesh

One of the foremost objectives of the Industrial Policy 2005 is to set up planned industries considering the real domestic demand, prospect of exporting goods abroad, and discouraging unplanned industries in the light of experiences. Strategic priority of this policy includes Measures for the preservation of frozen, pasteurized, canned and dry foods (best implies for Milk and meat and their products) in a modern and hygienic way in order to sell them in local and overseas markets throughout the year; Special importance has been given in the Industrial Policy on agro-based and agro- processing industries and Importance has also been given on considering the SMEs and cottage industries as one of the major driving forces of country's economy. Vision 2021, as an important concern of the policy, emphasizes the Proper utilization of surplus agricultural labour gradually in production and service oriented industrial sectors.

3.1.16 Environment Policy 1992 and Implementation Programme

The Ministry of Environment and Forests prepared an Environment Policy and its implementation programme in 1992 with the overall objective of protecting the environment with a view to achieving a sustainable development through environment- friendly use of natural resources.

Policy issues/focused areas

The domain of the policy spread over 15 areas such as:

- Agriculture
- Industry
- Health
- Energy
- Water resources development and flood control
- Land use
- Bio- diversity
- Fishery and Livestock
- Food
- Coastal and marine environment
- Transport
- Housing and Urbanization
- Education
- Science and Technology
- Legal and Institutional Framework

3.1.17 National Rural Development Policy, 2001

Ministry of Local Government, Rural Development and Cooperatives has formulated the National Rural Development Policy (NRDP), 2001 with the overall objective of poverty reduction through

comprehensive rural development programmes. Rural Development is the basis of overall progress and prosperity of Bangladesh. Both Public, private and NGO's efforts are going on in implementing various programmes for rural development.

Strategic priority has been reflected in the programmes under the policy framework. The priority included: people's participation, poverty alleviation, rural infrastructure development, agro based rural economy, education for rural areas, health services, nutrition, population control, development of rural housing, land uses, rural industries development, rural financing, empowerment of rural women, rural child and youth development, development of disadvantaged rural people, area specific special development programmes, employment generation for self-reliance, skilled manpower generation in rural areas, cooperatives for rural development, rural environment issues, dispute settlement/ Salish system, Law and order issues, culture and heritage, games and sports, power and fuel energy, research and training, etc.

3.1.18 Renewable Energy policy in Bangladesh

Government of Bangladesh has declared National Energy Policy (NEP) in 1996 covering renewable Energy issues and the Renewable Energy Policy has been drafted in October 2002.

Energy is one of the most important ingredients required in every sphere of life. Generally fossil fuel like gas, coal, oil etc. is the major source of energy in use. But, the energy generated from solar, wind, biomass, small hydro, geo-thermal, tidal, wave etc. are the renewable energy source. World's fossil fuels are exhaustive in nature, so the necessities of harnessing alternative energy resources are very significant. Renewable energy resource is free from environmental pollution, help control over deforestation and abating atmospheric emissions. At present, major portion of electricity is generated using mainly fossil fuel.

Policy issues

Renewable Energy policy 2002 (Draft) discussed with the following issues:

1. Modalities of policy implementation that included 'One window operation'- through establishing Renewable Energy Development Agency (REDA). The policy stated the terms of references of the REDA.
2. Financing arrangement that emphasizes establishing Trust Fund with grant from Global Environmental Facility (GEF) and other climate change abatement funds to support renewable energy projects in Bangladesh.
3. Environmental Impact Assessment (EIA);
4. Price regulation;
5. Financial incentives;
6. Facilities and incentives for foreign investors;
7. Right of interpretations of policy.

Policy goals/ Priority options/ Strategic priority:

Policy goal is to enhance power generation in the country to meet the sectoral demands. Declaration of fiscal incentives and providing other facilities and incentives along with the exemption of income taxes is a clear indication of attracting private and foreign investors in this sector. Therefore, attracting private and foreign investors may be considered as the strategic priority of this policy.

Linkage to Project Components: Yes (directly)

Renewable energy resource is free from environmental pollution. Therefore, the DRMP project has the scope to extend the support to government initiative in renewable energy generation and help control over deforestation and abating atmospheric emissions of Methane (CH4), Nitrous Oxide (NO2), etc. from livestock origin.

3.1.19 Bangladesh National Action Plan (NAP) for Reducing Short Lived Climate Pollutants (SLCPs) 2014

The objectives of the SLCP NAP are (i) identification of major SLCP emission sources, (ii) identification of major stakeholders who are working on SLCP, (iii) identification of information, management capacity and finance gap and (iv) Identification for options for reducing the SLCP through developing the action plan and addressing the challenges and problems posed by SLCP mitigation. The SLCP NAP of Bangladesh mainly addresses the Black Carbon and Methane emission issues.

Linkage to Project Components: Yes

In the SLCP NAP (Bangladesh) document it has been mentioned that Livestock contribute both directly and indirectly to climate change through the emissions of greenhouse gases such as carbon dioxide, methane and nitrous oxide. Methane emissions mostly occur as part of the natural digestive process of animals (enteric fermentation) and manure management in livestock operations. Methane emissions from livestock are estimated at about 2.2 billion tons of CO2 equivalent, accounting for about 80% of agricultural CH4 and 35% of the total anthropogenic methane emissions. Currently there are more than 65,000 poultry farms and over 59,000 livestock (cattle, goat, buffalo and sheep) farms in the country. According to the second national communication of Bangladesh to the UNFCC (2012), estimated methane emissions from livestock and poultry for 2004-05 are 493.16 and 84.79 Gg, respectively; and together they account for about 36% of total estimated methane emissions from all major sectors (GoB/ UNDP, 2012). According to the projection of first SLCP NAP the livestock and poultry sector will produce 953.9 tones Methane during 2020. According the component A, B and C of DRMP project it has been addressed that climate resilient livestock will be developed, the number of livestock population will not be increased rather the productivity will be increased, climate resilient fodder will be developed. Biogas plant will be introduced at farm level and manure management through biogas plant and ICS technologies.

3.1.20 The Sustainable Development Goal (SDG)

In the SDG, there are 17 Goals with 169 Targets in the SDG. Among them 9 Goals with 28 Targets are relevant to the DLS as per mapping of the MoFL. The DLS has extended the following efforts to achieve the Goals through reaching the targets (Extracted from the Annual Report of DLS for 2016-17)

SDG #	Goals	Efforts/Planning of DLS
1	No Poverty	Capacity development through conducting Training, technology transfer and providing inputs to unemployed and small holders through different development projects.
2	Zero hunger & Nutrition	With a view to achieve nutritional security and remove hunger, DLS is implementing diversified programmes to increase the production potentiality of cattle and proposed for development projects to accelerate their implementation process.

SDG #	Goals	Efforts/Planning of DLS
3	Good Health & Wellbeing	Awareness building on zoonotic diseases, vaccination of pets, identification and surveillances of diseased animals, Veterinary health checking in the cattle market during Eid festival by the veterinary team to protect the public health interest and these services will be extended in future.
4	Quality Education	Establishing Veterinary colleges aiming at the expansion of technical education in the country. Five Livestock diploma institute has been established for producing sub-technical professionals. A National Livestock and Poultry Management Institute have been established at Gopalgonj district head quarter for extension of quality technical services on post-harvest processing of milk, meat and eggs.
5	Gender Equality	Livestock related activities are the main sector in the professional areas for women right, empowerment, and equality. Participation of women in the self-employment comprises about 50%. Direct involvement of women will be increased further in the In the new projects.
6	Clean Water & Sanitation	-
7	Sustainable Energy	The integrated livestock manure management action plan has been prepared by the BLRI. This will enable the sustainable use of fuel in the country.
8	Sustainable Economic Growth and Employment	Livestock based Industrialization and export oriented programme will be lounged for a sustainable economic growth and employment generation. This will help in value addition to enhance economic development.
9	Industry, Innovation & Infrastructure	Development of livestock sector infrastructure including establishment of Quarantine station is in the process through the disease prevention and control project.
10	Reduced inequalities	-
11	Sustainable Cities & Communities	-
12	Sustainable Production & Consumption	Demand for quality protein will increase due to economic growth, expanding urbanization, increased paying capability and awareness of people in the country. So, the DLS has taken initiative to meet the demand through different development projects.
13	Combat Climate Change	Different Donor aided project on livestock sector will be proposed to address the impacts of climate change.
14	Conservation & sustainable use of marine resources	-
15	Ecosystem & biodiversity	Development and implementation of environmental friendly dairy and poultry farming. Support service for animal diseases investigation and also animal nutrition laboratory. Enforcement of regulatory measures to conserve endangered livestock species. Strengthen and functionalizing of quarantine stations
16	Governance	Use of modern technologies in the offices, capacity building and in a moral and transparent manner following annual work plans

SDG #	Goals	Efforts/Planning of DLS
17	Global Partnership	Strengthen the smart e-livestock service project. Establishment and linkage through technology transfer, consultation and collaborative research with national and international institutes. Global and regional partnership improvement, in science knowledge and good practices of feed, fodder, climate, dairy and meat productions.

3.2 Social Policies and Regulatory Framework

The Social Policies and regulatory framework is mainly to outline the constitutional provision of fundamental Rights of the citizen, their occupation, existing laws, Acts, Regulations and Policies of the country relating to acquisition and requisition of immovable properties for state purposes, laws regarding compensation of land under acquisition; Constitutional right of small ethnic communities; laws to settle land for small ethnic communities in the CHT and to establish state sovereignty on land (Regulation 1900); Laws to compensate for land under acquisition in Chittagong Hill–Tracts (Land Acquisition) Regulation 1958, The CHT Regional Council Act, 1998 which recognizes the peace Accord establishing the ethnic people's right to land, culture, language, and religion. The Labor Act, 2006, relating to the compensation due to death or injury of labor and also for group insurance provision of labors, etc. are more or less related to this project. This section is subjected to be updated with the change or amendment in laws, acts, regulations and policies.

Three Hill- districts (Khagrachori, Rangamati and Bandarban) of Chittagong (CHT) are not in the proposed area of the DRMP project. Therefore, the Acts regulation or Accords regarding CHT has not been discussed in this section. However, the World Bank emphasizes the small ethnic community issues (OP/BP 4.10), Involuntary Resettlement (OP/BP 4.12) and also the Gender issues involved in the social aspects of the project, a brief of the laws, acts, regulations and policies related to those contexts of the DRMP project is provided below:

3.2.1 Social Policies, Laws and Regulations of GoB

Constitutional Provisions: In part III, under Fundamental Right section of the constitution of the People's Republic of Bangladesh, has established the fundamental rights of the citizen. In Article 28, Clause-(1) reads "The State shall not discriminate against any citizen on grounds only of religion, race, caste, sex or place of birth". (2) Women shall have equal rights with men in all spheres of the State and of public life. (3) "No citizen shall, on grounds only of religion, race, caste, sex or place of birth be subjected to any disability, liability, restriction or condition with regard to access to any place of public entertainment or resort, or admission to any educational institution". And the Clause (4) reads "Nothing in this article shall prevent the State from making special provision in favour of women or children or for the advancement of any backward section of citizens".

Under the Constitutional provision of Article 29, Clause (3) reads " Nothing in this article shall prevent the State from – (a) "making special provision in favour of any backward section of citizens for the purpose of securing their adequate representation in the service of the Republic"; Article 40 of the constitution states categorically that every citizen has the right to practice any lawful occupation which implies that anything impeding such right (a) should not be done or (b) there should be supplementary measures to make recovery of the losses incurred by the citizen. Resettlement and rehabilitation of adversely affected people due to infrastructure projects very clearly falls within this

requirement for supplementary measures. However, as per Article 42, sub-clause 2, no law with provision of compensation for acquisition of land can be challenged in a court on the ground that such compensation has been inadequate. However, under World Bank OP 4.12 Involuntary Resettlement, every affected person will have access to a project specific Grievance Redress Mechanism (GRM) for dispute resolution before the matter is moved to the courts. Complaints, the resolution process and the outcome will be reviewed by the project proponents as well as the Bank. Until the dispute is resolved the funds for the disputed asset must be held in an escrow account (top-up payments due from the project agency can be held until the project closes; the amount placed with the DC may be held for10years or more if necessary).

The Acquisition and Requisition of Immovable Property Act 2017: The principal legal instrument governing land acquisition in Bangladesh is the Acquisition and Requisition of Immovable Property Ordinance,1982 (Ordinance II of 1982 with amendments upto1994), which is recently replaced by the new law (Act 21 of 2017) and other land laws and administrative manuals relevant to land administration in Bangladesh. According to the Act and the formal Ordinance, whenever it appears to the GoB that any property in any locality is needed or is likely to be needed for any public purpose or in the public interest, the Government can acquire the land provided that no property used by the public for the purpose of religious worship, graveyard and cremation ground. The1982 Ordinance/Act 21 of 2017 requires that compensation be paid for (i) land and assets permanently acquired (including standing crops, trees, houses); and (ii) any other damages caused by such acquisition. The Deputy Commissioner (DC) determines (a) market value of acquired assets on the date of notice of acquisition (based on the registered value of similar property bought and/or sold in the area over the preceding 12 months), and (b) 200% premium on the assessed value for land and 100% for non-land assets on the land due to compulsory acquisition. There are also provisions for payment of crop compensation to tenant cultivators.

The Ministry of Land (MoL) is authorized to deal with land acquisition. The MoL delegates some of its authority to the Commissioner at Divisional level and to the Deputy Commissioner at the District level. The Deputy Commissioners (DCs) are empowered by the MoL to process land acquisition under the Ordinance and pay compensation to the legal owners of the acquired property. Khas (government owned land) lands should be acquired first when a project requires both khas and private land. If a project requires only khas land, the land will be transferred through an inter-ministerial meeting following the acquisition proposal submitted to DC or MoL as the case may be. The DC is empowered to acquire a maximum of 50 standard bigha (6.75 ha) of land without any litigation where the Divisional Commissioner is involved for approval. Acquisition of land more than 50 standard bigha is approved from the central land allocation committee (CLAC) headed by the chief executive of the GoB proposed by the MoL.

The land owner needs to establish ownership by producing record-of-rights in order to be eligible for compensation under the law. The record of rights prepared under 4.143 or144 of the State Acquisition and Tenancy Act 1950 (revised 1994) are not always updated and as a result, legal land owners have faced difficulties trying to “prove” ownership. The affected person (AP) has also to produce rent receipt or receipt of land development tax, but this does not assist in some situations as a person is exempted from payment of rent if the area of land is less than 25 bighas (3.37 ha).

Constitutional Rights of the Small Ethnic Communities (SEC): The Constitution of Bangladesh does not mention the term Indigenous people, cultural and small ethnic communities in Bangladesh. The

only protective provision for the small ethnic communities that the policy makers often refer to is Article 28(4) which states that: Nothing shall prevent the state from making special provision in favour of women and children or for the advancement of any backward citizens. The above provision does not define who or what constitutes "backward". However, the Government of Bangladesh termed them 'Ethnic minorities' ,'Tribe' or 'Tribal', 'Small Ethnic Communities" etc. in different state documents to refer the small ethnic community people and the need for special attention and in general they are essentially viewed as backward, poor and socio-economically and culturally inferior. Towards this end a special program was initiated in 1996-97 by the Prime Minister's Secretariat aimed at improving the socio-economic situation of the small ethnic communities of Bangladesh, resident outside the Chittagong Hill Tracts (CHT).

The constitution of the peoples' Republic of Bangladesh has the distinct provision to protect the right of the small ethnic communities. The constitution fortified the citizen from discrimination on grounds of race, religion and place of birth (Article 28 of the constitution), and the article 27 has provided equality of all citizen before laws. The constitution provides scope for positive action in favor of the backward section of citizens (Articles 28, 29). A small percentage of public sector jobs and seats in several government educational institutions are reserved for small ethnic communities.

Legal and Regulatory Framework

There are some specific laws that refer to small ethnic communities, specially focusing the tribal peoples in the Chittagong Hill Tract (CHT) area. However, in the plains, the only one of such laws under section 97 of the East Bengal State Acquisition and Tenancy Act, 1950 forbids the transfer of lands owned by aboriginals to non-aboriginal persons without the state consent of the Government's designated officer. In case of CHT has a far larger body of laws that refers directly to small ethnic community peoples. Some of these laws recognize ethnic peoples' traditional system and customs regarding the ownership and use of lands and other natural resources. The CHT Regulation of 1900 is an example of such laws. Other laws include the Hill District Council Acts of 1989 and the CHT Regional Council Act of 1998 which was passed after the peace accord of 1997. This act has concluded the armed conflict (for as long as 20 years) and provided a framework for the CHT self-government system.

The Government of Bangladesh has a Special Affairs Division for small ethnic communities under the Prime Minister's office which looks after the development of small ethnic community population outside CHT. This Division provides fund for small ethnic community population for their development including stipends for small ethnic community students.

Other Relevant Laws and Policies

The government is fully aware of the vulnerable situation of small ethnic communities in the country. The small ethnic communities had a consultation organized by the government. Consultations have pointed out the need for special attention to the problems of small ethnic communities and development needs of the small ethnic community people. Restructuring of the Ministry of Chittagong Hill Tracts Affairs to include other plain-land minority populace, to take measures to preserve the language of the small ethnic communities, to take up a special program for poverty reduction among the small ethnic community people, to incorporate their culture in the national curriculum of education, and to formulate a policy for the development of small ethnic community people and implement laws.

Under the Constitutional mandate, Bangladesh Government has enacted different Acts, Ordinances and Policies to protect and promote the wide range of cultural diversity and their values through Bangla Academy Ordinance 1978, National Archive Ordinance 1983, Bangladesh National Museum Ordinance 1983, Nazrul Institute Ordinance 1984, Bangladesh Shilpakala Academy Act 1989, Bangladesh Folk Art and Crafts Foundation Act 1998, Copyright Act 2000, Bangladesh National Cultural Policy 2006, Small Ethnic Groups Cultural Organization Act 2010 etc. Bangladesh Government is sincere to follow the principles, depicted in the UNESCO Convention 2005.

The Labor Act, 2006: This act has been promulgated keeping provision of compensation for any incidental death and injury of labor/worker. Section 99 of the Labor Act, 2006, read with the Compensation Act 2005, makes it compulsory for them to have Group Insurance for establishments where there are more than 200 permanent workers. A worker is defined as: "any person, including an apprentice, employed in any establishment or industry, either directly or through a contractor, to do any skilled, unskilled, manual, technical, trade, promotional or clerical work for hire or reward, whether the terms of his employment are expressed or implied, but does not include a person employed mainly in a managerial or administrative capacity". The Labor Act allows workers to claim Tk. 1,00,000 and Tk. 1,25,000 for death and permanently total disablement at work respectively, or in other words, the same compensatory sums as set out in the Labor Act.

However, The DRMP project will follow the latest law provisions in case of incidental death or injury of workers.

3.3 World Bank Safeguard Policy

3.3.1 General Description of World Bank Safeguard Policy

The World Bank has developed a number of Safeguard Operation Policies to ensure that all possible impacts are considered and mitigation measures are spelled out prior to the implementation of any proposed project. These policies ensure that the quality of operations is uniform across different settings worldwide. If the decision is taken that a Safeguard Policy should be applied, mitigation measures and plans must be developed and in place before the implementation of a proposed project.

The Bank requires environmental screening and classification for all investment projects (including ones financed by Trust Funds, Project Preparation Facilities and Guarantees) proposed for Bank financing, to help ensure that they are environmentally and socially sound and sustainable. Screening and classification take into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, Indigenous Peoples); cultural property; and trans-boundary and global environmental aspects.

The objectives of environmental screening and classification are: to evaluate the environmental risks associated with a proposed operation; to determine the depth and breadth of Environmental Assessment (EA); and to recommend an appropriate choice of EA instrument(s) suitable for a given project. The Bank recognizes that environmental screening and classification is not absolute and involves professional judgment on a case by case basis. When screening, careful consideration needs to be given to potential environmental impacts and risks associated with the proposed project. Judgment is exercised with reference to the policy expectations and guidance; real impacts on the ground; and established regional and Bank-wide precedence and good practice.

3.3.2 OP 4.01 Environmental Assessment

Environmental Assessment (EA) of a World Bank assisted projects is to ensure that they are environmentally sound and sustainable. EA helps to screen out activities that causes environmental degradation, identify project selection and planning process, designing and implementation by preventing, minimizing or mitigating adverse impacts and stimulating positive impacts for all interventions throughout project implementation.

On the basis of location, nature/type, sensitivity, and extent of the environmental impact, the WB classifies the proposed projects in different categories; such as:

A. Category: Projects are risky to exert negative environmental impact and may cause an area affected beyond the site or facilities subjected to physical works. EA for these categories needs to study the potential Negative and positive impact, alternatives of the interventions may be compared and pave the ways for prevention, minimizing or mitigation measures. An Environmental Impact Assessment study requires to be taken by the supported agency.

B. Category: Projects are those that are potentially adverse for human or environmentally important areas like wetland, forest, Natural habitats, etc. and are less adversely affects than A-category ones. The impacts of this category is site-specific and does not require detailed EA as in case of Category-A. However, EA for these categories also needs to study the potential Negative and positive impact, alternatives of the interventions may be compared. It also helps to pave the way for prevention, minimizing or mitigation measures and improve environmental performance.

C. Category: Those projects that have no or very minimal environmental impacts. Environmental screening is needed but no EA is required.

3.3.3 OP 4.04: Natural Habitats

The policy describes the conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats and their functions in its economic and sector work, project financing, and policy dialogue. The Bank also supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. The Bank- promotes and- supports natural habitat conservation and improved land use by financing projects designed to integrate into national and regional development the conservation of natural habitats and the maintenance of ecological functions. Furthermore, the Bank promotes the rehabilitation of degraded natural habitats. The Bank does not support projects that involve the significant conversion or degradation of critical natural habitats.

3.3.4 OP 4.07: Water Resources Management

The OP 4.07 policy is intended to ensure the international standard for water resources management. The Bank's involvement in water resources management entails support for providing potable water, sanitation facilities, flood control, and water for productive activities in a manner that is economically viable, environmentally sustainable, and socially equitable. The Bank assists borrowers in many priority areas, among which developing a comprehensive framework for designing water resource investments, policies, and institutions is very important. Within this framework, when the borrower develops and allocates water resources, it considers cross-sectoral impacts in a regional setting (e.g., a river basin). Restoring and preserving aquatic ecosystems and guarding against overexploitation of

groundwater resources are also given priority to the provision of adequate water and sanitation services for the poor. Furthermore, special attentions are needed by the borrowers to avoid the water logging and salinity problems associated with irrigation investments by (i) monitoring water tables and implementing drainage networks where necessary, and (ii) adopting best management practices to control water pollution.

3.3.5 OP 4.36: Forests

The OP 4.36 is concerned about the management, conservation, and sustainable development of forest ecosystems and their associated resources. The bank believe that forests are very much essential for poverty reduction and sustainable development irrespective of their location in the world. Since some part of the coastal zone of Bangladesh is covered by mangrove and other type of forest, the assessment of impacts of CEIP project on the forest ecosystems need special attention while doing environmental assessment.

The Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. The Bank also assists borrowers with the establishment and sustainable management of environmentally appropriate, socially beneficial, and economically viable forest plantations to help meet growing demands for forest goods and services. The Bank does not finance projects that, in its opinion, would involve significant conversion or degradation of critical forest areas or related critical natural habitats. If a project involves the significant conversion or degradation of natural forests or related natural habitats that the Bank determines are not critical, and the Bank determines that there are no feasible alternatives to the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs, the Bank may finance the project provided that it incorporates appropriate mitigation measures. The Bank does not finance projects that contravene applicable international environmental agreements. The bank insist that the plantation projects should be designed carefully to avoid introduction of invasive species and threaten biodiversity.

3.3.6 Pest Management (OP 4.09)

Biological or environmentally friendly controlling methods are encouraged and the chemical pesticides that may cause harm to human and their environment are discouraged in any of the WB financed agricultural operations. Pests in crop agriculture are normally controlled through IPM approaches, such as biological control, cultural practices, and by developing pest resistant or tolerant varieties of crop. In respect to the classification of pesticides and their specific formulations, the Bank refers to the FAO's definition of pesticides and the World Health Organization's Recommended Classification of Pesticides by Hazard and Guidelines to Classification. The following criteria apply to the selection and use of pesticides in Bank-financed projects:

a. They must have negligible or no adverse effects on human health.
b. They must be shown to be effective against the target species.
c. They must have minimal effect on non-target species and the natural environment.
d. Their use must take into account the need to prevent the development of resistance in pests.

The Bank has the reservation of financing in formulated products that fall in WHO classes IA and IB, or formulations of products in Class II, if (a) the country lacks restrictions on their distribution and use; or (b) they are likely to be used by, or be accessible to, lay personnel, farmers, or others without

training, equipment, and facilities to handle, store, and apply these products properly. However, in animal Agriculture, IPM or PM is not in general practices by the farmers. The Registered Veterinarian prescribes the chemicals to use for animal pest control or advices to Inject/Spray/Deeping with synthetic veterinary pharmaceutical products to control external or internal parasites. Few indigenous methods of using herbal products such as: Tobacco leaf powder, some toxic plant extract and ashes, etc. are also in use in rural areas. However, use of Chemicals may cause harm to people or environment. Therefore, incompliance with the requirements of the OP 4.09 of WB safeguard policy, a Pest Management Plan (PMP) has been prepared for the DRMP Project of DLS and included in the ESMF of the project.

3.3.7 OP 4.11: Physical Cultural Resources

Physical cultural resources are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Their cultural interest may be at the local, provincial or national level, or within the international community. Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The Bank assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances. The impacts on physical cultural resources resulting from project activities, including mitigating measures, may not contravene either the borrower's national legislation, or its obligations under relevant international environmental treaties and agreements. The borrower should address the impacts on physical cultural resources in projects proposed for Bank financing, as an integral part of the environmental assessment (EA) process.

3.3.8 Indigenous Peoples (OP/BP 4.10)

The key purpose of identifying indigenous people is to ensure that they are fully consulted about and have opportunities to actively participate in project design and determination of project implementation arrangement. But the term "indigenous people" has to be used to refer exclusively to a distinct social and cultural group qualifying themselves as such with following characteristics:

- Distinct: self -identification as members of a distinct indigenous social and cultural group and recognition of this identity by others
- Vulnerable: collective attachment (meaning, the group has, for generations, a physical presence in and economic ties to, and territories traditionally owned, or customarily used or occupied, by the group concerned, including areas that hold special significance for it, such as sacred sites
- Social: Customary cultural, economic, social, or political institutions that are distinct or separate from those of the mainstream society or culture

Cultural: a distinct language or dialect, often different from the official language or languages of Bangladesh

3.3.9 Involuntary Resettlement (OP/BP4.12)

This policy aims to minimize displacement; treat resettlement as a development program; provide affected people with opportunities for participation; assist displaced persons in their efforts to improve their incomes and standards of living, or at least to restore them; assist displaced people regardless of legality of tenure; pay compensation for affected assets at replacement cost; the OP Annexes include descriptions of Resettlement Plans and Resettlement Policy Frameworks.

3.3.10 Safety of Dams (OP/BP4.37)

This Policy is to ensure due consideration is given to the safety of dams in projects involving construction of new dams, or that may be affected by the safety or performance of an existing dam or dams under construction; important considerations are dam height & reservoir capacity.

3.3.11 Projects on International Waterways (OP/BP7.50)

The Policy aims to ensure that projects will neither affect the efficient utilization and protection of international waterways, nor adversely affect relations between the Bank and its Borrowers and between riparian states

3.3.12 Disputed Areas (OP/BP7.60)

The Bank may support a project in a disputed area if governments concerned agree that, pending the settlement of the dispute, the project proposed for one country should go forward without prejudice to the claims of the other country

3.3.13 Disclosure Policy (BP17.50)

Disclosure policy supports decision making by the borrower and Bank by allowing the public access to information on environmental and social aspects of projects and has specific requirements for disclosure

3.3.14 IFC Environmental Health & Safety Guideline

The Environmental, Health and Safety (EHS) Guidelines of the International Finance Corporation (IFC), 2008 is the safeguard guidelines for environment, health and safety for the development of the industrial and other projects. They contain performance levels and measures that are considered achievable in new facilities at reasonable costs using existing technologies.

3.4 Compliance with World Bank Operational Policies

World Bank Safe Guard Policies	Triggering	Relevance
Environmental Assessment (OP/BP 4.01) This Policy aims to ensure that projects proposed for Bank financing are environmentally and socially sound and sustainable; to inform decision makers of the nature of environmental and social risks; To increase transparency and participation of	Yes	This OP is triggered as a series of proposed project activities as well as of the potential types of subprojects to be financed under the second component (upgrading/construction of the veterinary laboratories; investments in improving the animal heard; agricultural equipment; farm infrastructure improvement including animal housing, waste

World Bank Safe Guard Policies	Triggering	Relevance
stakeholders in the decision-making process		management, handling and storage including demonstration infrastructure in this regard; purchasing of inputs and machinery for feed and fodder production; animal shelter improvement; animal breeding, processing and storage of livestock products, including development of cattle, small ruminants, poultry farming as well as cultivation of forage crops, milk collection and cooling equipment; silage production; etc.) might generate a series of various environmental and social impacts. These impacts would be associated with noise, dust, air and water pollution, health hazards and labor safety issues, etc.). All these impacts are expected to be typical for agriculture production, and small-scale construction/rehabilitation works or for various agricultural/livestock processing activities, temporary by nature and site specific and can be easily mitigated by applying best construction and/or agro processing practices and relevant mitigation measures. To address these impacts the client prepared an Environmental and Social Management Framework (ESMF) aimed at specifying the set of mitigation, monitoring, and institutional responsibility measures to be taken during the project implementation to eliminate adverse environmental and social impacts, offset, or reduce them to acceptable levels. The ESMF also suggests a series of environmental issues to be included in the proposed project TA activities which would include training, preparing and disseminating guidebooks and implementing demonstration activities on the following: (a) education of livestock specialists on managing sector environmental and social impacts; (b) efficient lab and medicinal waste management; (c) sound manure management; (d) practicing large and/or small scale silage production and measures to ensure appropriate handling and disposal of generated "silage liquor", preventing soil and ground water pollution; and (e) promoting Integrated Pest Management while

World Bank Safe Guard Policies	Triggering	Relevance
		producing fodder and safety issues in livestock production practices.
Natural Habitats (OP/BP 4.04) This Policy aims to safeguard natural habitats and their biodiversity; avoid significant conversion or degradation of critical natural habitats, and to ensure sustainability of services and products which natural habitats provide to human society.	No	The project will not support any activities that would trigger this policy, this will be ensured during the subprojects initial environmental screening. Its indirect impact would be reduction in number of animals and respectively reduction of the pressure on the pastures that would beneficial in terms on improving status of NHs.
Forestry (OP/BP 4.36) This Policy is to ensure that forests are managed in a sustainable manner; significant areas of forest are not encroached upon; the rights of communities to use their traditional forest areas in a sustainable manner are not compromised.	No	The project will be implemented in non-afforested areas and thus no impacts on the forests status are expected
Pest Management (OP 4.09). This policy is to ensure pest management activities follow an Integrated Pest Management (IPM) approach, to minimize environmental and health hazards due to pesticide use, and to contribute to developing national capacity to implement IPM, and to regulate and monitor the distribution and use of pesticides	Yes	Although the project will not support purchasing and use of mineral fertilizers and pesticides, the farmers routinely use them while producing animal fodder as well as acaricides to control ticks and other ectoparasites. To ensure their safe usage the ESMF will support TA activities in this aspect, providing public awareness and training for farmers.
Physical Cultural Resources (OP/BP 4.11) This policy is to ensure that: Physical Cultural Resources (PCR) are identified and protected in World Bank financed projects; national laws governing the protection of physical cultural property are complied with; PCR includes archaeological and historical sites, historic urban areas, sacred sites, graveyards, burial sites, unique natural values; implemented as an element of the Environmental Assessment	No	In the project, there will be no such structures that have to be relocated and /or shifted. This will be ensured during the initial sub-components screening.
Indigenous Peoples (OP/BP 4.10) IP – distinct, vulnerable, social and cultural group attached to geographically distinct habitats or historical territories, with separate culture than the project area, and usually different language. The Policy aims to foster full respect for	Yes	Though there is existence of small ethnic communities in the project area, but none of the interventions may harm the interest of the ethnic communities. Because of the interventions of DRMP project relates mainly to the capacity building, support to producers organized for common interest, support to

World Bank Safe Guard Policies	Triggering	Relevance
human rights, economies, and cultures of IP, and to avoid adverse effects on IP during the project development.		improving production practices, market linkages through Productive Partnerships (PPs), and infrastructure development through renovation/ modernization/creating facilities etc.
Involuntary Resettlement (OP/BP4.12) This policy aims to minimize displacement; treat resettlement as a development program; provide affected people with opportunities for participation; assist displaced persons in their efforts to improve their incomes and standards of living, or at least to restore them; assist displaced people regardless of legality of tenure; pay compensation for affected assets at replacement cost; the OP Annexes include descriptions of Resettlement Plans and Resettlement Policy Frameworks	Yes	No resettlement impact is envisioned due to the project does not have the provision of land acquisition; therefore, no major issues on resettlement may be triggered. But, in course of developing a project on sub-component like support to slaughter house modernization, quarantine facilities in the border check-post, creating facilities in any other interventions; resettlement issues may be evolved incidentally due to tenancy, encroachment, squatters etc. Therefore, the Involuntary Resettlement issues with guiding principles have also been provided.
Safety of Dams (OP/BP4.37) This Policy is to ensure due consideration is given to the safety of dams in projects involving construction of new dams, or that may be affected by the safety or performance of an existing dam or dams under construction; important considerations are dam height & reservoir capacity	No	The project does not support any activities which can impact safety of dams.
Projects on International Waterways (OP/BP7.50) The Policy aims to ensure that projects will neither affect the efficient utilization and protection of international waterways, nor adversely affect relations between the Bank and its Borrowers and between riparian state	No	The project will not finance irrigation subprojects which can impact the international waterways, as well as any projects which can discharge sewage directly to the international waterways.
Disputed Areas (OP/BP7.60) The Bank may support a project in a disputed area if governments concerned agree that, pending the settlement of the dispute, the project proposed for one country should go forward without prejudice to the claims of the other country	No	The project will not support any activities in disputed areas.

3.5 Requirement of Environmental Clearances as per the GoB Policies

Legislative bases for EIA/IEE in Bangladesh are the Environmental Conservation Act 1995 (ECA'95) and the Environmental Conservation Rules 1997 (ECR'97). Department of Environment (DOE), under the Ministry of Environment and Forest (MOEF), is the regulatory body responsible for enforcing the ECA'95 and ECR'97. According to the Environment Conservation Act 1995 no industrial unit or project will be established or undertaken without obtaining, in the manner prescribed by the Environment Conservation Rules 1997, an Environmental Clearance Certificate from the Director General. Therefore, every development projects/industries which are specified under the Schedule-1 of the Environmental Conservation Rules 1997 require obtaining site clearance and environmental clearance from DoE. For 'Red' category, it is mandatory to carry out an EIA including an EMP and where necessary develop a Resettlement Plan for getting environmental clearance from DoE. The application procedure for obtaining site clearance and environmental clearance for the sub-components of Red category is shown in Figure 3.1.

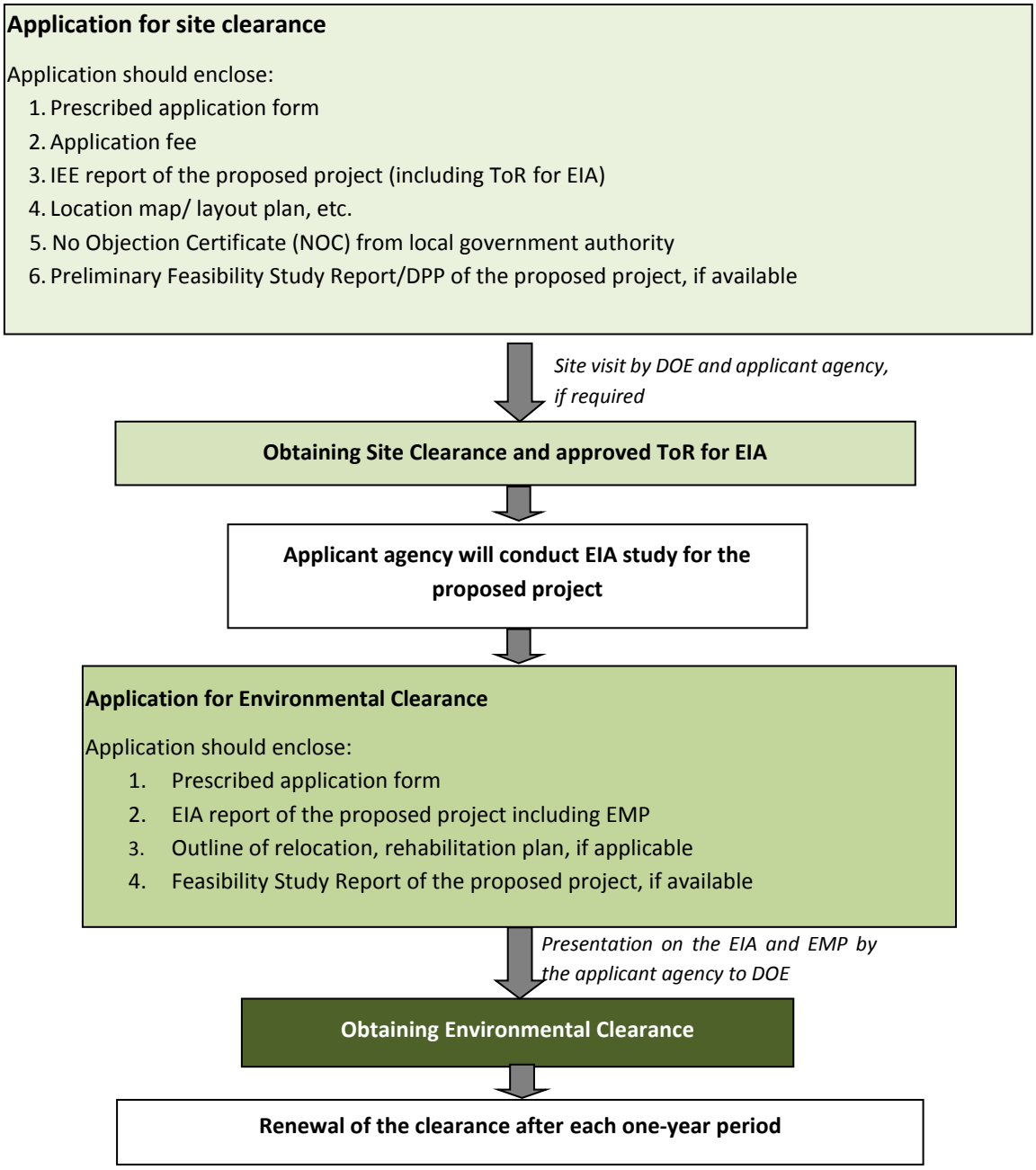


Figure 3.1: Process of Obtaining Clearance Certificate from DoE

4. Generic Assessment of Environmental and Social Impacts

4.1 Background

Development basically changes the existing conditions/situations of the interested components along with its adjacent natural resources and the management systems. These changes can be seen in both the way of positive and negative impacts. Under this study, several components have been selected for the improvement of livestock sector and its sustainable management in future. This chapter, therefore, brings forward common potential positive and negative impacts based on the components to be developed. Before going to assess impacts, it is important to understand and evaluate the existing strength and weakness of the livestock related institutions prevailing in Bangladesh.

4.2 Existing Policy and Institutional Assessment to Ensure Sustainable Livestock Development

Existing Policies relevant to livestock and poultry development of the country has been discussed in brief in Chapter-3.1 of this report. The existing institutional status involving livestock sector is given below.

4.2.1 Department of Livestock Services (DLS)

Department of Livestock Services under the Ministry of Fisheries and livestock is responsible for conservation and development of livestock in Bangladesh for production of valuable protein food for human. DLS is one of the oldest departments in this country inherited from British India. Over the period of time, the country has made remarkable progress in some of the areas, e.g. crop agriculture and supplementary sectors. But due to age old neglect and low priority, the development of livestock sector was not visible till 1990. Due to the realization of diversified impact of the importance of the sector, in 1990 and afterwards, a good number of development programmes have been taken up to provide infrastructure facilities and the sector has been contributing very significantly in the national economy by producing valuable protein food, milk, meat, eggs for health and nutrition, employment generation for the vulnerable women, unemployed youth and rural poor to reduce poverty. The sector has now transformed from traditional system to a commercially viable one.

4.2.2 Man-power and Infrastructural Facilities

Department of Livestock Services is the major actor in the public sector for livestock development in the country, having 1,556 officers including 1,471 Doctors (Veterinary Medicine/Animal Husbandry graduate officers) and 6,829 other sub-technical and support staffs. Over the years, it has created some infrastructure facilities with its Head Quarter in Dhaka, Seven Divisional offices, 64 District and 589 Upazila Livestock Development Complex (ULDC). The department has one Central Disease Investigation Laboratory (CDIL), seven Field Disease Investigation Laboratory (FDIL) and 24 (6 functioning and 18 is underway) quarantine stations. The ULDC is the nearest service delivery window for the rural farmers. The Department also have 64 District Veterinary Hospital. The DLS has one Central Animal Nutrition Laboratory in districts, 22 Animal Nutrition Laboratory in districts and operates one Feed Mill. DLS has 2 Veterinary Training Institute (VTI), 2 Livestock Training Institutes (LTI), one Officers' Training Institute (OTI) and Two Veterinary Colleges. DLS has Two Vaccine Production Institutes/Livestock Research Institute (LRI) producing essential vaccines for ruminant and poultry.

For the Artificial Insemination (AI) Services, DLS manages one Central Bull Station and semen processing laboratory, one Regional Bull Station, 21 District AI centers with liquid semen processing facilities and 466 AI sub centers in the ULDC. The AI sub centers at Upazila headquarters operate 3,151 AI points in the Union level.

In addition, DLS manages two Zoos, 7 Dairy Farms, 5 Goat Farms, one Sheep Farm, one Pig Farm, 31 Poultry Farms, 14 Duck Farms (DLS 2014).

DLS eradication programme on Rinderpest (Cattle Plague) the most formidable killer disease of cattle in early sixties from this country and eradicated successfully and obtained the recognition of World Organization for Animal Health (OIE) in 2010. The sporadic incidence of Anthrax and Black Quarter (BQ) are also partly contained through organizing ring vaccination program. The DLS is currently producing more doses of Anthrax and BQ vaccines for a successful protection. However, production of vaccines against Foot and Mouth Disease (FMD), an economically important disease of ruminant is not enough to cater the total national demand.

4.2.3 Union Parishad Complex

The Union Parishad (UP) Complex belonging to the Ministry of Local Government, Rural Development and Cooperatives (LGRDC) is an important infrastructure facility to meet the demand for services of the rural people; the facility is not proactively utilized by the DLS due to shortage of manpower and budgetary constraints. Considering the importance of extension services, DLS along with DAE and DoF has established 732 Farmer's Information and Advice Centre (FIAC) in 120 Upazila through National Agricultural Technology Project (NATP). These FIACs are attended by 1280 Community Extension Agent for Livestock (CEAL).

Another important area to work of DLS with LGED is the construction of 'Safe shelter' (Killa/Earthen Mound) with each 'Multi-purpose Cyclone Shelter' in coastal region to protect the animal resources during tropical cyclonic storm and tidal surge. Death of animals in huge number during cyclone led tidal surge has been experienced in the past in the coastal areas and off shore islands. UP complex may also be utilized fully and be a focal point for providing services to the rural people.

4.2.4 Bangladesh Livestock Research Institute (BLRI)

A Presidential Ordinance established this institute in 1984. Mandates of the Institute are to: identify livestock and poultry production constraints at the national and farm level, solve those problems through multi and inter-disciplinary and inter-institutional research and to develop technologies to help food and nutrition security for the increasing population, poverty alleviation, employment opportunities, income generation and control of environmental pollution. As per organogram of the BLRI, the institute comprises 201 Man-power including scientist, researcher, administrative and support staff. This institute is operating its functional activities through the following divisions.

- Animal Health Research Division
- Animal Production Research Division
- Goat and Sheep Production Research Division
- Poultry Production Research Division
- Socio-Economic Research Division
- Farming System Research Division
- Training Planning and Technology Transfer Division

- System, Research Division

4.3 Institutional Weakness and Lacking in Livestock Management

Institutional weakness in DLS has been the result of many externalities (Bator, 1958; Arrow, 1971) in the form of insufficient provision of a public good, inadequate information and inefficient marketing.

Causes of market failures or externalities as such, in dairy production and marketing in Bangladesh are discussed below:

4.3.1 Information Problems

The most important input to production now is knowledge, rather than capital and labour as in an industrial society, or land, as in an agricultural society. Information is not the same as knowledge. At the current set up of livestock department, human resources are not the prime cause of failure to control dairy market and livestock production improvement in Bangladesh.

The availability of relevant information is essential for sophisticated, empirical and rigorous economic analysis to arrive at the conclusions for policy formulation. Government programs at present are frequently dominated by responses to the current situation of crises, without adequate knowledge of the industry and market at large. The future effectiveness of government policies depends on plans that are based on more precise and adequate data about the livestock sector.

4.3.2 Lack of Disease/Parasites Control (Externalities)

Diseases and parasites are a major problem for the dairy industry in Bangladesh. Besides a number of other areas such as feeding efficiency, processing technology, transportation, and marketing efficiency also require careful analysis. The mass vaccination program all over the country by the Department of Livestock services is limited because of budgetary, manpower and other logistic constraints. Therefore, the animal health services need to be improved at every level. Parasite control is necessary to increase feed efficiency for a better economic return and the disease control is necessary for a healthy product and sustainability.

Though every effort is being made to improve the animal health service by increasing the field staff, and establishing of veterinary service centers and AI (artificial insemination) centers, there is a great need for further strengthening of these centers and the establishment of additional technical facilities. In order to correct the deficiency of the veterinary service centers and AI facilities, it is important not only to provide adequate training to the personnel in charge of the center and the farmers, but also to improve the quality of the infrastructural facilities of the veterinary and AI service centers.

4.3.3 Inefficient Marketing

Marketing makes the exchange process more meaningful to the parties involved in the exchange. Given that 97% of milk is produced in rural areas, while its profitable market exists largely in urban areas. Conventional liquid milk marketing by rural vendors in cities and towns is the best example of that. Due to the dearth of marketing facilities, the dairy farm owners are compelled to sell the bulk of their milk at a cheaper price. Marketing channels for livestock products are also very poor, particularly for perishable products of animal origin. The gyration of demand and supply and product prices severely restrict production and results in unmarketable surpluses or shortages in some areas.

The marketing effort has to be recognized not so much as a sales activity but as an essential pre-requisite for ultimate milk production. As indicated earlier, the absence of an efficient market is a problem for feed inputs as well as for the industry's output of milk.

4.4 Positive Impact of Overall Project

DRMP project will provide benefits to the DLS and stakeholders/communities in many ways. The subjected sectors for the development are mainly enhancement of livestock production, strengthening marketing facility, improving breeding facility and, lastly, monitoring the implementation of the project for sustainable development. However, it is necessary to identify the major positive impacts as envisaged against proposed interventions which are presented below.

Table 4.1: Positive Impact of Overall Project

Components/Sub-components	Activities	Major positive impacts
COMPONENT A: Productivity Improvement		
Sub-component A1: Support to Producer Organizations, to support producers organized around a commodity of common interest and build their capacity in climate smart production, management and marketing, etc.	**A.1.1 Capacity building in climate smart production, management & marketing Through**	
	Basic business development skills training on financial literacy, business planning, negotiation, and marketing.	Cost of production can be reduced through analyzing cost of production and benefit, Decision making capability improves
	Marketing support to small holders.	Time and money will be saved, spoilage of farm product will be reduced, fair price and marketing of product will be ensured,
	Arranging public education campaign.	Improve knowledge on nutritional issues, environmental conditions, Public health situation, etc.
	Using digital technologies, (SMS, Mobile Apps, etc. facilities)	Facilitate quick services to the farmers, processors, traders. Improve communication between producers and service providers regarding problems related to disease, feeding, breeding, marketing, etc. and to know the supply chain situation. Consumers may be informed about livestock product, their benefits and alert about outbreak of zoonotic diseases.
	Reducing Gender gaps effectively	Nutritional status of the society will improve. Women empowerment will help to maintain family nutrition and their children. Good social environment will prevail.
	Identifying relevant climate change impacts locally and to equip farmers with the knowledge and practical skills to become more resilient to these impacts.	Knowledge gain regarding climate change impact which will help better adaptation.
Sub-component A2: Support to Improving Production Practices to improve productivity,	**A.2.1 Feeding and nutrition**	
	Training on production of fodder seed, fodder nurseries, fodder	Improved productivity leading to increased economic return, increased environmental awareness.

Components/Sub-components	Activities	Major positive impacts
efficiency, safety, quality and climate smartness standards at producer level	demonstrations, including climate smart alternatives;	
	Production of protein/mineral/vitamin mixes, and Demonstrations for feed and fodder storage options.	Improved productivity leading to increased economic return, build-up of environmental awareness, supply during emergency and due to natural calamities like flood, cyclone etc.
	A.2.2 Disease prevention and control, safety and quality assurance	
	Capacity development for production of key animal vaccines, disease surveillance, diagnosis and reporting.	Quality of vaccines improves; diagnostic facilities improves leading to better protection.
	Expanded capacity for biosecurity including border check posts, quarantine facilities, and facilities for producing semen, feed, and vaccines.	Reduce risk of cross country diseases Increase productions through facilities for producing semen, feed, and vaccines
	Capacity development for regular sampling, testing, reporting and certification of slaughter houses, milk collection and processing facilities;	Environmental pollution reduces, Hygienic and quality meat and milk products ensures, Employment generation.
	Use of ICT to enhance disease surveillance and to geo-referenced mapping of diseases;	Regulatory function and surveillance improve and producers will be alert on transmissible diseases.
	A.2.3 Breed improvement	
	Enhanced capacity for production of quality semen;	Quality improves.
	Expansion of semen delivery infrastructure;	Quick delivery system develops Artificial Inseminations (AI) can be done on time.
	Open nucleus improvement program for quality bucks and rams;	Quality of breeding stock will exist
	Capacity development for delivery of quality chicks.	Availability of chicks will increase and production improves.
	A.2.4 Housing and management	
	Developing and promoting low-cost housing designs to improve productivity and reduce diseases;	Easy cleaning and disposal of wastes. Ensures better comfort reduces stress, better productivity. Environmental condition improves, stink and fly problem reduces.
	Upgrading shelters	Improve comfort, reduces stress, better hygienic condition, and improves environment.
	Promoting manure management technologies, including biogas converters to manage manure;	Reduces emission of Methane and Nitrous oxide. Stink and fly problem reduces and improves air quality. Source of cooking fuel saving forest resources. Organic matter in the soil increases due to use of organic fertilizer.
	Promoting processing options to reduce nutrient losses and add value to manure;	Air and water pollution reduces, soil quality improves and agricultural productivity increases.
	Water analysis kits for low cost filtration equipment	Quality improves for drinking water, Reduces health hazards.
COMPONENT B: Market linkages and Value-Chain Development		

Components/Sub-components	Activities	Major positive impacts
Sub-component B1: Market linkages through Productive Partnerships (PPs) Linkages between livestock POs and agribusinesses (ABs) including small and mid-sized enterprise (SMEs): Traders, Financial Institutions (FIs), processors and other downstream ABs.	Support to co-financing arrangements with business entities,	Agri-business develops, Quality improves, Food safety ensures.
	Partnerships for co-financing Large enterprises, SMEs & POs	Better cooperation, effective supply chain operations.
	Campaigns and communications targeting youth.	Employment generation enhances skill manpower development.
	Providing of a package of climate smart services and inputs to new producers.	Better performance, increased productions. Reduces GHGs.
	Facilitating Women's participation in the Productive Partnerships	Better family nutrition & women's empowerment occurs.
Sub-component B2: Critical Public Infrastructure for Livestock Infrastructure Development	Climate smart transportation connecting production areas to markets	Product quality improves better milk and meat handling system and better marketing system develops. Reduce GHGs.
	Slaughterhouses	System develops; environment improves; better utilization of byproducts, contamination of soil and water sources will reduce or stop. Stink will reduce and air quality will improve. Proper ante- mortem and post-mortem inspection will be possible to reduce the risk of disease transmission, hygienic product. No labor influx is envisaged for infrastructure building like slaughterhouse or storage or link roads because those are expected to require labor available from the locality.
	Renewable energy installations (solar panels, bio-digesters)	Conversion of wastes into resources. Bio-gas digester will improve the air quality by reducing stink, emission of methane and nitrous oxide from excreta of animals and birds, fly problem will be reduced, Organic fertilizer from digested residues will help crop agriculture by improving soil quality.
	Establishing National Livestock Identification Database (NLID)	This will help livestock production system and Breeding practices in a scientific and systematic way of management. Reduce diseases by taking timely measures.
	Establishing Information Network for Animal Productivity and Health (INAPH) AI- delivery, vaccinations, veterinary information, Certifications, etc.	This will help improve cost effective and early management of diseases, productivity, marketing, service delivery to the producers and trustworthiness.

Components/Sub-components	Activities	Major positive impacts
	Upgrading or replacing dilapidated and decaying buildings to protect health and welfare of workers, livestock, consumers and that considers climatic risks.	Help improve working environment, Easy service delivery, reduce risk of health problem for both officials and animals under treatment.
	Upgrading of selected farm to market and transportation means.	Productivity, marketing and service delivery improves. Modern system in transportation will reduce pollutions.
Sub-component B3: Consumer Awareness Development and Nutrition	Public education campaign using traditional and new media tools:	Mass publicity will encourage better production system, marketing, processing, consumptions, etc. Better behavioral changes will occur in consumption and disposing products packages. Environmental pollution will reduce.
	Awareness building and support to: dairy, beef, broiler management and Processing, food safety, and better nutrition practices.	Improves productivity, Better nutritional knowledge, and better practices in regards to nutrition and food safety issues.
	Campaign targeting mothers and school children to change behavior regarding public health issues, and nutritional food	Good practices will bring behavioral change of the children in regards to nutrition, heath education, cleanliness, environmental issues, awareness of waste disposal, etc.
	Conducting school milk program as it pertains to livestock product Consumption. (The program will build on the lessons-learned from the FAO-Rabo Bank pilot project (2012-2015). on "Linking School Milk with Smallholder Dairy Development in Tala, Satkhira, Bangladesh"	Nutritional status of the children and family members will improve, awareness building will help to keep environment fresh; benefit in the long run can be expected.
COMPONENT C: Improving Risk Management and Resilience of Livestock Production Systems		
Sub-Component C1: Institutional Capacity Development and Knowledge Platform Strengthen the capacity of the Department of Livestock Services (DLS), and the overall institutional setup governing the sub-sector	Strengthening DLS for (a) Evidence based Policy formulation at the MoFL	New organizational set-up will perform better in-service delivery and better regulatory function and also better productivity.
	Elaborating related regulations, procedures and manuals taking consideration of Gender issues, Environmental Pollution, climate risks and GHGs;	Updated requirement of regulatory function will be established. Improved environmental condition, less GHGs emission, less stink, better air quality, better sanitation and better products, less contamination of soil and water sources. Etc.
	Developing Livestock Information System for NLID and INAPH data	Quick services and better management expected productivity and marketing system will improve due to easy access to information system; environmental issues will improve due to improved management practices.
	Support to academic and vocational training to produce a cadre of high-quality graduates with the knowledge	Superior quality manpower may be expected. Skilled manpower will produce better management

Components/Sub-components	Activities	Major positive impacts
	and professional skill needed to spur the development of livestock.	practices to maintain environmental quality to a desirable level.
	Capacity Needs Assessment of DLS and other institutions involved in the livestock sub-sector.	Updated requirement of the organization may be expected.
Sub-Component C2: Food safety and quality assurance Complementing support to different organizations Uses of ICT for Food and environmental safety issues.	Improving regulations and their enforcement, quality standards for dairy and meat products, and feed	Quality product can be expected, Regulatory system develops, Public health situation improves, adulteration reduces.
	Developing SOP for control and certification of operator's facilities, dairy and meat products and feed; and Introducing traceability systems for supply chains, building on the INAPH developed under Sub-component B2	Quality product can be expected, Regulatory system develops, Public health situation improves, adulteration reduces, Supply chain develops, better information system in marketing process, Quick services ensures.
	Establishing greater capacity for sampling and expanding laboratory capacity at central and regional level for testing food and feed samples;	Feed quality improves leading to better productivity. Farmers benefit from their animals and birds for better production.
	Mobile applications, SMS, and video based training and materials for Farmers, service providers, DLS staff, processors, retailers, & consumers.	The science based knowledge will improve, Better management practices and productivity improves due to better health care of farm animals and birds.
Sub-component C3: Livestock Insurance ○ Deciding Preconditions of Livestock Insurance ○ Creation of National Livestock Database ○ Awareness Campaign, Training, motivational activities. Etc.	Introducing a Livestock Insurance Pilot Program (LIPP)	Farmers benefit due to risk coverage. Entrepreneurs will be encouraged to invest in this sector.
	Support to DLS to establish preconditions for livestock insurance.	Good insurance practices will be established.
	Developing system to identify and trace individual livestock animal with a National Livestock Identification Database (NLID),	Tracing of animals for keeping breeding record will be possible. System development will help to provide quick and proper services to farm animals.
	To provide high quality and proximity vet services, vaccination and Conducting pre-inspections, etc.	Management system improves; helps farmer to get quality services.
	Developing and maintaining a national database of livestock mortality and health and pre-conditions records.	Management system improves; helps in taking mitigation measures to prevent livestock mortality
	Awareness Campaign, Training, motivational activities. etc.	Knowledge based management system develops, environmental condition improves.
	Mass awareness campaign and Training for motivating Insurance of Livestock emphasizing training and knowledge sharing among women.	Knowledge based management system develops, environmental condition improves.
Sub-component C4: Contingency emergency response Rapid mobilization of funds in the event of an eligible crisis or	Developing System of Response during emergency or crisis.	Quick financial mobilization during emergency events is possible.

Components/Sub-components	Activities	Major positive impacts
emergency following an adverse natural or manmade event		
COMPONENT D: Project Management, Monitoring and Evaluation		
Sub-component: Establishment of the Project Management Unit (PMU) at DLS headquarters Establishment of 8(eight) Project Implementation Units (PIUs) one in each Divisional Livestock Office Conducting Feasibility Study on Dairy Development Board Total Mix Ration (TMR)/Densified Total Mix Ration (DTMT) factory, Dairy Research Institute., Poultry Research Institute,	Establishment of 8(eight) Project Implementation Units (PIUs) one in each Divisional Livestock Office	Quick implementation, Close monitoring/ supervision are possible. Decentralization of work will improve implementation process. Reduced expenditure. Project implementation capability improves, skilled manpower generation, Regulatory function improves.
	Conducting Feasibility Study on creation of Dairy Development Board.	The IRR and BCR can be identified in establishing the dairy development board that ultimately exert increases dairy production and quality dairy product.
	Total Mix Ration (TMR)/Densified Total Mix Ration (DTMT) factory, feasibility study to establish TMR/DTMR manufacturing within a PPP, etc.	Feed quality improves, convenient to use, competition exists, and cost of production reduces, Productivity increases.
	Conducting Feasibility Study on Dairy Research Institute and Poultry Research Institute to conduct research on poultry meat processing, meat safety and quality issues;	The IRR and BCR can be identified in establishing the research institutes that ultimately exert increases dairy and poultry production.

4.5 Potential Environmental and Social Risks/Impacts from Project Activities

Under this study several components have been proposed for making the Environmental and Social Framework more comprehensive and all-purpose. This section mainly lists probable component- wise negative impacts as a whole. Table 4.2 presents all the potential risks and impacts that might be associated with the components and sub-components.

Table 4.2: Component- Wise Negative Risks/Impacts of the Projects

Components/Sub-components	Activities	Potential major risks and impacts
COMPONENT A: Productivity Improvement		
Sub-component A1: Support to Producer Organizations, to support producers organized around a commodity of common interest and build their capacity in climate smart production management and marketing, etc.	**A.1.1 Capacity building in climate smart production, management & marketing Through**	
	Basic business development skills training on financial literacy, business planning, negotiation, and marketing	Small farming households have the least or no experience in financial literacy and commercial enterprises. Any routine motivation and training program may not succeed.
	Marketing support to small holders.	Present oligopolistic influence in livestock product market is deep rooted, causing unfair prices for small sellers. Bringing about a competitive market regime may

Components/Sub-components	Activities	Potential major risks and impacts
		take time. Project support for a limited period may not achieve the desired market efficiency. Vehicle movement will cause sound and air pollution. Risk of house-to-house transmission of cattle diseases and Zoonotic diseases alongside roads through vehicles.
	Arranging public education campaign.	No negative Impact is expected.
	Using digital technologies, (SMS, Mobile Apps, etc. facilities)	No negative Impact is expected.
	Reducing Gender gaps effectively	No negative impact is expected, but ineffective implementation of existing policy for women's involvement in Dairy Development in particular.
	Identifying relevant climate change impacts locally	No negative Impact is expected.
	To equip farmers with the knowledge and practical skills to become more resilient to these impacts.	No negative Impact is expected, but training courses will need to be CC-inclusive.
Sub-component A2: Support to Improving Production Practices to improve productivity, efficiency, safety, quality and climate smartness standards at producer level	**A.2.1 Feeding and nutrition**	
	Creation of feed and soil analysis facilities;	No negative Impact is expected, if the systems for analysis are sustainably maintained with necessary financial and technical back-up.
	On-farm feed optimization and ration balancing program;	No negative Impact is expected, subject to availability of feed and its sustained production.
	Training on production of fodder seed, fodder nurseries, fodder demonstrations, including climate smart alternatives;	Unsystematic demonstration and improper preservation may cause decomposition and pollute environment.
	Production of protein/mineral/vitamin mixes, and Demonstrations for feed and fodder storage options.	High atmospheric humidity and temperature may lead to decomposition and environmental pollution and health risks to animals and birds
	A.2.2 Disease prevention and control	
	Capacity development for production of key animal vaccines, disease surveillance, diagnosis and reporting;	Risk of low quality product is not follow the SOP. Generate additional clinical waste

Components/Sub-components	Activities	Potential major risks and impacts
	Expanded capacity for biosecurity including border check posts, quarantine facilities, and facilities for producing semen, feed, and vaccines.	Live animals and birds, breeding materials, feed and vaccines transportation may bear the risk of trans-boundary diseases.
	Capacity development for regular sampling, testing, reporting and certification of slaughter houses, milk collection and processing facilities;	No negative Impact is expected, but efficient system development for the activities will be key to such positive expectation.
	Use of ICT to enhance disease surveillance and to geo-referenced mapping of diseases.	No negative Impact is expected, subject to developing adequate number of ICT crew on regular role of DLS.
	A.2.3 Breed improvement	
	Enhanced capacity for production of quality semen;	No negative Impact is expected.
	Expansion of semen delivery infrastructure;	Additional vehicle movement will cause air and noise pollution.
	Open nucleus improvement program for quality bucks and rams;	Additional activities and grazing will cause degradation of land, characteristics order may create nuisance.
	Capacity development for delivery of quality chicks.	Waste (dead and unhatched chicks) as well as additional solid waste may produce from hatchery operation
	A.2.4 Housing and management	
	Developing and promoting low-cost housing designs to improve productivity and reduce diseases;	Improper manure management may cause environmental degradation, stink, air and water pollution may occur.
	Upgrading shelters	No negative Impact is expected, but risks of private capital shortage for small holders may hinder the up-gradation.
	Promoting manure management technologies, including biogas converters to manage manure;	Pollution may occur if the slurs are not properly managed. Digested effluents may overflow to cause soil and water pollution as well as stinks to neighborhood and fly problems. Social problem may arise.

Components/Sub-components	Activities	Potential major risks and impacts
	Promoting processing options to reduce nutrient losses and add value to manure;	Initial processing practices through aerobic digestion may cause air, soil and water pollution as well as stinks to neighborhood and fly problems. Social problem may arise
	Water analysis kits for low cost filtration equipment	No Negative Impact
COMPONENT B: Market linkages and Value-Chain Development		
Sub-component B1: Market linkages through Productive Partnerships (PPs) Linkages between livestock POs and agribusinesses (ABs) including small and mid-sized enterprise (SMEs): Traders, Financial Institutions (FIs), processors and other downstream ABs	Support to co-financing arrangements with business entities,	No negative Impact is expected if partners are agreeable to finance without insurance or collaterals
	Partnerships for co-financing Large enterprises, SMEs & POs	No negative Impact is expected, but present Bangladesh Bank programs have little scope for livestock sector.
	Campaigns and communications targeting youth.	No negative Impact is expected.
	Providing of a package of climate smart services and inputs to new producers.	No negative Impact is expected, but a motivational risk is envisaged for new producers due to absence of their experience, thus feeling risks in investment
	Facilitating Women's participation in the Productive Partnerships	No negative Impact is expected.
	Adoption of climate risks and mitigation opportunities for women producers	No negative Impact is expected.
Sub-component B2: Critical Public Infrastructure for Livestock Infrastructure Development	Climate smart transportation connecting production areas to markets	No negative Impact is expected. Use of existing land for connecting roads may in few cases involve involuntary displacement of people and concern from surrounding communities. Voluntary dispossession may be widely used by DLS but the acts requires appropriate screening, consultation and documentation.
	Slaughterhouses	In appropriate location due to dearth of suitable land may pose a problem. Efforts will be required to ascertain land readiness for development of slaughterhouses. Greenfield sites may involve effort

Components/Sub-components	Activities	Potential major risks and impacts
		for land readiness including screening, consultation and documentation. Soil, water and air pollution, Health hazard and bacterial contamination may occur. Movement of vehicle may transmit diseases.
	Renewable energy installations (solar panels, bio-digesters)	Soil and water pollution, air pollution, health hazard, stink and social problem may occur due to overflow of the digester.
	Establishing National Livestock Identification Database (NLID)	No negative Impact is expected, present National Livestock Policy includes ICAR system implementation, but its implementation need to support the DRMP project.
	Establishing Information Network for Animal Productivity and Health (INAPH) AI- delivery, vaccinations, veterinary information, Certifications, etc.	No negative Impact is expected, subject to allocation of adequate resources for sustainability
	Upgrading or replacing dilapidated and decaying buildings to protect health and welfare of workers, livestock, consumers and that considers climatic risks.	Air pollution, dust from decaying building materials, risk of injuries and dampness may cause health problems.
	Upgrading of selected farm to market and transportation means.	Air and Noise pollution may occur from the transportation.
Sub-component B3: Consumer Awareness Development and Nutrition	Planned investments to Gender Issue, private sector participation,	No negative impact is expected
	Partnership arrangements with the private sector for upgraded Govt-owned Facilities.	No negative impact is expected
	Public education campaign using traditional and new media tools:	No negative impact is expected
	Awareness building and support to: dairy, beef, broiler management and Processing, food safety, and better nutrition practices.	Solid and liquid waste may generate from food processing
	Campaign targeting mothers and school children to change behavior regarding public health issues, and nutritional food	No negative impact is expected

Components/Sub-components	Activities	Potential major risks and impacts
	Conducting school milk program as it pertains to livestock product Consumption. (The program will build on the lessons-learned from the FAO-Rabo Bank pilot project (2012-2015). on "Linking School Milk with Smallholder Dairy Development in Tala, Satkhira, Bangladesh"	No negative impact is expected, but lessons from existing programs need to be analyzed during DRMP studies before adopting it for the project
COMPONENT C: Improving Risk Management and Resilience of Livestock Production Systems		
Sub-Component C1: Institutional Capacity Development and Knowledge Platform Strengthen the capacity of the Department of Livestock Services (DLS), and the overall institutional setup governing the sub-sector	Strengthening DLS for (a) Evidence based Policy formulation at the MoFL	No negative impact is expected
	Elaborating related regulations, procedures and manuals taking consideration of Gender issues, Environmental Pollution, climate risks and GHGs;	No negative impact is expected
	Developing Livestock Information System for NLID and INAPH data	No negative impact is expected
	Support to academic and vocational training to produce a cadre of high-quality graduates with the knowledge and professional skill needed to spur the development of livestock.	No negative impact is expected
	Capacity Needs Assessment of DLS and other institutions involved in the livestock sub-sector.	No negative impact is expected.
Sub-Component C2: Food safety and quality assurance Complementing support to different organizations Uses of ICT for Food and environmental safety issues.	Improving regulations and their enforcement, quality standards for dairy and meat products, and feed	No negative impact is expected.
	Developing SOP for control and certification of operator's facilities, dairy and meat products and feed;	No negative impact is expected.
	Introducing traceability systems for supply chains, building on the INAPH developed under Sub-component B2	No negative impact is expected.
	Establishing greater capacity for sampling and expanding laboratory capacity at central and regional level for testing food and feed samples;	Use of Reagents and acids for digesting process in the laboratory may exert environmental pollution.
	Mobile applications, SMS, and video based training and materials for Farmers, service providers, DLS staff, processors, retailers, & consumers.	No negative impact is expected.

Components/Sub-components	Activities	Potential major risks and impacts
Sub-component C3: Livestock Insurance ○ Deciding Preconditions of Livestock Insurance ○ Creation of National Livestock Database ○ Awareness Campaign, Training, motivational activities. Etc.	Introducing a Livestock Insurance Pilot Program (LIPP)	No negative impact is expected.
	Support to DLS to establish preconditions for livestock insurance.	No negative impact is expected.
	Developing System to identify and trace individual livestock animal with a National Livestock Identification Database (NLID),	No negative impact is expected.
	To provide high quality and proximity vet services, vaccination and Conducting pre-inspections, etc.	No negative impact is expected.
	Developing and maintaining a national database of livestock mortality and health and pre-conditions records.	No negative impact is expected.
Sub-component C4: Contingency emergency response Rapid mobilization of funds in the event of an eligible crisis or emergency following an adverse natural or manmade event	Developing System of Response during emergency or crisis.	No negative impact is expected.
COMPONENT D: Project Management, Monitoring and Evaluation		
Establishment of the Project Management Unit (PMU) at DLS headquarters	Set-up of adequate fiduciary, governance, audits and accountability systems;	No negative impact is expected
Establishment of 8(eight) Project Implementation Units (PIUs) one in each Divisional Livestock Office	Set-up of adequate fiduciary, governance, audits and accountability systems;	No negative impact is expected
	Conducting Feasibility Study on creation of Dairy Development Board,	No negative impact is expected
Conducting Feasibility Study on Dairy Development Board Total Mix Ration (TMR)/Densified Total Mix Ration (DTMT) factory, Dairy Research Institute., Poultry Research Institute,	Total Mix Ration (TMR)/Densified Total Mix Ration (DTMT) factory, feasibility study to establish TMR/DTMR manufacturing within a PPP, etc.	No negative impact is expected
	Dairy Research Institute.	No negative impact is expected
	Poultry Research Institute to conduct research on poultry meat processing, meat safety and quality issues;	No negative impact is expected

5. Environmental and Social Management Framework (ESMF)

5.1 Environmental and Social Screening

5.1.1 Environmental and Social Perspectives of the DRMP Project

Livestock activities generate many pollutants that may cause serious environmental, social, and health related problems. Therefore, to comply with the requirement of the WB procedure, a study entitled "Environmental and Social Management Framework" has been undertaken to provide inputs into the design of DRMP project of DLS in accordance with the World Bank Operational Guidelines through identification of key environmental and social issues arising out of the proposed project activities and mainstreaming the environmental and social management measures in all stages of the project cycle (project preparation, project implementation and project operation). The studies will ensure:

- Environmental and social consideration in project planning, implementation, operation and monitoring;
- PMP development in accordance with the WB safeguard Policy/ Operational policies and as per recommended livestock activities to ensure protection of environmental and social resources;
- Avoidance of the potential adverse impacts arising from the project activities;

The ESMF will facilitate compliance with the policies, acts, and rules of the Government of Bangladesh and environmental safeguard policies of the World Bank. The environmental impact of the project activities depends on the nature and magnitude of actions, and the location of the project activities. Therefore, the activities and their categorization prescribed under the Environment Conservation Rules 1997, the components/sub-components/future interventions of DRMP projects have been classified into 3 categories:

i) That require Limited Environmental Assessment (LEA);
ii) That require Detailed Environmental Assessment (DEA); and
iii) That does not need any such assessment;

ESMF will also facilitate identifying stakeholders, gender, cultural and ethnic perspectives influencing the future projects to be designed. A brief but systematic information collection requirement is described below for guiding the future project preparation teams:

Impacts of DRMP project on social components can be envisaged briefly in the following lines:

- Livelihoods of people (mainly women and vulnerable) associated with livestock resources in all project districts
- Employment in livestock sector along with Dairy and Meat subsectors
- Households affected by DRMP project interventions (losing land, asset, livelihoods etc,)
- Ethnic communities and women-headed households impacted by DRMP project activities
- Cultural and Recreational resources

Specific information on the said variables will be needed to design the future projects and specific management frameworks for protecting social interests. Stakeholder analysis, Gender analysis and secondary data review will provide basic information on

- Who are the likely stakeholders?
- What are the levels of their interest in the project?
- Under which power relations they prefer to participate in the proposed project?
- What are the gender roles, activities, needs, opportunities etc. they envisage in the proposed project context?
- What culture, class and ethnic community will be positively or negatively impacted?
- Which stakeholders will pose constraints to beneficiary participation in the proposed project and what are their feedbacks on interventions?

Secondary data will, on the other hand, provide existing status of potential stakeholders, gender composition, cultural and ethnic characteristics, expected participation modes, perception about the project etc.

Although DRMP project does not envisage land acquisition at this moment, project(s) may need private land or assets to be acquired/required for technical or economic viability. Even if land owners are not affected squatters, tenants, encroachers or any other usufruct right holders may be affected for which the comprehensive compensation entitlement matrix has been given in this ESMF document in Chapter-8, under Resettlement Policy Framework to facilitate the project planners in future.

5.1.2 Environmental Screening (ES)

Screening is the first step in any ESMF process. This needs to be done for selection of an intervention to include in the project or implementation of the intervention. The screening process will determine the level of environmental assessment required. The screening process intends to identify relevant environmental concerns and suggests any further assessment if needed. The relevant organizational assistance in this regard will be helpful.

5.1.3 Objective of ES

The screening exercise will determine the key environmental concern, its nature and magnitude of the potential impacts on the environment that may arise from proposed project or sub-project activities. The major environmental or social issues need to be identified based on type, location, sensitivity and scale of the project component/sub-components. This exercise will reflect if the detail assessment is required or the type and extent of Environmental and Social Assessment (ESA) is needed. The output of the screening process is an important input for analyzing the feasibility of the project or sub-projects. The screening will be carried out following the existing relevant rules/regulations/laws of the country. It will indicate whether the project requires EIA and/or SIA, resettlement issues of the affected people, or to determine the need for conducting SIA on specific social issues or the project needs 'Best Code of Practices' only.

5.1.4 Environmental Screening and Categorization

Environmental screening and categorization is needed to be done during the selection of project and shall be an integral component of pre-design phase. Environmental analysis of the relevant component of the project is required to indicate likely environmental issues in the proposed activities. Each component of DRMP, which are proposed for infrastructure development, will go through environmental screening in order to identify relevant environmental concerns as well as suggest any further necessary investigation and assessment. The DRMP needs to review the sub component activities and propose environmental category.

As per categorization by the World Bank (OP 4.01-described under section 3.2.2), some of the proposed project under DRMP can be classified as Category B and C. LEA is required for category-B and only Screening is required for Category-C and, therefore, LEA need to be undertaken by DLS for some of the sub-components of COMPONENT B: Market linkages and Value-Chain Development and particularly for the sub-component B-2 of the project. In compliance with the requirements of the OP 4.01 of the WB, this Environmental Management Framework has been prepared for the DRMP Project of DLS.

Table 5.1: Environmental Categories and Assessment Requirements for DRMP

DoE Category	DoE Clearance requirements	Corresponding WB category	DRMP Environmental Management Process
Green	Environmental Clearance Certificate based on application to DoE containing general information about industrial unit/project, exact description of raw materials and product and no objection from local authority.	C	Categorically excluded from environmental assessment
Orange A	Location Clearance Certificate and Environmental Clearance Certificate based on application to DoE containing general information about industrial unit/project, exact description of raw materials and product and no objection from local authority, process flow diagram, layout plan, effluent discharge arrangement, etc.	B (Partial Assessment)	Environmental Screening; Limited Environmental Assessment; Environmental Management Plan
Orange B	Location Clearance Certificate and Environmental Clearance Certificate based on application to DoE containing Feasibility Report, Initial Environmental Examination (IEE) Report, Environmental Management Plan (EMP) Report, no objection certificate from local authority, emergency plan, etc.		Environmental Screening; Detailed Environmental Assessment; Environmental Management Plan

Table 5.2: Categorization of Proposed Activities as per ECR,97 (DoE) and OP 4.01 (WB)

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	DoE Categorization	Categorization based on EA requirement
COMPONENT A: Productivity Improvement				
Sub-component A1: Support to Producer Organizations, to support producers organized around a commodity of common interest and build their capacity in climate smart production management and marketing, etc.	**A.1.1 Capacity building in climate smart production, management & marketing Through**			
	Basic business development skills training on financial literacy, business planning, negotiation, and marketing	No environmental Impact is expected.	None	None
	Marketing support to small holders.	Vehicle movement will cause sound and air pollution. Risk of house-to-house transmission of cattle diseases and Zoonotic diseases alongside roads through vehicles.	None	ECP
	Arranging public education campaign.	No environmental Impact is expected.	None	None
	Using digital technologies, (SMS, Mobile Apps, etc. facilities)	No environmental Impact is expected.	None	None
	Reducing Gender gaps effectively	No environmental impact is expected	None	None
	Identifying relevant climate change impacts locally and to equip farmers with the knowledge and practical skills to become more resilient to these impacts.	No environmental Impact is expected.	None	None
Sub-component A2: Support to Improving Production Practices to improve productivity, efficiency, safety, quality and climate smartness standards at producer level	**A.2.1 Feeding and nutrition**			
	Creation of feed and soil analysis facilities;	No negative Impact is expected.	None	None
	On-farm feed optimization and ration balancing program;	No negative Impact is expected.	None	None
	Training on production of fodder seed, fodder nurseries, fodder demonstrations, including climate smart alternatives;	Unsystematic demonstration and improper preservation may cause decomposition and pollute environment.	None	ECP
	Production of protein/mineral/vitamin mixes, and Demonstrations for	High atmospheric humidity and temperature may lead to decomposition and	None	ECP

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	DoE Categorization	Categorization based on EA requirement
	feed and fodder storage options.	environmental pollution and health risks to animals and birds		
	A.2.2 Disease prevention and control			
	Capacity development for production of key animal vaccines, disease surveillance, diagnosis and reporting;	Risk of low quality product is not follow the SOP. Generate additional clinical waste	None	LEA
	Expanded capacity for biosecurity including border check posts, quarantine facilities, and facilities for producing semen, feed, and vaccines;	Live animals and birds, breeding materials, feed and vaccines transportation may be risk of trans-boundary diseases.	None	ECP
	Capacity development for regular sampling, testing, reporting and certification of slaughter houses, milk collection and processing facilities;	No negative Impact is expected.	None	None
	Use of ICT to enhance disease surveillance and to geo-referenced mapping of diseases;	No negative Impact is expected.	None	None
	A.2.3 Breed improvement			
	Enhanced capacity for production of quality semen;	No negative Impact is expected.	None	None
	Expansion of semen delivery infrastructure;	Additional vehicle movement will cause air and noise pollution. Risk of house-to-house cattle diseases transmission, even Zoonotic diseases transmission through vehicles.	None	LEA
	Open nucleus improvement program for quality bucks and rams;	Additional activities and grazing will cause degradation of land and characteristic odor may create nuisance	None	LEA
	Capacity development for delivery of quality chicks.	Waste (dead and unhatched chicks) as well as additional solid waste may produce from hatchery operation	None	ECP
	A.2.4 Housing and management			
	Developing and promoting low-cost	Improper manure management may cause	Orange-A	LEA

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	DoE Categorization	Categorization based on EA requirement
	housing designs to improve productivity and reduce diseases;	environmental degradation, stink, air and water pollution may occur.		
	Upgrading shelters	No negative Impact is expected.	None	None
	Promoting manure management technologies, including biogas converters to manage manure;	Pollution may occur if the slurs are not properly managed. Digested effluents may overflow to cause soil and water pollution as well as stinks to neighborhood and fly problems. Social problem may arise.	None	LEA
	Promoting processing options to reduce nutrient losses and add value to manure;	Initial processing practices through aerobic digestion may cause air, soil and water pollution as well as stinks to neighborhood and fly problems. Social problem may arise	None	LEA
	Water analysis kits for low cost filtration equipment	No environmental Impact is expected.	None	None
COMPONENT B: Market linkages and Value-Chain Development				
Sub-component B1: Market linkages through Productive Partnerships (PPs) Linkages between livestock POs and agribusinesses (ABs) including small and mid-sized enterprise (SMEs): Traders, Financial Institutions (FIs), processors and other downstream ABs.	Support to co-financing arrangements with business entities,	No negative Impact is expected.	None	None
	Partnerships for co-financing Large enterprises, SMEs & POs	No negative Impact is expected.	None	None
	Campaigns and communications targeting youth.	No negative Impact is expected.	None	None
	Providing of a package of climate smart services and inputs to new producers.	No negative Impact is expected.	None	None
	Facilitating Women's participation in the Productive Partnerships	No negative Impact is expected.	None	None
	Adoption of climate risks and mitigation opportunities for women producers	No negative Impact is expected.	None	None
Sub-component B2:	Climate smart transportation connecting production areas to markets	No negative Impact is expected.	None	None

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	DoE Categorization	Categorization based on EA requirement
Critical Public Infrastructure for Livestock Infrastructure Development	Slaughterhouses	Soil, water and air pollution, Health hazard and bacterial contamination may occur. Movement of vehicle may transmit diseases.	Orange-A	DEA
	Renewable energy installations (solar panels, bio-digesters)	Soil and water pollution, air pollution, health hazard, stink and social problem may occur due to overflow of the digester.	None	LEA
	Establishing National Livestock Identification Database (NLID)	No negative Impact is expected.	None	None
	Establishing Information Network for Animal Productivity and Health (INAPH) AI- delivery, vaccinations, veterinary information, Certifications, etc.	No negative Impact is expected.	None	None
	Upgrading or replacing dilapidated and decaying buildings to protect health and welfare of workers, livestock, consumers and that considers climatic risks.	Air pollution, dust from decaying building materials, risk of injuries and dampness may cause health problems.	None	LEA
	Upgrading of selected farm to market and transportation means.	Air and Noise pollution may occur from the transportation.	Orange-A	LEA
Sub-component B3: Consumer Awareness Development and Nutrition	Planned investments to Gender Issue, private sector participation,	No negative impact is expected	None	None
	Partnership arrangements with the private sector for upgraded Govt-owned Facilities.	No negative impact is expected	None	None
	Public education campaign using traditional and new media tools:	No negative impact is expected	None	None
	Awareness building and support to: dairy, beef, broiler management and Processing, food safety, and better nutrition practices.	Solid and liquid waste may generate from food processing	Orange-B	LEA

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	DoE Categorization	Categorization based on EA requirement
	Campaign targeting mothers and school children to change behavior regarding public health issues, and nutritional food	No negative impact is expected	None	None
	Conducting school milk program as it pertains to livestock product Consumption. (The program will build on the lessons-learned from the FAO-Rabo Bank pilot project (2012-2015). on "Linking School Milk with Smallholder Dairy Development in Tala, Satkhira, Bangladesh"	No negative impact is expected	None	None
COMPONENT C: Improving Risk Management and Resilience of Livestock Production Systems				
Sub-Component C1: Institutional Capacity Development and Knowledge Platform Strengthen the capacity of the Department of Livestock Services (DLS), and the overall institutional setup governing the sub-sector	Strengthening DLS for (a) Evidence based Policy formulation at the MoFL	No negative impact is expected	None	None
	Elaborating related regulations, procedures and manuals taking consideration of Gender issues, Environmental Pollution, climate risks and GHGs;	No negative impact is expected	None	None
	Developing Livestock Information System for NLID and INAPH data	No negative impact is expected	None	None
	Support to academic and vocational training to produce a cadre of high-quality graduates with the knowledge and professional skill needed to spur the development of livestock.	No negative impact is expected	None	None
	Capacity Needs Assessment of DLS and other institutions involved in the livestock sub-sector.	No negative impact is expected	None	None
Sub-Component C2: Food safety and quality assurance. Complementing	Improving regulations and their enforcement, quality standards for dairy and meat products, and feed	No negative impact is expected	None	None

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	DoE Categorization	Categorization based on EA requirement
support to different organizations Uses of ICT for Food and environmental safety issues.	Developing SOP for control and certification of operator's facilities, dairy and meat products and feed;	No negative impact is expected	None	None
	Introducing traceability systems for supply chains, building on the INAPH developed under Sub-component B2	No negative impact is expected	None	None
	Establishing greater capacity for sampling and expanding laboratory capacity at central and regional level for testing food and feed samples;	Use of Reagents and acids for digesting process in the laboratory may exert environmental pollution.	Orange-B	LEA
	Mobile applications, SMS, and video based training and materials for Farmers, service providers, DLS staff, processors, retailers, & consumers.	No negative impact is expected	None	None
Sub-component C3: Livestock Insurance ○ Deciding Preconditions of Livestock Insurance ○ Awareness Campaign, Training, motivational activities. Etc.	Introducing a Livestock Insurance Pilot Program (LIPP)	No negative impact is expected	None	None
	Support to DLS to establish preconditions for livestock insurance.	No negative impact is expected	None	None
	Creation of National Livestock Database	No negative impact is expected	None	None
	Developing System to identify and trace individual livestock animal with a National Livestock Identification Database (NLID),	No negative impact is expected	None	None
	To provide high quality and proximity vet services, vaccination and Conducting pre-inspections, etc.	No negative impact is expected	None	None
	Developing and maintaining a national database of livestock mortality and health and pre-conditions records.	No negative impact is expected	None	None
	Awareness Campaign, Training, motivational activities. etc.	No negative impact is expected	None	None

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	DoE Categorization	Categorization based on EA requirement
	Mass awareness campaign and Training for motivating Insurance of Livestock emphasizing training and knowledge sharing among women.	No negative impact is expected	None	None
Sub-component C4: Contingency emergency response. Rapid mobilization of funds in the event of an eligible crisis or emergency following an adverse natural or manmade event	Developing System of Response during emergency or crisis.	No negative impact is expected	None	None
COMPONENT D: Project Management, Monitoring and Evaluation				
Establishment of the Project Management Unit (PMU) at DLS headquarters	Establishment of 8(eight) Project Implementation Units (PIUs) one in each Divisional Livestock Office	No negative impact is expected	None	None
	Conducting Feasibility Study on Dairy Development Board	No negative impact is expected	None	None
	Total Mix Ration (TMR)/Densified Total Mix Ration (DTMT) factory	No negative impact is expected	None	None
	Dairy Research Institute	No negative impact is expected	None	None
	Poultry Research Institute	No negative impact is expected	None	None

ECP: Environmental Code of Practice, LEA: Limited Environmental Assessment, DEA: Detailed Environmental Assessment.

5.2 List of Negative Aspects to Exclude from the DRMP Project

To avoid any serious negative impact on environment the activities of following activities will be excluded in DRMP:

- Any activities that does not comply with the laws and regulations of the country i.e. Environment Conservation Rules 1997, Food Safety Act 2013, Animal Slaughter and Meat Control Act 1957;
- Any activities related to use of pesticides banned by the Government and classified by FAO and WHO;
- Any activities that causes harm to natural habitats and cultural property resources;
- Any activities that causes harm to natural habitats (mangroves, wetlands, etc.);

- Any activities that have significant degradation of critical natural habitats;
- Any activities within Protected Areas (Wildlife Sanctuaries and National Parks);
- Any activities related to use of genetic materials that have not been approved and cleared by the World Bank and the Government of Bangladesh;
- Any activities that seriously violate the Sanitary and Phyto-sanitary measures regulated by the World Organization for Animal Health (OIE) and Codex Alimentarius Commission;

5.3 Programme Level Screening

The programme level screening is required only to determine the consistency of the rules, regulations and laws of Bangladesh government as well as the World Bank's Safe guard/operational policies. Based on the nature, scale and extent of impact, different level of assessment need to be carried out on environmental and social issues. For example, If resettlement is necessary, the need for a comprehensive resettlement action plan, arrangement for its implementation, budgeting for compensation, etc. arise. However, the DRMP project has no provision of land acquisition. So, there is presumably no major resettlement issues. The efforts of DRMP project mainly relates to enhance the productivity, marketing, processing, value addition, supporting the baseline producer, etc. All the proposed activities under sub-components are socially or culturally in practices all over the country. The proposed activities under this program may not exert adverse impact on protected areas, natural habitats, cultural property resources, small ethnic communities etc

5.4 Project Level Screening

A very limited environmental assessment (LEA) will be required to determine the exclusion of the activities under sub-component from the mainstream of the project. The mitigation measures or alternatives of the activities will be proposed for any significant deviation from the proposed activities under sub-component. Negative attributes furnished earlier will be considered during project level screening. **'*Environment Code of Practice' (ECP)*** will be adapted to all activities associated with DRMP.

5.5 Environmental Assessment

The environmental assessment of the sub-components under DRMP will be carried out as per provisions of the Environment Conservation Rules 1997 and the relevant World Bank Operational Policies (OP 4.01) for environmental assessment. The environmental assessment of the components and sub-components of DRMP has followed two steps as below.

5.5.1 Limited Environmental Assessment (LEA)

This level of environmental assessment is for those activities under the sub-component that have relatively limited, localized and reversible environmental impacts and are classified as Green, Orange-A or Orange-B by the Department of Environment (DOE). The outlines of the category of activities/sub-components that will require LEA is presented in section 5.1.4 for Environmental Screening and Categorization. In case of a Research proposal (received by the Livestock Research Institutes, Universities and Vocational Institutes), it will go through an environment screening process first by using a list of exclusion criteria. Proposal that have survived through the list of exclusion criteria will go through Limited Environmental Assessment (LEA). The departmental officials or the project personnel will carry out both the assessment. The ToR of LEA/ IEE has been provided in Appendix C.

5.5.2 Detailed Environmental Assessment (DEA)

This level of environmental assessment is for those sub-components that have relatively significant, large scale and/or irreversible environmental impacts which may arises from the project activity and are classified as Red category by the DOE. If LEA recommends carrying out further assessment for any sub-component where environmental problems are expected to be complex and the cumulative impacts and mitigation measures are not easy to adapt, then DEA will require to be conducted by the safeguard specialist to be based at the project implementation process. Any activities under DRMP project is expected to require DEA or EIA. The ToR of DEA/ESIA has been provided in Appendix D.

5.6 Environmental Management Plans (EMPs)

The major components of an EMP include mitigation measures, enhancement measures, Environmental Codes of Practices, environmental monitoring, and institutional arrangement for implementation of EMP. Environmental impacts and potential mitigation measures have to be recommended in the Project implementation process.

Components of the EMP

- Environmental Mitigation Measures
- Environmental Enhancement Measures
- Environmental Code of Practices
- Environmental Monitoring and evaluation
- Institutional Arrangements
- Capacity Building Plan
- Budget for implementation of EMP

5.6.1 Environmental Mitigation Measures

The negative impacts that may occur during implementation of DRMP sub-components can be mitigated. Mitigation measures suggested for sub-components to be implemented under the DRMP has been provided in the following table. The potential negative impacts and mitigation measures will be helpful for deciding the level of assessment.

Table 5.3: Environmental Impacts and Mitigation Measures for Sub-Components under DRMP Project

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	Suggested Mitigation Measure
COMPONENT A: Productivity Improvement			
Sub-component A1: Support to Producer Organizations, to support producers organized around a commodity of common interest and build their capacity in climate smart production management and marketing, etc.	**A.1.1 Capacity building in climate smart production, management & marketing Through**		
	Marketing support to small holders.	Vehicle movement will cause sound and air pollution. Risk of house-to-house transmission of cattle diseases and Zoonotic diseases alongside roads through vehicles.	▪ Ensure that all project vehicles are in good operating condition. ▪ Vehicles must not approach the animal or poultry sheds. ▪ Vehicles should be cleaned and disinfected.
Sub-component A2: Support to Improving Production Practices to improve productivity, efficiency, safety, quality and climate smartness standards at producer level	**A.2.1 Feeding and nutrition**		
	Training on production of fodder seed, fodder nurseries, fodder demonstrations, including climate smart alternatives.	Unsystematic demonstration and improper preservation may cause decomposition and pollute environment.	▪ Generated wastes should be dumped in a stipulated area by appropriate manner. ▪ Use of non-toxic and readily biodegradable chemicals on-site. ▪ Insecticide must not be used. If at all needed, must be as per experts' recommendation and supervision.
	Production of protein/mineral/vitamin mixes, and demonstrations for feed and fodder storage options.	High atmospheric humidity and temperature may lead to decomposition and environmental pollution and health risks to animals and birds.	▪ Training on silage preparation is needed. ▪ Proper method to be followed for preservation of green fodder. ▪ Regular checking should be required for maintaining humidity and temperature of the storage. ▪ Proper ventilation should be needed in feed storage. ▪ Insecticide must not be used for controlling insect and rodents. Physical and biological measures should be used.
	A.2.2 Disease prevention and control		
	Capacity development for production of key animal vaccines, disease surveillance, diagnosis and reporting;	Risk of low quality product if SOP is not followed. Generate additional clinical waste.	▪ Vaccine Production must follow the Standard of Procedure (SOP) to ensure quality.

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	Suggested Mitigation Measure
			▪ Left over vaccines and their vials must be disposed of following the safety method of disposal like Material Safety Data Sheets (MSDS) for chemicals. ▪ Code of practice for veterinary medical waste should be followed.
	Expanded capacity for biosecurity including border check posts, quarantine facilities, and facilities for producing semen, feed, and vaccines;	Live animals and birds, breeding materials, feed and vaccines transportation may carry the risk of trans-boundary diseases.	▪ Proper quarantine procedure must be followed. ▪ Certification of the govt./authorized agency should be required before shipment of the consigned material/ animals or birds for their diseases, vaccination, health condition, etc. ▪ Training should be arranged for the quarantine personnel at boarder check post.
	A.2.3 Breed improvement		
	Expansion of semen delivery infrastructure.	Additional vehicle movement will cause air and noise pollution. Risk of house-to-house cattle diseases transmission, even Zoonotic diseases transmission through vehicles.	▪ Ensure that all vehicles are in good operating condition. ▪ Must be handled with adequate care and pre-cautions. ▪ Vehicle movement from farm to farm must be restricted. ▪ Only AI centers/sub-centers should be allowed to receive frozen semen from the vehicles.
	Open nucleus improvement program for quality bucks and rams;	Additional activities and grazing will cause degradation of land and characteristic odor may create nuisance.	▪ Bucks and Rams have some unpleasant odors from their body. So, must be away from public places/ roads and at an isolated distance from residence.
	Capacity development for delivery of quality chicks.	Waste (dead and unhatched chicks) as well as additional solid waste may produce from hatchery operation	▪ Cleaning and disinfecting of vehicles after every delivery should be ensured. ▪ Vehicle must not approach the sheds of birds. ▪ Code of practices should be followed for waste (dead and unhatched chicks) disposal.

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	Suggested Mitigation Measure
	A.2.4 Housing and management		
	Developing and promoting low-cost housing designs to improve productivity and reduce diseases;	Improper manure management may cause environmental degradation, stink, air and water pollution may occur.	▪ Regular cleaning is necessary. ▪ Well drained facility must prevail for liquid pollutant and easy cleaning with flash of water.
	Promoting manure management technologies, including biogas converters to manage manure.	Pollution may occur if the slurs are not properly managed. Digested effluents may overflow to cause soil and water pollution as well as stinks to neighborhood and fly problems. Social problem may arise.	▪ Approved design of digester with proper method of feeding process is necessary. ▪ Regular checking for leakage is necessary. ▪ Should be constructed apart from a fire place or residence. ▪ Over flow of slur should be stopped with appropriate measure. ▪ Code of practices should be followed for anaerobic digestion.
	Promoting processing options to reduce nutrient losses and add value to manure.	Initial processing practices through aerobic digestion may cause air, soil and water pollution as well as stinks to neighborhood and fly problems. Social problem may arise.	▪ Appropriate method of composting must be practiced. ▪ Should be isolated distance from residences or public places. ▪ Care must be taken so that it does not bother to the neighboring people. ▪ Code of practices should be followed for aerobic digestion.
COMPONENT B: Market linkages and Value-Chain Development			
Sub-component B2: Critical Public Infrastructure for Livestock Infrastructure Development	Slaughterhouses	Soil, water and air pollution, Health hazard and bacterial contamination may occur. Movement of vehicle may transmit diseases.	▪ Regular cleaning with recommended germicidal is needed. ▪ Easy cleaning system with adequate drainage to be provided. ▪ Blood and visceral content to be removed/ collected immediate after slaughtering or flaying. ▪ Other byproducts to be collected accordingly. ▪ Code of practices should be followed for soil, water and air pollution.

Components/Sub-components	Activities under sub-projects/sub-components	Major negative impacts	Suggested Mitigation Measure
	Renewable energy installations (solar panels, bio-digesters)	Soil and water pollution, air pollution, health hazard, stink and social problem may occur due to overflow of the digester.	▪ Maintenance of digester and regular checking for leakage is necessary. ▪ Solar panel should be installed and maintained by the installing agencies and regular monitoring. ▪ Code of practices should be followed for anaerobic digestion.
	Upgrading or replacing dilapidated and decaying buildings to protect health and welfare of workers, livestock, consumers and that considers climatic risks.	Air pollution, dust from decaying building materials, risk of injuries and dampness may cause health problems.	▪ Old and decaying buildings to be listed for upgrading through an expert committee. ▪ Budgetary provision is necessary. ▪ Building code for construction is necessary to be followed.
	Upgrading of selected farm to market and transportation means.	Air and noise pollution may occur from the transportation.	▪ Good quality transport to be used. ▪ Roads to be upgraded through appropriate agencies/authorities.
Sub-component B3: Consumer Awareness Development and Nutrition	Awareness building and support to: dairy, beef, broiler management and Processing, food safety, and better nutrition practices.	Solid and liquid waste may generate from food processing	▪ Code of practices should be followed for maintaining solid and liquid waste
COMPONENT C: Improving Risk Management and Resilience of Livestock Production Systems			
Sub-Component C2: Food safety and quality assurance. Complementing support to different organizations Uses of ICT for Food and environmental safety issues.	Establishing greater capacity for sampling and expanding laboratory capacity at central and regional level for testing food and feed samples;	Use of Reagents and acids for digesting process in the laboratory may exert environmental pollution.	▪ To be established in isolated distance from residences and public busy places. ▪ SOP to be practiced to reduce the magnitude of pollution.

5.6.2 Environmental Enhancement Measures

Most of the activities under DRMP project will promote better resource management and contribute to environmental conservation (For examples, fodder cultivation, manure management, Biogas digester, developing and promoting low-cost housing designs to improve productivity and reduce diseases etc.). In addition to these activities, the following enhancement measures have been suggested for building capacity of the small holder to respond to events of the climate change realities:

- Cooling process during high temperatures or warming process during very low temperature.
- Preventive and curative measures during extreme weather conditions.
- Fodder preservation for lean season and during natural calamities like flood.
- Using 'Killa' (Earthen high shelter place during flood, tidal surge or cyclone.)
- Poultry shed management during drought or prolonged monsoon.
- Producing salinity tolerant fodder variety.

5.6.3 'Environmental Code of Practices' (Best practices)

The Environmental Code of practices or best practices is necessary for any interventions where the project activities do not have any remarkable negative impact. The best practices will be adopted for all sorts of activities under DRMP interventions.

Use of Pesticides/Chemicals

Pesticides that have been classified by the WHO as hazardous to health and environment, banned by the government or phasing out, and any substance that violates the Sanitary and Phyto-Sanitary measures recommended by the OIE (World Organization for Animal Health) will not be used in any interventions of this Project.

Health and Safety of the Worker

All persons related to production, processing and also marketing of milk, meat and egg will follow the occupational safety practices to protect and prevent the zoonotic diseases, getting injuries, or toxic effects (for example; use of pesticides in fodder cultivation, retrieval of frozen semen ampoules from liquid nitrogen cylinders, injuries during operation of processing machineries and devices, etc.)

Waste Disposal

a) Farm wastes will be disposed of safely. Cattle dung and poultry droppings and litters will be used in composting and in Biogas plant.

b) Solid and liquid wastes generated from food processing plants (milk, meat, etc.) will be disposed of as per the prescribed standards of the Government of Bangladesh and as per the global best practice (the wastes from milk chilling plants, washed water from milk products manufacturing plants, wastes from slaughter houses, etc.).

c) Chemical and medical wastes are to be disposed of as per the prescribed standards of the Government of Bangladesh and as per the global best practice. Biomedical waste has to be subjected to incineration or autoclaving prior to disposal. Chemical waste is to be disposed of as per the instructions provided in the respective chemical Material Safety Data Sheets (MSDS).

Feed and Food Safety

All food products and feed will follow the standards prescribed by the Government of Bangladesh for feed and food safety. Additives such as steroids, coloring agents, materials etc., that have been banned or restricted in using either in Bangladesh or internationally must not be used

Disposal of Veterinary Waste

Veterinary Medical Waste

Veterinary drugs may need to be disposed of for various reasons including expiry, spoilage or simply because they are no longer needed. There are two classes of expired medicines: unopened and opened. Unused expired drugs can be returned to where they were purchased. Many manufacturers will take them back for disposal. Modified live virus vaccines should be rendered non-infectious before disposal to prevent the virus from potentially infecting workers or animals. Freezing or adding bleach to the bottle can do this. When disposing of expired medicines, do not attempt to empty or wash bottles - discard them with their contents.

Veterinary Sharp Waste

Sharps are veterinary and laboratory materials capable of causing cuts or punctures. Sharps include needles, syringes, scalpel blades, slides, cover slips, pipettes, broken glass and empty or expired pharmaceutical containers. There are risks of needle stick injuries or cuts when these materials are not handled or disposed of properly. Certain drugs or vaccines may cause reactions or infections if they are present on broken glass or used needles that break the skin. Blood on used needles, collection tubes or other equipment may contain viruses or bacteria that can cause illness following a cut or needle stick injury. To safely dispose of sharp items:

- Separate sharps from other waste.
- Use a labelled, puncture-proof container with a sealed lid for needles and surgical blades. Special containers can be obtained from many local veterinary clinics.
- Containers must be labelled clearly as containing sharps and must not be used for recycling.
- Do not use containers that allow easy access to the contents. Ensure children or animals cannot remove the lid. A plastic jug with a narrow mouth or a pail with a narrow opening in the lid also works well.
- Use another pail or rigid container for pharmaceutical bottles and syringes.
- Do not burn disposal containers. Use disposal facilities that are set up to accept the waste.

Plastic Materials

Where possible, reuse or recycle plastic materials on the farm as this will help to reduce the quantity of waste which has to be disposed of. Care in the handling and use of plastics will increase its potential for reuse and/or recycling and its useful life expectancy. Where plastic material is not reusable for its original purpose, all opportunities should be sought to reuse or recycle it for other applications. Materials to be recycled should be as clean as possible and free from soil. Different types of material should be kept separately and the material stored in a safe place ready for collection. Be aware that wind -blown plastic can accumulate in hedges and on riverbanks, which is unsightly and potentially harmful.

Packaging Materials

Use packaging which is biodegradable or can be returned to the supplier for reuse. Where possible, minimize packaging by using bulk delivery and re-usable packaging. Containers for chemicals and other persistent toxic or harmful substances should not be put to an alternative use.

Other Animal Health Products

Items including antibiotics, parasite treatments, vaccines, implants and banned drug products need to be disposed of immediately. In addition to returning those products back to the place of purchase, you can take them to a hazardous waste disposal facility to be disposed of properly. Regularly consult your supplier or veterinarian about products that may have been banned. Disposal of rodenticide or other pesticide baits and carcasses should be in accordance with the requirements specified on the product label.

Water Quality and Conservation

Use of surface water will be emphasized for irrigation in fodder production. If ground water is used, must follow the directives of the government for its efficient use to conserve the water table. Water used for livestock production, product processing, etc. will meet the quality standard set by the government.

Construction/ Civil Work

All construction or civil work will follow the Govt. rules for safety of worker as well as public. The safety measures such as fencing of construction site to protect unauthorized access, use of protective gear for construction worker, compensatory plantation for depletion of trees, filling the burrow pit, etc.

Compliance with Government Rules for Environment Conservation

Location clearance and the environmental clearance (from DOE) will be necessary for establishing any enterprise including dairy farm, Poultry farm, Feed mill, milk or meat processing industry or any other enterprises.

Disposal of Solid Waste

By-products that are not used in any way will be referred to as solid waste. Toxic compounds require special attention, e.g. special dumping grounds. Organic compounds require attention under certain conditions because of hygienic reasons or because during decomposition foul odor or leaching problems may arise. Non- degradable compounds may be dumped at regular dumping grounds.

Anaerobic Digestion

Anaerobic digestion is the breakdown of organic matter by bacteria in the absence of oxygen. This natural process can create: biogas - renewable energy source for heat and power; biomethane - biogas that has had the impurities, carbon dioxide and water removed so it can be used as a fuel for vehicles; digested-effluents; nutrient-rich organic fertilizer or soil conditioner

Composting Biodegradable Waste

Most farm composts and digested-effluents; are made up of either green waste - eg hedge trimmings and tree pruning's - or livestock manures and slurries. Composting farmyard manures can help concentrate nutrients, increasing efficiency. Composting involves active management, such as turning the heaps and maintaining the best conditions for the waste to break down.

Disposal of Dead Animal

Livestock and poultry deaths may occur no matter how well an operation is managed. Disposing of dead animals quickly and effectively is important to reduce the risk and spread of disease. Carcasses can be a source of disease if scavenged by wildlife or pets. Some of these diseases can then be passed back to livestock or even humans. Carcasses are also unsightly, odorous and a breeding site for flies. The choices for disposal could be burial, incineration, composting, rendering and natural disposal (except for animals that have been euthanized with drugs and chemicals or if the animal is known or suspected to have died from an infectious or reportable disease). The dead animal should be disposed of within 48 hours of death.

Burial

If carcasses are to be buried, do it promptly to control odor, insects and scavenging. Screen the burial pit area from view with trees, shrubs or fences, and locate it some distance away from livestock and other farm areas Guidelines for burial are:

- The total weight of carcasses in a burial pit must not exceed 2,500 kilograms. The pit must be
- 25 m (82 ft) from the edge of a coulee, major cut or embankment.
- 100 m (328 ft) from wells, waterways, high watermarks of lakes, livestock facility or residence.
- 300 m (984 ft) from a primary highway.
- 50 m (164 ft) from any other road.
- Apply quicklime to the carcass in sufficient quantities to control flies and odour.
- The pit must be covered with minimum of 1 m (3 ft) of compacted soil or wooden or metal lid that is designed to exclude scavengers and the bottom of the pit must be at least 1 m (3 ft) above the seasonal high-water table.

Incineration

Dead animals may be disposed of by incineration either through own arrangement or availing on payment incineration facilities. This method is somewhat expensive and need special arrangement.

Figure 5.1: NATP (Livestock) Promoted Burial Pit of Dead Animal

Composting

Composting carcasses is an effective way of disposal and can be done in a bin system designed for composting, in a window system or open compost pile. A windrow or open compost pile must be:

- 100 m (328 ft) from wells or other domestic water intakes, streams, creeks, ponds, springs, and lake high watermarks
- 25 m (82 ft) from the edge of a coulee, major cut or embankment
- 100 m (328 ft) from any residence, livestock facility or pasture.
- designed in a manner that will exclude scavengers

Within These Structures

- each animal or part of it should not exceed 100 kg (220 lbs)
- maximum volume of the animals should not exceed 25 percent of the total compost pile
- animals must be covered by at least 15 cm (6 in) of composting material

Rendering

Dead animals must be picked up by rendering plants within 48 hours of death; until then, the carcass must be stored. In Bangladesh, there is organization named “Anjuman Mufidul Islam” for carrying & burial of claimless dead human bodies. There may be government or local government like City Corporation, Municipality (Pourasova) or non-government authority for rendering animal dead bodies. When storing carcasses:

- locate the storage area close to the entrance of the farm to minimize the need for collection vehicles to enter the property
- use an area that will minimize the spread of disease — for example, do not store the carcass near a waterway or water body or where it will be easily scavenged
- if not picked up within 48 hours, use special storage bins or refrigeration until the carcass is taken to a rendering facility

Natural Disposal

Natural disposal refers to disposal by scavenging and sites must be located well away from farm areas, water bodies and sources. However, if the animal is known or suspected to have died from a reportable or an infectious disease that can be spread by scavengers or insects, it is best to dispose of these animals under the direction of a veterinarian.

- The total weight of the carcasses disposed of at any one site must not exceed 1,000 kilograms.
- There must be at least 500 m (1640 ft) between disposal sites.
- The site must be 500 m (1,640 ft) from wells, waterways and lake high watermarks
- 25 m (82 ft) from the edge of a coulee, major cut or embankment
- 400 m (1,312 ft) from any livestock facility or residence or road allowance or park, recreation area, ecological reserve, wilderness area or forest recreation area and must not create a nuisance.

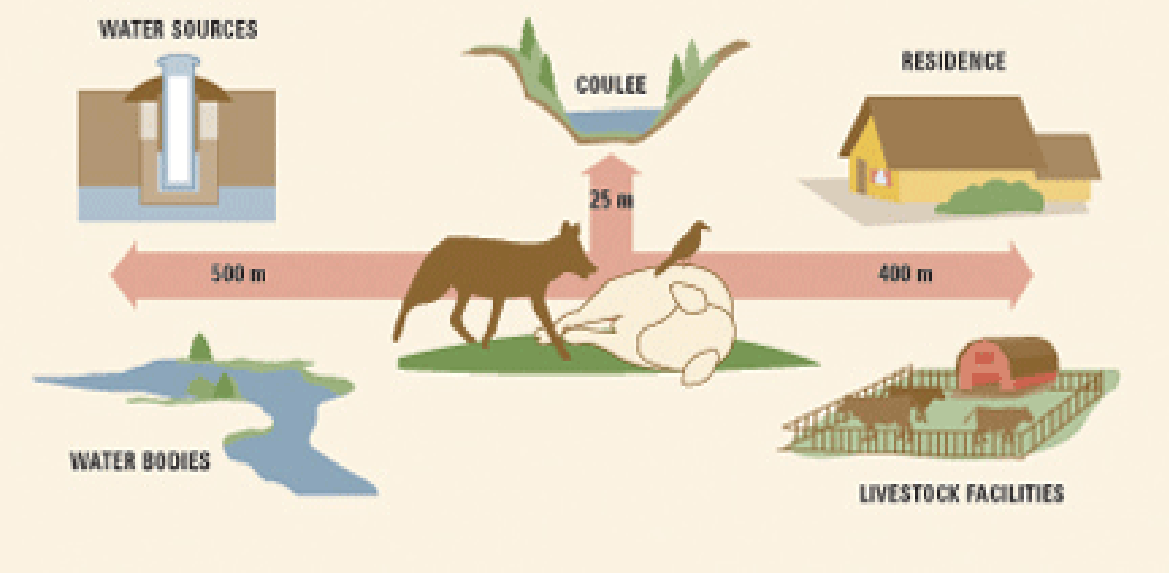


Figure 5.2: Minimum Distance Separations for Natural Disposal

Odor Management:

Many odor control techniques cost nothing more than operator time. These include good housekeeping, good manure management, careful siting of animal housing and manure storages maintaining minimum distance formulae, and communication between neighbors. If prevention measures fail to stop disputes over farm odors, technology-based approaches to odor control may be necessary. These may be expensive and their effectiveness may vary widely. Current odor control methods include preventing the production, release and transport of odors and odor treatment. There are several management steps that can reduce odor production on the farm such as good housekeeping:

- Clean up spilled feed, silage and manure. Even small leaks in feed augers can result in large accumulations of waste feed over time.
- Wash manure-caked spreading equipment shortly after use.
- Keep animals clean – their warm bodies accelerate anaerobic decay.
- Dispose of deadstock promptly and properly.

- Minimize dust levels to prevent odors attached to dust particles from escaping through the ventilation system.
- Keep organic matter such as feed or bedding dry. Anaerobic decay, the major process of odor generation, is inhibited if moisture content is kept below 40%.
- Grade the farmstead to avoid standing water. Direct clean water away from manure piles.
- Check regularly for leaks from drinking water supplies.
- Ensure the ventilation systems are in good working order. Ventilation helps to keep barns dry.

Prevention of Release and Spread of Odors

Odor production cannot be completely prevented on a farm. Therefore, most odor control methods are designed to keep or dissipate odors within the farm boundary, thus minimizing odor complaints from neighbors. Odors from solid manure, that is, manure below 75% – 80% moisture content, generally do not generate complaints. However, excessive moisture in solid manure can cause odors because it creates anaerobic conditions. To prevent wet conditions:

- Divert clean water away from manure storages.
- Reduce water bowl spillage.
- Obtain drier manure by adding bedding to absorb water.
- Roof a solid manure storage to exclude precipitation.
- For liquid manure storages the intensity of odors generated is directly proportionate to the size of the top surface area. A covered manure storage generates almost no odors. A circular concrete tank with the same storage capacity as a liquid earthen manure storage generates less odors than an earthen manure storage since it has less top surface area.
- Crust formation limits the exposed liquid surface area and helps reduce odors. As odorous air passes through a crust or permeable cover, the moist aerobic environment within the crust helps to break down odors. Floating permeable covers that imitate crust formation can effectively reduce odors as well.

Biofilters

Biofilters for barn ventilation systems work on a similar principle as a floating cover on a manure storage. The air ventilated from the barn is screened for dust and pressurized in a plenum under the biofilter. The air is then forced through a box usually containing a filter medium of woodchips, peat moss or compost, achieving odor reductions of 60% – 80%. As the airflow tends to dry out the filter medium, it needs to be regularly sprayed with water. The filter medium also has to be changed every 2–5 years. Dust clogging can be a problem with some biofilters. While effective for controlling odor, biofilters are expensive to install and operate.

Windbreaks

Trees and other windbreaks around manure storages help reduce top surface agitation by the wind action and help promote vertical air mixing and dilution of the odors. This further reduces the transport of odors to neighbors. Visual screening provided by trees and other windbreaks also help reduce the number of odor complaints.

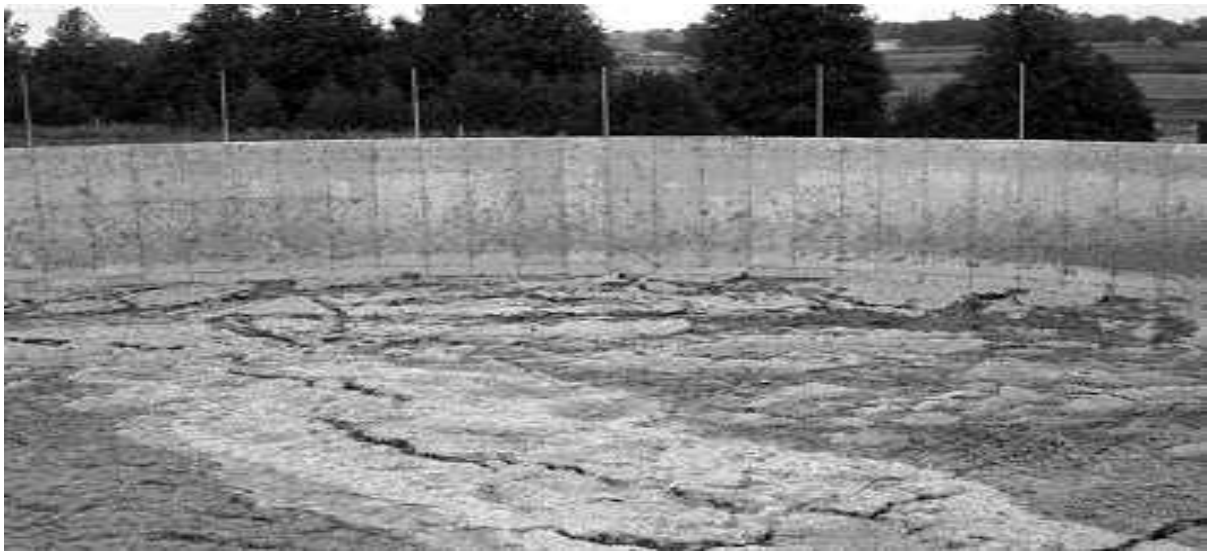


Figure 5.3: Crust Formation on a Liquid Manure Storage

Treating Odors

Manure and other organic matter can be treated biologically or chemically to reduce odor potential. Biological treatments include aerobic (with air) systems such as aeration, and anaerobic (without air) systems such as anaerobic digesters. Other methods include using additives designed to chemically or biologically alter, reduce or mask odors. Odor control additives have been designed to mask, neutralize or alter, either chemically or biologically, odors or odor production. By strictly following the manufacturer's instructions, the correct additive under the proper conditions may reduce odor emissions.

Fly ash has been tested as a stabilizing agent that can inhibit the production of odors. The ashes are rich in calcium which, when added to manure, will raise the pH to 12 where all microbial activity ceases and sulphur compounds are fixed. Similar to fly ash, lime can also be used to raise the pH of manure to reduce odors.

5.6.4 Environmental Monitoring and Evaluation

Environmental monitoring will be carried out during implementation of the sub-component at a regular interval. DRMP project will have a monitoring, evaluation and reporting system for assessing the environmental impact of the project. Regular monitoring will be carried out through internal monitoring process of the Project. This process will involve a rigorous checking of real indicator values on the ground against threshold values set at the planning stage of the project. Mid-term and Final evaluation should be carried out by the independent evaluator from external sources (Out-sourcing).

Regular monitoring will be carried out for:

- Consistency of ESMF with DRMP Project activities;
- Compliance of the ESMF having conflict/complain mitigation;
- Monitoring of civil work-related activities;
- Monitoring for environmental issues in the project areas.

Consistency of ESMF with DRMP Project Activities

DRMP project activities will follow ESMF guideline. Monitoring is needed to see that the negative attributes are excluded and the appropriate mitigation measures are in practices.

Compliance of the ESMF having Conflict/Complain Mitigation

Conflict/ complain mitigation should be the regular and important issue of monitoring during implementation of the project intervention. ESMF guideline will be followed to resolve the conflict/complain arises.

Monitoring of Civil Work-Related Activities

All civil work under DRMP project will follow the ESMF guideline. Monitoring will be carried out to assess the progress as well as to identify and mitigate any unwanted problems from the project activity. Safety level of the personnel will be ensured through designing and monitoring of the project activity on regular basis.

Monitoring for environmental issues

Monitoring of project activities will ensure that the exclusion of negative attributes are in practice. The following environmental and other issues need to be monitored for negative impact on regular basis:

k. Use of pesticides in fodder cultivation, feed storage, etc.
l. Use of chemicals, germicides, etc. in cattle sheds and milking equipment and utensils.
m. Water quality for harmful elements and bacteria.
n. Effluent treatment facility (ETF) to prevent water pollution due to project interventions.
o. Air quality to take mitigation measure for odor, dust, smoke, and other nonsense.
p. Noise from the machineries and equipment for smooth running and regular cleaning.
q. Solid waste to keep the surroundings clean and healthy.
r. Health and safety issues for the project personnel and to take necessary measures.
s. Quality assurance of the products for safe consumption.
t. Liquid and solid waste utilization for biogas production, composting or proper disposal.

Monitoring and evaluation of the environmental impact will be carried out on regular basis by the internal monitoring cell for DRMP project. The local DLS officials will be involved to oversee the environmental impact situation in the locality due to implementation of the project interventions.

5.7 Overall Management of Environmental Issues

The following principles will be followed in the overall environmental management of sub-component to be implemented under the DRMP Project.

- Activities with severe negative environmental impacts will not be supported by DRMP Project.
- Activities involving financing of Producers Organization will go through environmental screening and assessment process.
- All supported activities will ensure compliance with the relevant Environmental Codes of Practices.
- Review of negative list of attributes for its correct applicability
- Categorization of sub-components for its selection process.

- Environmental assessment of sub-component and development of EMP
- Institutional arrangements for implementation process.
- Institutional capacity building.
- Monitoring and evaluation of the implementation process.
- Recommended safety level of the quality standard for livestock products for Sanitary and Phyto-sanitary (SPS) measures regulated by the World Organization for Animal Health (OIE) and Codex Alimentarius Commission.

A flow diagram of planning and implementation of sub-components under DRMP and environmental management process has been provided in Figure 5.4.

5.8 Social Management Plan (SMPS)

5.8.1 Social Screening

Social screening is essential for assessing possible risks that may emanate from the proposed DRMP project in course of its preparation, detailed planning, implementation, operation and maintenance. The risks and negative impacts have been identified activity-wise in Table-4.2 above. The screening should be based on existing socioeconomic status of population who are supposed to be potentially benefited or affected by the interventions directly or indirectly. Social screening identifies probable impacts of the proposed project in general context, hinging on stakeholder's responses to issues that may affect various socioeconomic variables in person or in general, expert intuitions and judgment, comparable experiences at home or abroad etc. having an overall indicative impression about the social viability of the Project in respective communities. But detailed examination of critical issues are imperative through the screening, applying social investigation techniques like FGDs, KIIs and reconnaissance. Detailed social risks and impacts will be assessed on the basis of this social screening which provides the broader layout of types and nature of potential risks and impacts.

Social screening is usually carried out with the help of simple checklist to tentatively identify the baseline status and proposed potential impacts of the project interventions. A sample screening form has been attached at Appendix B, which will be further developed at the implementation stage. Members of social assessment team will update and use this checklist for collecting information through site visit, interview/ consultation with stakeholders, focus group discussion in the project site at the later stages.

The screening results will:

- give planners decision options for choice regarding social acceptability of the project for implementation, and if acceptable, it will indicate extent and depth of further assessment and investigations to be pursued during detailed project planning
- indicate Issues like land acquisition, household displacement, extent of compensation payment, resettlement
- inform probability of mosques, temples, graveyards and cremation grounds, and other places/ objects of religious, cultural and historical significance being affected by project interventions
- inform probable impacts on ethnic communities, mainly negatively, in terms of denying their present usufruct or other rights on common properties or resources or livelihoods

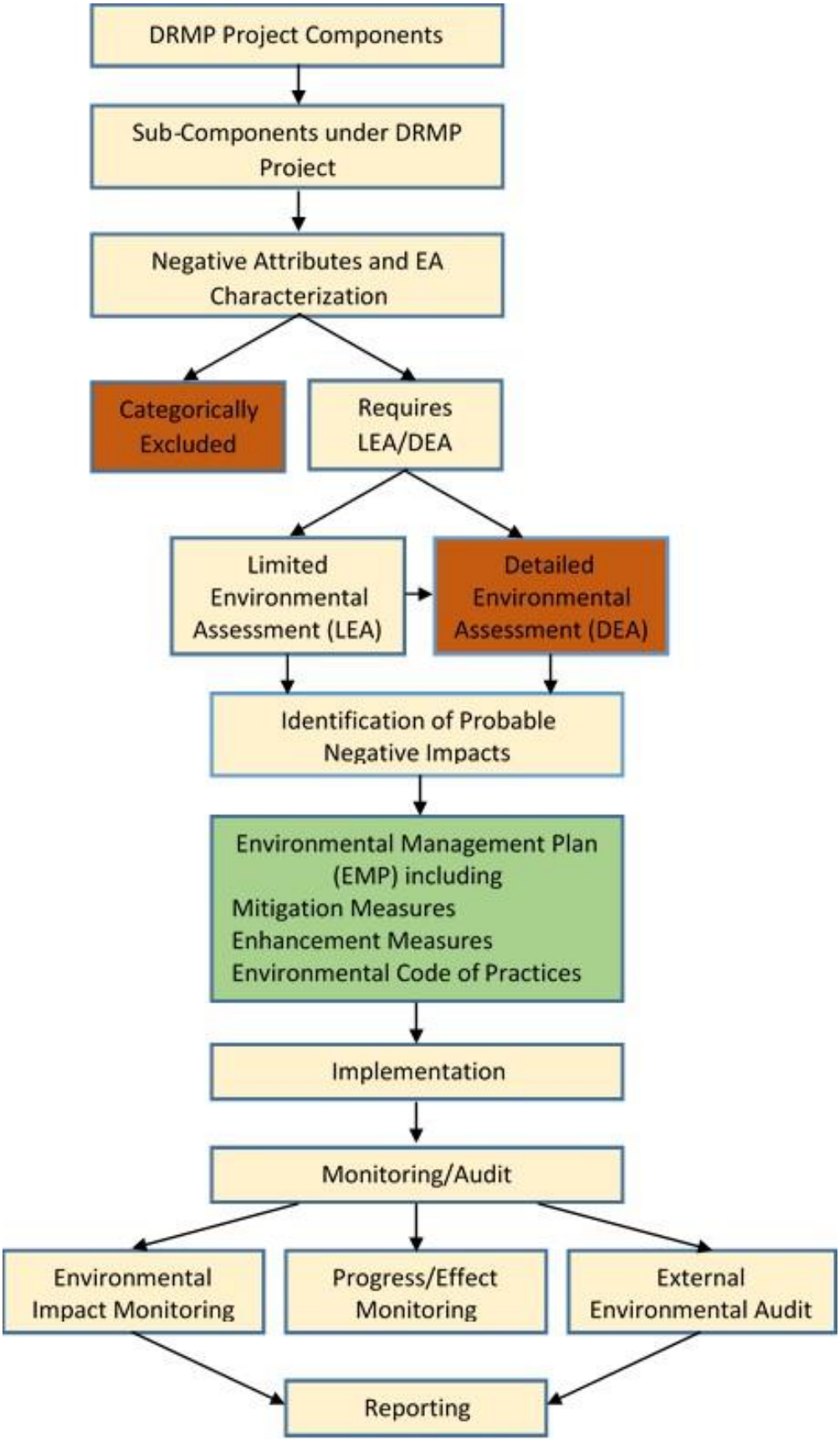


Figure 5.4: Environmental Management Process for DRMP project

- inform impacts on their cultural, social or socio-environmental practices or beliefs or customs that cannot be addressed through alternative provisions

Any project component giving rise to unacceptable social and environmental losses not amenable to redress may be subject to be dropped from investment portfolio during implementation.

5.8.2 Scoping

Scoping will follow screening activities stated above. At this stage, priorities of social issues will be fixed up and detailed social assessment can be conducted through community and stakeholder's consultations. Priority issues can be established for the rest of the social assessment process. Collection of information and statistics with respect to social scoping are, inter alia, the following:

- Gathering and reviewing existing social data like community mix, their occupational profile, interests, market opportunity, marketing mechanism, vulnerability and vulnerable community and groups, alternative livelihoods, land holding, religious, cultural and archaeological sites and sensitive areas.
- Identifying project stakeholders including any persons and community groups particularly to be impacted by the project activities.
- Assembling and reviewing relevant legislative and policy requirements associated with the proposed activities as well as the World Bank operational policies and standards.
- Gathering existing information sources and local knowledge;
- Informing stakeholders of the project and its objectives and get input on the social assessment;
- Identifying the key social risks and impacts associated with the project activity and the relative importance of issues;
- Preparing the social assessment work program, including a plan for community consultation and participation;
- Defining the range of project alternatives and measures for avoiding and minimizing social risks and impacts.
- Obtaining agreement/ consensus on the methods and techniques to be used in social impact assessment and document preparation.

5.8.3 Social Impact Assessment

Once the scope of project activities is identified through scoping and screening, the social impact assessment (SIA) work can be initiated. Steps are as follows:

Identification of project beneficiaries and stakeholders, disaggregated by gender, poverty status, ethnicity, income, employment, education, age, skills and other socio-economic aspects along with cultural and community aspects in the areas

Though no bulk land acquisition is envisaged, if any requisition or direct purchase by any entity is imperative, the above social impact assessment will feed into the individual Resettlement Plans prepared for each site and will be incorporated, along with consultation feedback from those identified in the PAP census in case of eviction or dislocation of households and all other relevant

stakeholders, in the development of mitigation measures, especially livelihood restitution,, compensation payment or delegation of social respect to donors if any.

The project should develop a guideline for SIA, specific to the intervention site – a generic guidelines set is provided in Chapter-8.

When SIA identifies Small Ethnic Communities (SEC) with distinct characteristics different with the mainstream population of the country, a special approach will be followed as per the Bank OP 4.10 on indigenous peoples. A free, prior and informed consultation approach will be followed for meaningful consultation with the SECs and identification of their priorities for additional measures for maximizing project benefits to them. Measures will be taken to avoid any adverse social effected to these communities and a small ethnic community development plan (SECDP) will be prepared for following implementation of the project activities in areas inhabited by small ethnic communities.

DLS will undertake a survey for identification of the persons and their families likely to be affected by the project. Every survey shall contain the following information of the project affected families:

- Members of families who are residing, practicing any trade, occupation or vocation in the project affected area;
- Project Affected Families who are likely to lose their immovable assets, commercial establishment, agricultural land, employment or are alienated wholly or substantially from the main source of their trade occupation or vocation.
- Families belonging to indigenous categories
- Vulnerable persons
- Families that are landless (not having homestead land, agriculture land or ether homestead or agriculture land) and are below poverty line, but residing in the affected area
- Losing access to private property or common property resources

DLS, on completion of the assessment will disseminate the results among the affected community. Based on the assessment, project will prepare an action plan to mitigate or minimize the adverse impacts as identified during the survey. The draft mitigation plan in form of resettlement action plan (RAP) will be again disseminated among the affected individuals/ community. The feedback received from the affected groups will be incorporated to the extent possible before finalization of the RAPs.

Probable social impacts of the DRMP Project can be visualized from five broad positive impact considerations (a. good governance, b. employment of women and their welfare, c. productivity improvement in terms of milk, meat and egg, d. economic development at micro and macro level, e. sustainability of livestock industries) and risks visualized from seven plausible risk considerations (a. policy lag and governance problem, b. lack of PPP, c. asset-less women's limited credibility, d. institutional budget constraint, e. lack of insurance of livestock, f. market imperfections due to oligopolistic influence, g. delay in forming farmer organization is indicated in the following Table:

Table 5.4: Probable Social Impacts of the DRMP Project by Proposed Activity

Nature of Project Activity	Probable Positive Impacts	Probable Risks
A. Productivity Improvement		
A1. Support to farmer Organizations	a, b, c, e	g
A2. Support to improving production practices	c, d	b, c, d
B. **Market Linkage and Value Chain Development**		
B1. Market linkage through partnership	b, c, d	b, d, f
B2. Critical Public Infrastructure for Livestock development	a, c	-
B3. Consumer awareness and nutrition	c, d	-
C. **Improving Risk Management and Resilience of Livestock Production**		
C1. Institutional capacity development, knowledge platform	a, e	a, d
C2. Food safety and quality assurance	b, d	a, d, b,
C3. Livestock Insurance	a, e	a, c, e
C4. Contingency emergency response	c, e	
D. Project management, coordination, monitoring and evaluation		
D1. Project management and coordination	a, e	d
D2. Monitoring and evaluation	a, b, c, d, e	d

5.8.4 Social Impact Management Framework

Management of social risks and impacts associated with the project interventions aim at enabling sustainable livestock sector development through livestock related regulation, creation of investment climate, small infrastructure development, livestock products value chain and food quality assurance, productivity improvement, community co-management and livelihood transformation. The project will not acquire private land for infrastructure construction, rather use existing available lands, and potentials for involuntary displacement is bare minimum. The project approach will be to engage targeted beneficiaries inclusively irrespective of their location, age, gender, disability, ethnic identity, poverty and any other form. A Social Management Plan (SMP) has to be prepared to provide appropriate management for possible risks and negative impacts generated by project activities. Following are the summary objectives of SMP:

The Social Management Plan (SMP) provides guidance to the DRMP project and any actors on the social development requirements during implementation of the Project and applies to all Project activities and construction sites.

The SMP provides for obligations of the executing agencies and project staff on social development and safeguards requirements of the World Bank in supplement with national legislative requirements and at the same time guides DRMP project in identification, planning, auditing, monitoring, reviewing, evaluation and reporting of social performances of project implementation.

The SMP includes action plans for gender and consultation framework. The SMP also refers to Small Ethnic Communities (SEC) development plan (Chapter 7) and guiding principles for management of involuntary resettlement (Chapter 8).

5.8.5 Gender Analysis and Gender Action Plan Preparation

Gender Analysis Guidelines

To develop a participation strategy for men and women during project implementation and M&E, it is expected that the implementation agency (i.e. DLS) might have to avoid overly high expectation of women's participation and develop a practical schedule, as women often have constraints, such as cultural, familial and other customary social barriers. Nevertheless, the strategy should incorporate the following principles and components to advance the project objectives and goals:

- Conduct women specific consultation to take their views and suggestions on the design of activities.
- Ensure work conditions that are conducive to women's participation (e.g., gender-equal wage rates, construction season, toilet and other related facilities).
- Develop a feedback mechanism in which both male and female have a voice. Identify organizations that could facilitate women's participation during implementation and M&E.
- Identify ways to link up with income-generation, literacy, and other activities to support an integrated approach to poverty reduction and women empowerment
- Consider seasonal labor demand in scheduling civil works.
- If appropriate, set a minimum percentage of female laborers and prohibit the use of child laborers in the civil works contract.
- Ensure adequate and flexible budgeting to allow a "learning" approach (e.g., training budget, consulting service budget for women's organizations).
- Support a decentralized structure to allow linkages between the fishing villages and local government.
- Develop M&E arrangements: (i) internal M&E by project staff or consultants, as necessary; and (ii) participatory monitoring by beneficiary men and women.
- Disaggregate all relevant indicators by gender such as number of women gaining access to credit, increase in women's income, and career prospects for project trained women.
- Finally, prepare a Gender Action Plan (GAP) for DRMP project for which a draft has been proposed at Appendix

Steps in Gender Analysis Exercise

Gender analysis is a four steps procedure for developing the project Gender Action Plan for empowering them to participate in project process from identification, design and implementation. All interventions will be inclusive of men and women for equal opportunity and benefits from the project. DLS will follow the steps outlined below for development a comprehensive Gender Action Plan within three months of project launching.

Step-1: Assessment of Baseline Opportunities and Constraints

- Review data and information from secondary sources related to gender at specific project locations regarding socioeconomic profile of the target population, relevant legal (e.g., inheritance law), policy and institutional framework (e.g., current administrative system) and their gender implications.
- Draw up gender-disaggregated socio-economic and cultural profiles and identify the constraints, and needs of the target population in project areas.
- Determine by gender income level and sources, expenditure patterns and decision making, incidence of domestic violence, food allocation and nutrition level within households, literacy and school enrolment ratios, school dropout ratio, child labor, etc.
- Determine how do men and women differ in their access to and control of assets, properties, employment opportunities, and credit
- Identify factors affecting the level of men's and women's participation
- Identify entry points for participation of men and women beneficiaries and other stakeholders in the project.

Step-2: Assessment of existing gender capacity

- Map out the target areas. Which are the most disadvantaged areas in terms of access to services and poverty level?
- Draw up a socioeconomic profile of key stakeholder groups in the target population and disaggregate data by gender.
- Assess men's and women's capacity to participate in development efforts and initiatives and the factors affecting that capacity.
- Identify government agencies and nongovernment organizations (NGOs), community-based organizations (CBOs), and women's groups that can be used during project implementation. Assess their capacity.

Step-3: Assessment of Enabling Environment for Gender involvement

- Review the gender related policies and laws, as necessary. Identify information gaps related to the above issues.
- Review the current level of women's representation in other community decision- making bodies?
- Review performance of the local organizations (e.g., local governments, national NGOs, CBOs, mass organizations) that address women's constraints and needs and find out how can the project link up with them
- List out what organizations can be used to mobilize and train women in the project activities and livelihood options?
- List out major gender actions around any other sector development project.

Step-4: Prepare Gender Action Plans

- Develop gender-disaggregated indicators and monitoring plan.

- Incorporate the preferences of community men and women on issues such as: number and location of assets and sharing vs. individual arrangement of assets; and highlight women's strengths in mobilizing savings and resources.
- Assess the potential gender-differentiated impact of the project and options to maximize benefits and minimize adverse effects.
- Incorporate the preferences of men and women in the community on: financing arrangement; possible preferential treatment for very poor, female-headed and other disadvantaged families; credit or community-based revolving funds for women's group
- Propose involvement of men and women in livelihood related project interventions and other activity design under DRMP Project.
- Ensure adequate gender balance in staffing, especially in project's field teams.
- Select field team members with gender awareness, local knowledge, cultural understanding, and willingness to listen.

5.8.6 Consultation and Participation Plan

Objectives and Methodology: The objectives of consultation and participation are to inform, consult, engage, collaborate and empower the communities and other local stakeholders at all levels of project cycle. Consultation and community participation will be undertaken to achieve the following specific objectives at identification, planning, design, implementation and evaluation stages:

Identification – to sensitize the community about the project objectives, its components and their role and identify inclusive ground needs;

Planning – to ensure transparency of the planning process, reflect community expectations in project design, acceptable work schedule and procedures; ensure identification of adverse impacts and measures to mitigate them;

Implementation – to ensure that benefit accrues to the targeted beneficiaries inclusive of all groups including the very poor and vulnerable groups and activities designed and implemented at a standard satisfactory to the communities.

Review and evaluation – to evaluate the beneficiary's satisfaction and outcomes of the project activities for intended benefits to targeted group beneficiaries.

Involvement of communities is not limited to interactions with them but also disclosing relevant information pertaining to the project tasks and targets. Consultation and participation involves communities and other stakeholders and will take place through interpersonal communications, focused group discussions and small and large community meetings. DRMP project of DLS as the implementing agency will be responsible to carry out continued consultation with and information dissemination to the key stakeholders regarding:

- The relevant details of the project;
- The target group beneficiaries and targeting criteria;
- Intended benefits and sharing of project benefits among target group beneficiaries;
- Involuntary displacement and resettlement entitlements;
- Eligibility of entitlements and project resettlement policy framework;

- Compensation process and compensation rates;
- Definition of small ethnic communities and their rights in accessing project benefits;
- Project's accountability mechanism including GRM;
- Objectives and methods of consultation and participation.

The implementing agencies shall enlist the help of community leaders and other influential stakeholders in encouraging the participation of the communities and affected persons in project activities. Finally, they shall attempt to ensure that all vulnerable groups and small ethnic communities understand the process and that their needs are specifically taken into consideration.

Public participation will be performed and information will be made available during preparation and implementation of the resettlement plan and small ethnic communities development plans at the minimum includes community meetings and focus-group discussions. Public consultation must be appropriately documented.

Communication and consultation strategy: As required for informed consultation, DRMP project will provide communities and affected persons including the livestock dependent households with all activity-related information, including that on potential adverse impacts in a language familiar to and understandable by the target communities. To facilitate consultation the implementing agency will:

Prepare a time-table for dialogues during activity selection, design and implementation processes, and consult them in manners so that they can express their views and preferences freely.

In addition to the communities in general, consultation with community organizations, community elders/leaders and others with adequate gender and generational representation; and civil society organizations like NGOs and groups knowledgeable of issues related communities living within sub-component area.

Consultation will include the activity objectives and scope; the likely key adverse impacts on (and benefits for) communities; communities' own perception of the impacts and feedback; and a preliminary assessment of economic opportunities which the implementing agency could promote – in addition to mitigation of the adverse impacts.

Consultation will in general concentrate on targeting and the adverse impacts perceived by the communities and the probable (and feasible) mitigation measures, as well as exploring additional development activities that could be promoted under the project.

The implementing agency will keep Minutes of these consultation meetings in the activity files and make them available for inspection by World Bank, respective government officials and other interested groups and persons.

If the presence of small ethnic communities is identified in the sub-project area, based on the baseline data appropriate social tool will be adopted using free, prior, informed consultation. This will serve as the basis for sub-project implementation and monitoring.

Information Disclosure: The mechanism of information dissemination should be simple and be accessible to all. Two of the important means that have been followed until now include briefing material and organization of community consultation sessions. The briefing material (all to be prepared in local language) can be in the form of

(a) brochures (including project information, details of entitlements including compensation and assistance to be given to the PAPs; grievance mechanism) that can be kept in the offices of local self-government (Union parisad office) and project office;

- (b) posters to be displayed at prominent locations and

(c) leaflets that can be distributed in the project areas. Consultation meetings should also be organized at regular intervals by the project to acquaint the communities, target group beneficiaries and affected persons of the following:

- Timeline and progress of the project by components;
- Information on beneficiary participation;
- Information of involuntary displacement, compensation and entitlements;
- Information of participation of small ethnic communities;
- Time line for acquisition of land using voluntary donation, direct purchase and any other voluntary approach.

Also, opinion and consensus of the community needs to be sought for livelihood transformation, relocation of any community assets and involuntary resettlement management. Information disclosure procedures are mandated to provide citizen centric information as well as all documentation necessary for addressing any queries. Disclosure of information will enhance governance and accountability specifically with respect to strengthening of monitoring indicators to help the World Bank monitor compliance with the agreements and assess impact on outcomes.

Table 5.5: Disclosure Requirements

Topic	Documents to be Disclosed	Frequency	Where
Resettlement, Rehabilitation and Land requirement	Social Impact Assessment; Resettlement Action Plan (RAP).	Once in the entire project cycle. But to remain on the website and other disclosure locations throughout the project period.	World Bank's website; On the website of DLS. The client would make the RAP available at a place accessible to displaced persons and local NGOs, in a form, manner, and language that are understandable to the PAPs in the following offices: UP Office, Public Library if any, Project Office.
	Resettlement Policy Framework translated in local language	Once in the entire project cycle.	Distributed among Project Affected Persons (PAP)
	Information regarding impacts and their entitlements in local language	Once at the start of the project and as and when demanded by the PAP.	Through one-to-one contact with PAPs. Community consultation List of PAPs with impacts and entitlements to be pasted in the project office and website of DLS/Project
	R&R monthly progress report.	10th day of every month	Website of DLS Hard copy in the project office
	RAP Impact Assessment Report	At mid-term and end of the RAP implementation	Project and DLS website in local language.

Topic	Documents to be Disclosed	Frequency	Where
Small ethnic communities	Small Ethnic Community Development Framework and Plans	Identification, design and implementation, monitoring and evaluation	Project and DLS website Hard copies in local language in the following offices: Project Office SECs to be informed on one to one contact
Public Consultation	Minutes of Formal Public Consultation Meetings	Within two weeks of meeting	On the web sites of Project and DLS website; Hard copies in local language in the following offices: UP Office, Project office
Grievance redressing process	Proceedings of grievance process/ monitoring reports	Continuous process throughout the project cycle.	On the web sites of Project and DLS website; Hard copies in local language in the following offices: UP Office Project Office Beneficiaries and affected persons to be informed on one to one contact
Beneficiary identification and engagement	Approach and proceedings/long and short list of beneficiaries	Continuous process throughout the project cycle.	On the web sites of Project and DLS website Hard copies in local language in the following offices: UP Office Project Office Potential target group beneficiaries to be informed on one to one contact

5.9 Procedure for Management of Physical Cultural Resources- Protection and Chance find procedures

The World Bank emphasizes the protection of natural habitats and their biodiversity (OP-4.04) to avoid significant conversion or degradation of critical natural habitats (mangroves, wetlands, etc.) and to ensure sustainability of services and products which natural habitats provide to human society. The World Bank also has the policy of conservation and restoration of historic and for dealing with chance finds. Chance finds are anything that has the archeological or historic value found in the site of activities during excavation/renovation i.e. Implementation of the project activities.

It is envisaged that none of the activities under DRMP project will cause harm to natural habitats like mangrove forest, wet land, specified reserve forests, lakes, etc. and cultural property resources like ancient mosques, temples, pagoda, churches, places where genocidal incidences occurred during liberation war, etc. The negative attributes stated in this ESMF will not be supported from the DRMP project. However, any other suitable alternatives will be considered in case of incidental occurrences. This principle will also be followed for activities of any nature that does not comply with the laws and regulations of the country i.e. Environment Conservation Rules 1997, Food Safety Act 2013, Animal Slaughter and Meat Control Act 1957 and any activities related to use of pesticides banned by the Government and classified by FAO, WHO and also that does not comply with the OIE standard for sanitary and phyto-sanitary measures. In case of chance finds, the relevant departments to be

informed (administration, archeological department etc.) for taking necessary actions as per existing legislation of the country.

5.10 Grievance Redress Mechanism and Handling Complaints

Grievance on different issues may likely to arise due to pollutant generated from the livestock activities during the project implementation process. These could be minimized through following some mechanism. A grievance redress committee (GRC) should be formed with the representation from:

i. Officials from the DRMP project
ii. Stakeholder's representative,
iii. Local government representative and any other elite persons as may deem necessary.

Any grievance arises from environmental or social issues may be referred to that committee. The grievance must be redressed at local level through consultation amongst the community or person affected and DRMP project officials, local government representative, and/or local administration. This committee should be constituted in every division/district with at least the members from the DRMP project, local government representatives and the stakeholder's representative.

The GRC should document all complaints received and action taken on the complaint (for each and individual basis) and should report monthly to the Project Implementation Unit and quarterly or half yearly to the WB (as per demand) with the progress report or separately as monitoring report. Unsettled issues should be referred to Project Central Unit (PCU) at Dhaka for their necessary action on the issues.

5.11 Ethnic Community

The interventions of DRMP project relates mainly to the capacity building, support to producers organized around a commodity of common interest, support to improving production practices, market linkages through Productive Partnerships (PPs), infrastructure development through renovation/modernization/creating different facilities, consumer awareness building and institutional capacity development and knowledge platform, food safety and quality assurance, Livestock Insurance, establishment of the Project Management Unit (PMU) at DLS headquarters and 8 PIUs at divisional offices of DLS, etc.

Therefore, none of the above noted interventions may harm the interest of the ethnic communities. However, if there is any risk of adverse effect, the DRMP project will safeguard the interest of small ethnic communities by maintaining the following procedure:

1. Avoiding any intervention that may exert potentially adverse effects on the IP's communities.
2. Holding informed consultation with IP's community prior to project development in their area.
3. Providing appropriate compensation as per provision of the World Bank.
4. Providing priority to the affected families if any provision of employment exists.
5. Creating educational, recreational, and other facilities for the welfare of the children of employees as well as the community populace.

6. Ensuring the economic and social benefits that are culturally appropriate for the IP's community i.e. providing them training on biogas production, composting etc. or other livelihood options

However, other issues of small ethnic communities have been detailed in Chapter 7.

5.12 Labor Influx

The project envisages only small-scale infrastructure construction for connecting production centers including farms and slaughterhouses with markets. Civil works construction under the Project will require labor force and associated goods and services will therefore available locally with only few with special skills (one or two in a site) from outside the area. DLS will look at the contractors' labor and staff management to avoid any unintended incidents of social risks. The site specific social assessment and management plans will assess the risks associated with influx of outsiders in the project site. The contractors labor management should include plans to reduce influx (by using local labor as far as possible), mitigate risks and implement the plans. This will be mandatory for contractors to follow, if labor influx is assessed for civil works sites and will be specified as the contractor's obligation in all bid documents. Labor influx management issues will be included in the regular monitoring along with safeguards.

5.13 Monitoring ESMF Implementation, Compliance and Reporting

DRMP project will have a monitoring, evaluation and reporting system for assessing the environmental and social impact of the project. The implementing agency (DLS) of the project will be responsible for implementation of the ESMF. Frequent monitoring with regular interval should be carried out through internal monitoring process of the Project. Mid-term and Final evaluation should be carried out by the independent evaluator from external sources (Out-sourcing). Matrix of regular monitoring will include:

1. Consistency of ESMF with DRMP Project activities;
2. Compliance of the ESMF having conflict/complain mitigation;
3. Monitoring of construction related activities;
4. Monitoring for environmental issues in the project areas.

5.13.1 Monitoring and Implementation of the ESMF

The Implementing agency of the project (DLS) will carry out regular monitoring for the implementation of ESMF. Monitoring for environmental issues; difficulties in implementation of ESMF, conflict/ complain mitigation, etc. to be done following the guiding principles of the ESMF. Exclusion of negative attributes will also be monitored.

5.13.2 Environmental Compliance Monitoring and Reporting

The Implementing agency (DLS) will ensure the environmental compliances. DLS will collect location and environmental clearance from DOE for its projects to be implemented. Depending on the environmental category of the DOE, the projects will require mainly LEA and a few DEA. DLS will carry out regular monitoring for the environmental issues and maintain environmental code of practice and continue resolving unwanted environmental situation through participatory approach in mitigation measures. DLS need to have concurrence from WB Team regarding compliances with environmental

guidelines. The team will be provided with the necessary documents needed to release the concurrences.

5.13.3 Monitoring State of the Environment

The monitoring state of environment will be on regular basis and guided by the following matrix in the environmental management plan:

Table 5.6: Environmental Management Plan for Sub-components to be implemented

Environmental Issues	Actions needed/ Clearance	Monitoring Schedule	Monitoring Indicator	Monitoring Type
Project location	Location certificate	After site selection	Does not exceed beyond permitted location	Regular
Pesticide /Chemical or Drug use	Ensure that banned items are not being used.	Getting report of infestation	Consulting Veterinary officials	Frequent or regular
Water use	Quality of water to be ensured for standard	During production process	Harmful elements/ bacteria	Frequent or regular
Water pollution	Ensure standard of water in use	Frequent	Effluent treatment facility is functioning	Regular
Air and noise pollution	Mitigation measure /Env. code of practices	Frequent	Odor, sound, and complains found.	Regular
Solid waste	Process of using or disposing of	Daily	Cleanliness	Regular
Health and safety of the employees	Introduction of safety rules in production and processing equipments and machineries	During operations	Health and safety measures	Regular
Product quality.	Establishing testing system for quality standard	During production period	Quality of product for hygiene	Regular.

5.14 Capacity Building on Environmental Safeguards

Capacity building on environmental safeguards is very important aspect of the project to keep and maintain the environment less or no polluted and to make the process sustainable. Therefore, persons involved in the implementation process of the interventions need to be trained on environmental issues

5.14.1 Training Objectives

The capacity building on environmental safeguard is necessary through training to ensure the soundness of environment in and around the interventions under DRMP. Dairy and poultry production system generate lots of pollutant. Producers are not capable to manage these pollutants in environmentally friendly manner. So, very often environmental and social problem arises. Therefore, training on environmental safeguard to the persons involved in Livestock and poultry production and processing practices is necessary. The main objectives of the training are:

g) To have a healthy environmental safeguard system.
h) To make the producers, processors, sellers and traders aware of environmental soundness for public health interest.

i) To have healthy and safe food products in the market.

5.14.2 Scope of the Training

Livestock activities (Production, processing, even marketing of raw goods) generate lots of pollutant. These pollutants are organic in nature and therefore, can best be utilized to increase soil fertility through converting into organic fertilizer (compost), besides; cooking fuel in rural areas is mainly cooking wood collected from cutting of the trees exerting negative impact on the environment. Biogas production from Cow dung and poultry droppings may be the solution of this problem and perhaps, one of the best scopes to protect the environment from pollution as well as public health concern. Training on composting and biogas production on the view point of environmental safeguard issues will help to protect environment.

Training is necessary for the staff of the organization, persons involved with the production of milk, meat, eggs and breeding materials, moreover, transport operator, processors of the products, sellers, traders, etc. They need to be trained so that they can understand the need for environmental issues and can identify the problems and address accordingly to protect the environment.

5.14.3 Capacity Building Plan

Based on the organizational review of DLS, the capacity of existing staff and professionals have been understood and following capacity development plan has been designed:

Table 5.7: Capacity Building Plan

Trainees	Training issues	Training method	When to be trained	Training Duration	Expected outcome
Selected DLS officers, school teachers	Training of Trainers (TOT)	Detailed Training	Prior to implementation of sub-components	5-7 days	Good trainers available.
Dairy Farmers	Environmental awareness; Environmental Code of Practices, Feeds & Fodder management, Farm wastes, composting, Bio-gas production, making aware of environmental laws.	Through video with illustration of ideal one	Prior to implementation of sub-components	2 days	Better management practices & good environment, less pollution
Milk Collector	Milk quality, preservation, transportation, etc.	Through video with illustration of ideal one		Half day	Hygienic product
Milk processor	Milk quality Environmental Code of Practices, washed water. Making aware of environmental & food safety laws.	Through video with illustration of ideal one		1 day	Hygienic product
Sweet-meat seller	Milk quality, Environmental Code of Practices, making aware	Through video with illustration of ideal one		1 day	Hygienic product

Trainees	Training issues	Training method	When to be trained	Training Duration	Expected outcome
	of environmental & food safety laws.				
Beef cattle farmer	Environmental Code of Practices, Feeds & Fodder management, Farm wastes, composting, Bio-gas production. Making aware of environmental laws.	Through video with illustration of ideal one		2 days	Better management practices & good environment, less pollution
Goat farmer	Environmental Code of Practices, Feeds & Fodder management, Farm wastes, composting, Bio-gas production, making aware of environmental laws.	Through video with illustration of ideal one		1 day	Better management practices & good environment, less pollution
Sheep farmer	Environmental Code of Practices, Feeds & Fodder management, Farm wastes, composting, Bio-gas production, making aware of environmental laws.	Through video with illustration of ideal one		1 day	Better management practices & good environment, less pollution
Meat Processor	Environmental Code of Practices, Feeds & Fodder management, Farm wastes, composting, Bio-gas production, making aware of environmental & food safety laws.	Through video with illustration of ideal one. Demonstration using motorized mechanical devices		1 day	Hygienic product
Slaughter house community	Environmental Code of Practices, wastes disposal, collection of byproducts.	Through video with illustration of ideal one. Demonstration using motorized mechanical devices		2 days	Better management practices & good environment, less pollution
Poultry Farmers					
Layer farmer	Environmental Code of Practices, Feeds, pest management, Farm wastes, composting, Bio-gas production	Through video with illustration of ideal one	Prior to implementation of sub-components.	1 day	Better management practices & good environment, less pollution
Broiler farmer	Environmental Code of Practices, Feeds management, Farm	Through video with illustration of ideal one		1 day	Better management practices &

Trainees	Training issues	Training method	When to be trained	Training Duration	Expected outcome
	wastes, composting, Bio-gas production				good environment, less pollution
Live bird seller	Environmental Code of Practices, generated wastes disposal, risk of disease transmission	Through video with illustration of ideal one		Half day	Better management practices & good environment, less pollution
Live bird processor	Environmental Code of Practices, generated waste disposal, Hygienic meat processing.	Through video with illustration of ideal one		Half day	Better management practices & good environment, less pollution
Entrepreneur					
Small	Environmental Code of Practices, Feeds/ Fodder management, Farm wastes disposal, composting, Bio-gas production, improved livestock (ILM) manure management	Through video with illustration of ideal one, demonstration	Prior to implementation of sub-components.	1 day to 1 week	Better management practices & good environment, less pollution
Medium	Environmental Code of Practices, Feeds/ Fodder management, Farm wastes disposal, composting, Bio-gas production, improved livestock (ILM) manure management	Through video with illustration of ideal one, demonstration		1 day to 1 week	Better management practices & good environment, less pollution
Large	Environmental Code of Practices, Feeds/ Fodder management, Farm wastes disposal, composting, Bio-gas production, improved livestock (ILM) manure management	Through video with illustration of ideal one, demonstration		1 day to 1 week	Better management practices & good environment, less pollution
Any other community as deem necessary					
School students along with milk programme	Environment/ Health/ Nutrition/ etc.	Class room lecture, video-clips.	Prior to implementation of sub-components	3 periods in a month	Sustainability of best practices. Behavioral change

Table 5.8: Budget for Capacity Building Plan

Sl. No	Major Items of expenditure	Unit	Cost per Unit	No of Unit	Total US$
1.	Capacity Building training	Number	1,500	200	300,000
2.	Demonstration	Number	2,500	100	250,000
3.	Campaign on environmental issues	Number	20,000	10	200,000
4.	Video documentary	Item	5,000	20	100,000
5.	Transportation	LS			50,000
8.	Total				850,000

5.15 EMP Implementation Cost

Cost estimates will need to be prepared for all the mitigation and monitoring measures to be proposed in the specific EIA in accordance with the ESMF. The cost estimates for some of the mitigation measures to be identified in the EMP will be part of civil works contract. Some of suggestive activities from EIA will be implemented by hiring competent institutes.

The Development Project Proposal (DPP)/ Technical Assistance Project Proposal (TAPP) of DLS/ MoFL/ GoB for the proposed program should reflect the ESMP activities with budget for successful environmental management of the program.

Total US$ 2.8 million is estimated for implementation of EMP which is embedded in the proposed total project budget US$ 500 million from IDA.

Table 5.9: Cost Estimates for Environmental Management and Monitoring of BSCMFP.

SN	Description	Amount million US$
1	Contractor's Budget for development of management plans, staff, training, etc.	0.3
2	Environmental monitoring during construction (quarterly for 5 years)	0.2
3	Cost of Consultants for future Environmental and Social Assessment	0.1
4	Cost of Environmental Clearance from DOE	0.1
5	Integrated pest management	0.2
6	Independent Environment Consultants/M&E	0.3
7	PMU/CSC Environmental staff	0.4
8	Capacity building and institutional strengthening	0.8
9	Small Ethnic Communities Development Framework	0.4
	TOTAL =	**2.8**

6. Implementation Arrangements

6.1 Project Implementation Arrangements

The sub-components under the component A, B, C & D of DRMP project will be implemented all over Bangladesh except three hill districts. A Project Management Unit (PMU) will be established at DLS headquarter and 6 (Six) Project Implementation Units (PIU) will be set up, one in each divisional office of the DLS. The Department of Livestock services has its offices in all Upazilas each with 2 officers (of Bangladesh Civil Service cadre) graduated in Animal Husbandry/Veterinary Sciences) and 9 other technical and sub-technical staffs. They have the mandate of providing livestock related services to the people and the responsibility to keep watch on the environmental aspects related to the livestock related activities. A Project Steering Committee at National level will be formed headed by the Secretary to the Ministry of fisheries and livestock (MoFL) and DG (DLS) as the member secretary.

The PMU will perform the responsibilities of coordination of the project activities, budgeting, procurement, monitoring and evaluation etc. while the PIU will implement the interventions through the DLS officials and also through other institutional arrangements for execution of programmes.

The Upazila is the basic administrative unit of the government. Each Upazila has got few unions having staff of various departments. Department of Agriculture, livestock and fisheries do not have their offices at union level but some functional units exist. Livestock department has some Artificial insemination centre at union level and also in some important places in the union. National Agricultural Technology Project (NATP), a World Bank supported Project of DLS, DAE and DOF has established 732 Farmer's Information and Advice Centre (FIAC) at unions of 120 Upazila. These FIACs are attended by 1280 Community Extension Agent for Livestock (CEAL). However, man-power constraints exist in the department of livestock services. Therefore, it is very difficult to ensure adequate quality services to the farmers. Hence, staff constraints (orthodox veterinarians and Animal Husbandry graduates) to implement the project activities may be addressed by new recruitments and assigning them with specific task for extension, regulatory functions to oversee the processing activities, quality certification, etc.

Different institutions at different level (Union, Upazila, District, Division and National level) of officials have their specific role in implementation process of the projects. Therefore, institutional arrangements for environmental management as shown in the Table 6.1, will also carry out the implementation of the project interventions.

Table 6.1: Staff Composition and Responsibilities

Institutions	Assigned person	Responsibilities
Union level	Field Assistant/ Community Ext. Agents	Monitoring and extending technical supports for adapting mitigation measures, Implementation of Environmental Codes/ best Practices and Enhancement Measures. Organizing awareness building programmes and training for the small holders
Upazila level	Upazila Livestock Officer (ULO)/ Vet. Surgeon	Conducting environmental categorization of all sub-components under DRMP projects at Upazila level. Conducting LEA of low impact sub-components. Coordination, Monitoring

Institutions	Assigned person	Responsibilities
		of the implementation of mitigation measures, Environmental Codes of Practices and Enhancement Measures
District level	District Livestock Officer (DLO)/ Asst. Director	Monitoring and extending technical supports for adapting mitigation measures, Implementation of Environmental Codes/ best Practices and Enhancement Measures. Organizing awareness building programmes and training for the small holders.
Divisional Level	Deputy Director/ PSO	Ensuring the Environmental and social screening process and implementation of ESMF for establishing PIU at divisional Livestock Offices. Provide technical supports to SME and Large enterprises of Livestock and Poultry production, processing, marketing and value addition activities and oversee the environmental issues of those activities
National level	DG (DLS) and Directors through sub-ordinate professionals.	Provide support to all concern in livestock and poultry production, processing, marketing and value addition activities and oversee all related environmental issues, such as; mitigation measures, enhancement measures, Environmental Codes of Practices, environmental monitoring, etc. Sole responsibility of any environmental issue arises due to implementation of DRMP project interventions. Accountable for all public, private or PPP enterprises of livestock and poultry related environmental issues.

7. Small Ethnic Communities Development Framework (SECDF)

7.1 Introduction

Small ethnic community issues are important when World Bank OP/BP 4.10 on Indigenous Peoples applies to a project activity. With the anticipation that small ethnic communities are present in some of the project districts but their status as indigenous peoples is subject to review and analysis following the World Bank OP 4.10, this Small Ethnic Community Development Framework (SECDF) has been including the ESMF of the Project. This part of framework will be applied to all activities under the DRMP which follows the country's legislation as well as World Bank's OP/BP 4.10.

A remarkable progress in livestock sub-sector has been achieved during last few decades. Livestock is a key component of the agricultural economy of Bangladesh and serves an essential role as a source of protein, employment generation, export earning, and provision of food security. Livestock resources play an important role in the sustenance of landless people, livelihood options for the rural poor families and are potentially important for poverty reduction.

With a view to enhance milk, meat and egg production, employment generation, export earnings, and to ensure public health, the government of Bangladesh has decided to bring about a revolutionary change in this sub-sector of agricultural sector including quality assurance of livestock products.

However, Country's production system of milk and meat is mainly performed by the rural household. Despite some potential milk pocket areas in the country, production from every part of the country contributes in supply chain. Small Ethnic Communities also have their contributions in milk and meat production process in the country. These communities have their constitutional right to avail every facility like that of the mainstream populace. Besides, their distinct cultural characteristics and festivals have enriched the country's beauty.

Small ethnic communities have been paid due importance in World Bank safeguard policy (OP/BP 4.10). Since the World Bank financing process fully respect the human rights, dignity, economies and cultures of indigenous people and suggests to avoid potential adverse effects on the small ethnic communities, the DRMP project interventions will avoid such effect. If avoidance cannot be possible at all, the appropriate measures to minimize, mitigate, or compensate for such effects will be provided.

7.2 Rationale

Bangladesh is the dwelling place of different ethnic communities and is a country of ethnic harmony. Their historical background, economic activities, social structure, religious beliefs and festivals make them distinctive. Small ethnic communities are located mainly in the border areas of the country. Fifty-eight per cent of small ethnic communities will be involved in proposed project areas and are located in different areas of the country.

Due to presence of small ethnic communities in the proposed project areas, protection of their interest as well as to respect their cultural activities, norms, values, religious belief and their distinct characteristics are the constitutional obligation to the DRMP project.

The Govt. of Bangladesh prefer to term people of small ethnic communities as "Tribe" and "Tribal" (In Bengali: Upajati) instead of indigenous. However, different names have been used to refer these ethnic groups. For example; ''Indigenous Hillman" has been termed in a Finance Law in 1995, "aboriginal castes or Tribes" has been termed in the East Bengal State Acquisition and Tenancy Act of 1950, The term "Small Ethnic Communities /Adivasi" has been used in the poverty Reduction Strategic Paper-1 (PRSP-I), adopted by the government of Bangladesh in 2005 and later, "Indigenous communities" and "Indigenous people" has been noted in PRSP-II, The term "Khudro Nrigoshthhi" (in English: Small ethnic group) has been referred to indigenous people in the "Small Ethnic Groups Cultural Institutions Act 2010". The Govt. of Bangladesh also termed "Tribes", "Minor races" and "Ethnic sects and communities" to mean the small ethnic community. Therefore, small ethnic communities and indigenous people are used synonymously in different documents of the country. Hereafter, the term "Small Ethnic Community" (SEM) will be used in this framework to refer the 'Indigenous People' as defined in various UN human rights organizations and policies, including the World Bank's safeguards policy OP/BP 4.10

The nature and magnitude of impacts will remain unknown until the sites for project activities are identified and the beneficiaries are selected and screened. The DRMP project will formally adopt guidelines to address small ethnic community issues and concerns, and identify and promote development opportunities for the affected small ethnic communities.

7.3 Scope and Objectives

Relevance of Bank's OP 4.10 on indigenous peoples will depend on the presence of EM in the project's command areas where they might be affected in a manner that could impact their culture and way of life, including present livelihood activities. The proposed small ethnic community Development Framework (EMDF) outlines principles, policies, guidelines and the procedure to identify impact issues and potential risks and, if required, formulate and execute Small Ethnic Community Development Plan (SECDP), whenever project activities affect small ethnic communities present in the project areas.

The primary objective is to ensure that the sub-component activities of DRMP project do not adversely affect SECs and that they receive culturally compatible social and economic benefits. This will require DRMP to work with the following strategic objectives:

- Screening of all activities to identify presence of Ems and ensuring their direct participation in selection, design and implementation process of the activities including any civil works;
- To select sites and interventions to determine their scopes to avoid or minimize the adverse impacts;
- To adopt socially and culturally appropriate measures to mitigate the unavoidable adverse impacts; and
- To adopt special measures, in addition to those for impact mitigation, to reinforce and promote any available opportunities for socio-economic development of the affected small ethnic communities.

7.4 Project's Small Ethnic Community Development Policy

In accordance with the Bank's requirements, the project proposes the following principles, guidelines and procedure to prepare Small Ethnic Community Development Plan (SECDP), where project activities and interventions are found to affect the SECs in positive or negative ways. To avoid or

minimize adverse impacts and also to ensure culturally appropriate benefits, the DRMP project will be guided by the following basic principles in selection, design and implementation of the sub-components

7.5 Principles to safeguard Small Ethnic Communities

In the process of designing and developing as well as implementation of activities under DRMP project, the following principles will be followed to safeguard the interest of the small ethnic communities as well as to ensure their involvement in every stage of project developing process:

- **Inclusion of small ethnic communities:** The small ethnic community leaders and their organizations will be fully included in the project planning, designing and developing process including identification and selection of interventions in their locations.
- **Screening the sub-component:** Screening process both environmental and social will be carried out together with small ethnic communities, for a clear understanding of the nature and magnitude of potential adverse impacts, and selection of alternatives to avoid or minimize those impacts.
- **Involvement in consultation:** Details of potential impact will be identified and the most appropriate mitigation measures, through intensive consultations with the affected tribal communities, tribal organizations, civil society organization, NGOs and CBOs, professionals, and the other dignified or elite personalities.
- **Avoidance of interventions:** Interventions to be avoided at locations where the small ethnic communities (even the mainstream populace) disagree to extend their support or opposes the intervention for not providing benefit to them.

7.6 Socio-economic Concerns of Small Ethnic Communities

7.6.1 Concerns on Social & Cultural issues

The social concerns primarily focus on the cultural and socioeconomic characteristics of small ethnic communities and the potential vulnerability that they may apprehend to be derived from proposed sub-component activities. The concern of the small ethnic community on social issues mainly relates to their religious and cultural activities, languages, food habits, interactions amongst other small ethnic community groups, social and political relationship and interaction with non-ethnic population, presence of community based other organizations and also other social and cultural aspects likely to be affected by the sub-component activities.

7.6.2 Concerns on economic issues

The major economic concern of small ethnic communities may derive from sub-component activities that may affect their legal ownership on land where they reside in and use for agricultural or other economic activities; access to natural resources like forest, water bodies, and other resources for their livelihood; occupational activities that may be affected or benefited due to subproject activities; and marketable goods and services that may be affected or enhanced by the project interventions.

7.6.3 Settlement Pattern

- Physical pattern of settlement: indicating the existing community facilities, such as schools, places of worship, cremation/burial grounds and others, water supply and sanitation system, etc.
- The nature of EM settlements/neighborhoods with the mainstream people, interactions and mutual understanding to each other, etc.
- Distance between EM settlements and selected sub-components meant for implementation.

However, this ESMF will suggest considering all these concerns and their settlement patterns in planning, designing and implementation process of the interventions through discussion and their active participation in different stages of project development.

7.7 Impact Mitigation & Development Measures

7.7.1 Measures for Mitigation of Impacts

The guideline proposed in the resettlement policy framework (RPF) will be applicable in case of involuntary / voluntary land use policy. Eligibility and standards for compensation proposed in the RPF will also be applicable in settling the issues. Further, attention will be paid to ensure that non-local persons do not intrude into the EM localities and behavior that could be considered as culturally insensitive and disrespectful by SECs.

Appropriate and culturally compatible development measures will mainly depend on preferences and priorities of the affected SECs. Such measures may include providing credit facilities where SECs are found to engage in the production of marketable goods, such as handicrafts, handlooms, small-scale horticulture; employment in construction and maintenance activities; basic water supply and sanitation facilities; and those, such as schools, that could be used by the communities as a whole.

If credit programs are found appropriate, DRMP, in consultation with DLS, should facilitate and call upon civil society organizations like NGOs/ agencies to organize and provide with due considerations.

7.7.2 Community and Social Enhancement

To generate baseline data a baseline survey may be conducted. There are areas exclusively inhabited by SECs and areas which have both SECs and non-SECs. Therefore, to address the needs of SECs in these different situations distinct strategies would be adopted. Likely processes are described below. A participatory approach in implementing the programme will be followed.

Exclusive EM areas: The project would consult EM leaders, both men and women or their groups that would be formed amongst the EM. Area Development Committee (area means village or any other geographically isolated habitation) will be formed that must include representatives from all EM communities. It is likely that credit group (CG) would be formed separately for each EM community sub-group if required. Members of the CG shall belong to the same EM group as they may have close relations with each other and they trust each other. They can be motivated to work together. All such CGs in an area would form into a area development committee, since the different SECs traditionally extend mutual co-operation in times of need.

Mixed habitation: Mixed habited areas may likely be of two types —EM majority areas and non-EM majority areas. The institution building process will be different in each context. The project would address the concerns of the poor non-EM in EM areas. In a EM majority area, the EM CGs and the non-EM CGs would perhaps be formed separately and be federated at the Area development committee level. In a non-EM majority Area, the SECs typically lives in a separate settlement within the area or at the outskirts of the area. CGs would be formed for EM exclusively and the CGs of the non-SEC would be formed separately. Representatives from each CG will form an inclusive Area Development Committee.

7.7.3 Community Infrastructure Works

As with other vulnerable groups, project will facilitate formation of local committee and CGs, and assist them in developing a community action plan (CAP), the CAP will identify the resources available– natural and human, and the opportunities and risks in each of the existing livelihoods. This would be done through a participatory process and there would be several rounds of discussions. The focus naturally would be on the traditional livelihoods sources and infrastructure needs of the tribes such as skill development, access to seed capital and credit, land, livestock and forests. The community would identify the leakages and gaps and opportunities for consolidation and expansion in their present livelihoods. They would analyze the causes of leakages and gaps in their livelihoods and the alternative approaches that can be adopted for their development and select appropriate plans for intervention.

The MEs through their institutions would not only develop CAP, but would be responsible for implementation and monitoring of the plans thus prepared. In order to bridge their knowledge gap EM youths would be trained as volunteers and provided necessary inputs in managing that sector interventions. The EM institutions would receive capacity building inputs from the project staff and functionaries for the evolution and management of projects. The capacity building inputs for the EM would include visits (study) to successful interventions.

7.7.4 Social Assistance

Project would also implement a social assistance program for increasing social and economic opportunities for Ems. And other vulnerable groups. The objectives of the social assistance program are to increase the capacity of EM groups to participate in mainstream development activities through:

- Increased access to information and knowledge about health and nutrition, including child and mother health, immunization services, personal hygiene, water and sanitation issues; literacy and leadership program; and human and legal rights, including child rights;
- Motivation towards increased participation, 'voice' and empowerment in working with local government bodies for local level planning, decision making and monitoring, thereby decreasing social exclusion and improving local governance; and
- Increased economic opportunities for skill development and access to income creating assets.

Activities eligible for financing under this program will be of five types:

- Advocacy programs

- occupation/ skills training
- support for pregnant women and risk pooling pilot initiatives
- legal aid support
- Grants for the graduated trainees and worst affected natural hazard victims.

7.7.5 Linkages and Leverages

To ensure effective services in the EM areas, project will ensure convergence and synergy with important line departments like health, education, child welfare and nutrition, agriculture, horticulture, fisheries, and livestock. Project will facilitate linkages with other poverty reduction programs, such as micro-finance; vulnerable groups development, legal literacy and human rights programs.

7.8 Implementation Arrangement

7.8.1 Institutional Arrangement

The institutional arrangement of the project has been discussed in chapter 6. However, involvement of small ethnic communities in the implementation process must be paid due importance where involves. Their support in the process of sub-component selection and screening process will help smooth operation of the subcomponent activities. The PMU and PIUs of the project as well as the DLS officials involved in the process of implementation will ensure their interest through consultation and involvement in planning and selection process. It is important for PMU and PIUs to protect their interests as per requirement of the WB safeguard policy OP/BP 4.10

7.8.2 Grievance Redress Mechanism

As stated earlier in chapter 5 of this ESMF, a Grievance Redress Committee (GRC) will be formed to redress the grievances of the affected person. The same committee will look after the interest of the small ethnic communities with due consideration of their concerns and redress their grievance. The concern of the small ethnic communities will be considered during selection of sub-component with free, prior, inclusive and informed consultation and this process will reduce the possibility of grievance of the small ethnic communities and helps to protect their interest.

The GRC will have the responsibility to address all complaints/grievances related to the project and resolve as and when necessary. All grievances will be duly recorded in the office and will be maintained in the book of records. At least one of the GRC members, where applicable, will be from the small ethnic communities.

However, a key approach of resolving the grievance will be based on local level arbitration (Salish in Bangla) relying on alternative dispute mitigation techniques. If the arbitration is acceptable to the aggrieved parties, it should be done through local level consultation meetings in presence of all the relevant stakeholders. The grievance redress mechanism in different steps is presented below:

Table 7.1: The Grievance Redress Mechanism

Tiers of GRM	Contact Person/body	Facilitation by Project	Timeframe to redress
First Tier: Local level (Union)/Upazila level project Coordination Committee (UPCC)	the UPCC will be the first level of contact in specific grievance related to the management of the project or any other issue related to land; access and adverse impacts on the or community. Office of the Upazila Livestock Officer (ULO) will act as the office of the UPCC.	The UPCC will record the grievance received from the aggrieved person/ community and take initiative to redress the grievance of the aggrieved person.	15 days
Second Tier: District Management Committee (DMC)	The grievance will be forwarded to the DMC by the UPCC.	If the first tier is exhausted, The aggrieved person can attend the hearing in person to the DMC. District livestock Officer will ensure that there is no cost imposed (for travel, food, etc.) on the aggrieved person if the person belongs to the vulnerable groups, the project will assist affected with travel and accommodation costs, if needed.	30 days
Third Tier: Department of livestock services (DLS)/ Ministry of Fisheries and Livestock (MoFL) – E&S Safeguards Coordinator of the Project Management Unit (PMU).	The grievance will be forwarded to the Environment and Social Coordinator at the PMU.	After exhausting the first and second tier, the aggrieved person can attend the hearing in person to the PIUs. DLO of the respective district will ensure that there is no cost imposed (such as for travel, etc.) on the aggrieved person if the person belongs to the vulnerable groups, the project will assist the affected person with travel and accommodation costs, if needed. Website advertisement, public notices in print media will be used for notification.	60 days
Fourth Tier: Independent Institutions such as Anti-Corruption Commission, Human Rights OR the Judiciary Commission etc.	Independent Institutions and the Judiciary will remain as an option for an aggrieved person and/or community in case that the other tiers have not been effective.	Only for vulnerable person (s) as per the grievance mechanism of the project. Only after exhausting the first, second and third tire initiatives.	As per established laws of Bangladesh

7.9 Small Ethnic Communities Development Plan

Small Ethnic Community Development Plan (SECDP) is necessary to prepare where project activities will affect the minority communities either in a positive or negative way. The DRMP will consider the following issues in preparing the SECDP:

- The ethnic characteristics of the affected population;

- The prevailing intuitions as family, religion, language and education and other EM variables and social stigma;
- The local traditions and customs, leadership (as headman, karbari), gender issues, and civil societies and NGOs in their locality.
- The land ownership pattern and availability of required land for taking up agriculture related livelihoods interventions;
- The positive and negative impacts on the prevailing institutions; both formal and informal; and
- To ensure adequate and appropriate consultation and communication, and their participation and approval of their implementation of project inputs and mitigation plan.

In accordance with the Bank's requirements and also taking into consideration of the above issues, the DRMP project proposes the following principles, guidelines and procedure to prepare MEDP, where project activities might have the effect on EM communities.

To avoid or minimize adverse impacts and to ensure culturally appropriate benefits, the DRMP project will apply the above noted basic principles in selection, design and implementation of the project interventions.

7.9.1 Contents of SECDP

SECDPs will primarily aim at mitigating adverse impacts, and reinforcing and promoting any existing development opportunities in the project areas, with emphasis on the SECs who would be directly affected. The elements and contents of the SECDP are presented below:

The DRMP project will prepare an Small Ethnic Communities Development Plan on the basis of social assessment and consultation through which the Project will ensure that

1. The small ethnic communities affected by the project will receive culturally appropriate social and economic benefits;
2. The plan will help to avoided, minimized, mitigated, or compensated for any sorts of adverse effects on the ethnic community. The plan must be a pragmatic and its approach and content varies due to variation of nature of effects to be addressed. DRMP project will incorporate and integrate the SECs development plan into the design of the sub-components. Where the SECs are the sole or the overwhelming majority of direct project beneficiaries, the plan should be included in the overall project design and therefore, no separate DP will be required. The Social Management Plan will cover the SECs requirements.

The SEC Development Plan will include the following elements.

a. A summary of the information about (i) legal and institutional framework applicable to ethnic community and (ii) baseline information on the demographic, social, cultural, and political characteristics of the affected communities, the land and territories that they have traditionally owned or customarily in use or occupied, and the natural resources on which they depend.
b. A summary of the social assessment.

c. A summary of results of the free, prior, and informed consultation with the affected ethnic communities that was carried out during project preparation and that led to broad community support for the project.

d. A framework for ensuring free, prior, and informed consultation with the affected small ethnic communities during project implementation.

e. An action plan of measures to ensure that the EM people receive social and economic benefits that are culturally appropriate, including, if necessary, measures to enhance the capacity of the project implementing agencies.

f. When potential adverse effects on ethnic communities are identified, an appropriate action plan of measures either to avoid, minimizes, mitigate, or compensate for these adverse effects.

g. The cost estimates and financing plan for development purposes.

h. An appropriate procedure to address grievances of the aggrieved communities arising from project implementation. When designing the grievance procedures, availability of judicial recourses and customary dispute settlement mechanisms among the small ethnic communities will be taken into account.

i. Mechanisms and benchmarks appropriate to the project for monitoring, evaluating, and reporting on the implementation of the Development Plan to be established. The monitoring and evaluation mechanisms should include arrangements for the free, prior, and informed consultation with the affected SE communities.

The basic information for preparation of the SEC Development Plan are as follows:

- The basic census, socio-economic data and inventory of affected resources;
- Household ownership of economic and productive assets.
- Annual income from primary and secondary employment opportunities including livestock and poultry rearing practices.
- Information about economic activities of the community (e.g. natural resources, production and livelihood systems, etc.)
- Social information of community (e.g. kinship, value system, types of social organizations of formal and informal groups, etc.)
- Potential impact of proposed project activities on basic social services (e.g. water supply, health clinics, and schools, etc.)
- Potential impact of project activities on the social and economic livelihood.

7.9.2 Free, Prior, and Informed Consultation

The SECs participation in the process of consultation will help to ascertain stakeholders' influence and share control over development initiatives and the decisions on resources which affect them. When SECs are understood to be indigenous peoples as recognized under the World Bank OP 4.10, a free, prior and informed consultation approach will be followed to ensure informed participation of and meaningful consultation with the SECs. The decision to participate will initiate their involvement in the whole process in the project cycle. The World Bank' OP/BP4.10 provides a clear direction to

project proponents in both the public and private sectors, on the need for public consultation. Importance of participation is to make the project influenced SECs informed about the project and, more importantly, getting their active involvement in the planning and implementation of the project.

All communications will be in local language made in advance to enable the SECs to participate in the consultation process. Their views and choice expressed in the consultation process will help the project designing and implementation approaches and for a conducive atmosphere during operating stage of the project.

7.9.3 Budget

Budget for implementing SEC Development Plan is a part of the Project total budget. This budget is to cover costs of project staff allowances and consultants to prepare compliance reports including supervising and monitoring reports, data collection, and preparation of SEC Development Plan, etc. This Development Plan will include information on detailed cost of mitigation measures and other community level enhancement measures and entitlements for small ethnic community people in the project areas; and also, administrative and monitoring costs. All funds for management of small ethnic community development will be provided as per provision of the project document/ agreement. DRMP will keep resources allocation for social development and safeguards in the Development Project Proposal to be approved by the Government.

8. Resettlement Policy Framework (RPF)

Land acquisition and displacement of people is discouraged in World Bank supported Project. The World Bank Safeguard Policy PO-4.12 stands for involuntary resettlement. It is triggered in case the project causes loss of private properties such as land, houses, commercial places or structures and also for disrupting source of income or source of livelihood means.

The DRMP project does not have the provision of land acquisition. So, displacement or resettlement issues are not expected to happen due to these project interventions. However, if such a situation arises and require the land temporarily, involve population displacement or loss of livelihoods, Women-headed household, elderly citizen, and disable persons, etc. are affected due to interventions of the project, mitigation or compensation might be necessary and in such cases a Resettlement Action Plan (RAP) needs to be prepared. The RAP will include:

1. Major issues concerning temporary land acquisition and resettlement;
2. Impact mitigation objectives and principles;
3. Eligibility for compensation/assistance and principles for providing compensation/assistance
4. Description of land acquisition process, and processes for preparation and implementation of sub-project specific RAP.
5. Method for market price survey, and a compensation and entitlement matrix.

8.1 Land Acquisition and Resettlement Issues

Involuntary resettlement issues arise where project interventions require additional lands temporarily or permanently and where the project activities require permanent or temporary displacement of people. Where expansion of existing land boundary of any infrastructure is a critical part of project development to materialize expected benefits, the DRMP project will use the following guidelines to obtain public and private lands.

8.1.1 Public Lands

Where it is found that the public land has been occupied by certain quarter of people, the DRMP project authorities and communities may persuade the users to relinquish occupancy. If they refuse, and currently in use for living and/or livelihood by the poor and vulnerable, the DRMP-project authorities and beneficiaries can offer socioeconomic rehabilitation measures acceptable to the affected persons. In such a situation, a RAP will be necessary to compensate and restoration of livelihood for the affected persons.

8.1.2 Private Land on 'Voluntary Contribution'

If a small strip of land is required for DRMP project intervention, the concerned land owner, if persuaded, may agree to contribute the lands without compensation. This method will be followed only for small amount of lands and the DRMP project will need to ensure that,

- The contributions are voluntary;
- There are no encumbrances on the contributed lands;

- The contributions in no way affect the livelihood of vulnerable persons. If it does, the DRMP project authority and community will devise and implement mitigation measures acceptable to the affected persons;
- The contributors give up all claims on the lands and the titles are transferred to the recipient through the legal procedures prevailing in the country; and
- The contributions need to be documented through an MOU.

8.1.3 Private Land on 'Direct Purchase or Exchange or against compensation'

A well-off land owner may have intention to contribute land voluntarily. But some might be quite marginal and vulnerable land owners. In such cases, the DRMP project authority can propose for temporary acquisition of the lands or the owners may opt to provide the lands against compensation.

8.1.4 Existing Lands with Authorized and Unauthorized Private Users

Certain project activities like drainage system or road to and from slaughter houses or animal yards or any other project intervention may involve temporary replacement of residing individual or family or community. In such a situation RAPs should include special measures to identify these displaced persons or families and allow them to continue their livelihood at another location arranged by the DRMP. Open consultation should be conducted with general public and special consultation should be carried out with the affected persons for their relocation and livelihood restoration arrangements.

8.1.5 Voluntary Donation

In case of such contribution the DRMP project will need to be ensured that;

a. Landowners and communities are made fully aware of their rights and obligations;
b. Contributions are truly voluntary;
c. The contributors are the legitimate owners of the lands being obtained and there are no issues of pending taxes or any other dispute over ownership.

8.2 Impact Mitigation Objectives

A set of principles and guidelines to be followed to avoid or minimize adverse impacts on private landowners and public land users, to mitigate the impacts that are inevitable, and assist to restore their income earning at least to pre-project levels. To achieve the objectives, DRMP will adhere to the following strategic guidelines.

- Avoid or minimize displacement of persons/households who may have been using public lands for residential and livelihood purposes;
- Establish procedural guideline to ensure that the voluntary contribution of private land is sought and accepted in transparent manners so that unacceptable impact on the owners can be avoided.
- Establish guidelines and procedures to ensure that private land contributions are voluntary and sought and accepted in transparent manners without causing unacceptable adverse impacts on the owners.
- Adopt impact mitigation measures based in consulting with the affected person (s) where private lands are required for project development purposes.

8.3 Impact Mitigation Principles

The DRMP project will adopt appropriate mitigation measures if any of the project activities affect any person or households, on public or private land through minimizing or avoiding the adverse impact adhering into the principles noted below:

- The DRMP project will try to avoid the adverse impact as much as possible on socioeconomically vulnerable persons and their households.
- If the adverse impacts are impossible, the project will ensure that the affected persons or their households are economically resettled with acceptable measures.
- If the displacement of public land user is unavoidable, the DRMP project will assist the affected persons and their household to displace on available lands in the neighborhood.
- If the livelihood options are affected, the DRMP project will ensure the restoration of their livelihood means or any other alternatives they are agreed upon.
- A resettlement action plan (RAP) will be prepared as per above principles and the DRMP will implement the RAP prior to execution of the interventions.

8.4 Eligibility for Compensation/Assistance

Adversely affected persons or households due to any activities under DRMP project are eligible to claim compensation and assistance. Such groups of people are:

8.4.1 Private land owners

The legitimate owner of the affected land and other assets such as houses or structures, trees, etc. within the affected lands are illegible for compensation. Compensation will be provided for loss of lands and additional allowance to be provided when the loss exceeds 20% of land or rest of the land is not economically viable for use. Private land in extreme circumstances of critical design requirements will be taken using voluntary donation, direct purchase or contribution against negotiated compensation.

8.4.2 Squatters

"Squatters" are persons who occupy or possess an asset without legal title. Persons/ households having no legal right to the affected land but using for their livelihood purposes or residing on that land constructing structure may get compensation for the structure but not for the land. The squatters are also entitled for relocation and livelihood restoration assistance.

8.4.3 Encroachers

Encroachers are persons/households are not the legitimate owner of the affected lands but attached to their titled land. They have extended their land, holdings or structures into public land. They are not entitled to get compensation for the encroached land but may get for the structure and assets developed on it. They will be entitled to get compensation for relocation and livelihood restoration assistance in addition to the compensation for structures.

8.4.4 Tenants/ Lease holders (Public or private land)

Persons/ householders who are not the legitimate owner of the affected lands but rented or leased out it for agricultural, residential or commercial purposes. In such cases, compensation will be provided for the gross harvest of agricultural products for one year or remaining lease period

whichever is higher. But, in case of residential or commercial uses, compensation to be made equivalent to three months rent or for the remaining lease period whichever is higher.

8.4.5 Tenants of affected structures

Persons or households renting for residential or commercial purposes on the affected structure, the affected tenants will be provided with assistance of cash compensation equivalent to three months rent of affected structure, displacement or shifting allowance and in finding out an alternative accommodation on rental basis.

8.4.6 Traders in market places

The traders or operators of the business may need to be displaced due to the interventions of DRMP project for improvement/modernization or extension of the facilities of a business center. In such cases, for a temporary relocation or temporary loss of business to be compensated for wages equivalent to the closure period or arranging an alternative business site to continue the income. In case of a permanent loss, compensation will be the transition allowance equivalent to the loss of income or wages for a period of six months for each affected members of the business.

8.5 Compensation/Assistance Principles

The DRMP project may consider both financial and physical form of compensation or assistance for affected persons or households. The DRMP project will ensure the agreed compensation/ assistance in a timely and transparent manner. Compensation for the affected assets will be as per following principles:

- Replacement cost of equal amount of land of same productive quality to be provided.
- Replacement cost of houses or structures will be equivalent in regard to price and quality of materials and the current labor cost will be applicable. Depreciation or salvage value of the structure will not be deducted in computing the compensation.
- Valuation of the trees that to be felled will be as per current market price. The owner will retain the ownership of the un-felled trees.
- Other acceptable compensation in kind may be provided.
- All monetary compensation will be made in public but through banking system.

In case of temporary land acquisition, part of replacement cost will be paid through Deputy Commissioner (DC) following compensation law of the country. If the compensation under law is less than the replacement cost determined by the DRMP project and approved by the appropriate authority, the remaining amount will be paid to the affected land owners directly by the DRMP project authority.

Table 8.1: Matrix for Compensation and Entitlement

Sl. No	Type of loss	Application	Entitled person	Compensation
1	Arable land (public and private)	Land taken for project interventions through– direct purchase, voluntary donation, contribution against compensation	Usufruct/other Right Holder (private)	Cash compensation for lost land.
			Usufruct/other right holder (private)	Cash compensation.
			Tenant/lease holder (private / public)	Cash compensation equivalent to the replacement value of gross harvest or income for one year or for the remaining period of tenancy agreement, whichever is greater.
			Agricultural labor (private/ public)	Cash compensation equivalent to 6 months' wage and assistance in getting alternative employment.
			Squatter/ encroacher (private / public)	Relocation assistance equivalent to one year's cash return from the land they occupy.
2	Residential/ commercial land (public and private)	=do=	Usufruct Right Holder/Beneficiary (private)	Compensation in cash Relocation assistance as stipulated under matrix 3.
			Usufruct Right Holder/Beneficiary (private)	Compensation Relocation assistance as stipulated under matrix 3.
3	Structures on required land or affected on existing land vacated for project purpose (permanently or temporarily) (permanently or temporarily)	Partial loss of structure on additional private or public land taken or vacating existing land for project purpose and the remaining structure is viable for continuing current use.	Owner with valid title to land or with valid lease deed for the land	• Compensation in cash for affected portion of the structure and other fixed assets at replacement cost, and • Assistance in restoration of the remaining structure • Repair Allowance, minimum 20% of compensation
			Squatters	• Compensation in cash for affected portion of the structure • Transfer/shifting allowance. • Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity.
			Tenants	Cash compensation equivalent to 3 months' rental allowance Transfer/shifting allowance Assistance in alternate rental accommodation

Sl. No	Type of loss	Application	Entitled person	Compensation
			Encroachers	Early notice on the demolition Technical advice in demolition, relocation and repairing of affected structure Payment for repairing only those damages to structure resulting from demolition, if required Transfer/shifting allowances, if required Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity.
		Entire structure affected OR where structures partially affected such that the remaining structure is unviable for continued use.	Owner with valid title to land or with valid lease deed for the land	• Compensation in cash for entire affected structure and other fixed assets (wells, electric and water connections, etc.) at replacement cost, without depreciation. • Transfer/shifting allowance. • Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity.
			Tenant	• Cash compensation equivalentto3months' rental allowance • Transfer/shifting allowance • Assistance in alternate rental accommodation.
			Squatters	• Compensation in cash for affected structure • Transfer/Shifting allowance • Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity. • Early notice for eviction and demolition • Technical advice in demolition or repairing of affected structures
			Encroachers	• Early notice on the demolition before no less than 60 days. • Technical advice in demolition, relocation and repairing of affected structure • Payment for repairing only those damages to structure resulting from demolition, if required • Transfer/shifting allowances • Transition allowance for three months' equivalent to the rent of similar structure in the same vicinity.

Sl. No	Type of loss	Application	Entitled person	Compensation
5		Affected female headed households	Female head of household (titled or non-titled – squatters and encroachers)	• Female headed household affected with structures will be entitled for additional financial assistance equivalent to 3 months' subsistence cost for the incumbent household.
6	Loss of business /income or employment due to displacement	Temporary or permanent loss of business/ incomes/ employment	Affected individuals (titled/non-titled)	• Employment in reconstructed enterprise or package for re-employment or starting business for affected employee. • Transition allowance for the permanent loss of business, incomes &wages equivalent to the loss of income/wages for a period of 6 months for each affected member of households. • In case of temporary relocation and temporary loss of business incomes, compensation will be wages equivalent to closure period OR Alternative business site for continued income stream. • Re-allocation of market corners or shops after construction to the original market trader.
7	Standing crops on affected lands	Crops affected by temporary acquisition/easement	Owner of affected crops(titled/non-titled)	• Compensation in cash at market value.
8	Trees on affected lands	Trees lost	Owner of affected trees(titled/non-titled)	• Compensation in cash calculated on the basis of type, age and productive value of affected trees.
9	Loss of public infrastructure	Infrastructure (electric water supply, sewerage &telephone lines; public health center; public water tanks)	Relevant agencies.	• Compensation in cash at replacement cost to respective agencies or restoration of affected assets.
10	Unforeseen Losses	As identified	As identified	• Appropriate mitigation measures as determined to meet the objectives of this policy framework

8.6 Suggested Methods for Market Price Surveys

The DRMP project will conduct market price survey in accordance with the suggested principles of compensation mentioned in this chapter. The survey will include determination of replacement cost of lands, houses or structures and other moveable and immoveable properties/assets following the method suggested below:

8.6.1 Valuation of Land and replacement cost

- The survey will unambiguously take into account the quality of land under acquisition. Criteria for quality judgments should be the current uses, crop intensity, value of crops produced, accessibility from the road or any other characteristics that influences the market value of lands. The survey will be conducted on the following three categories of people:
- A random sample of at least 10 land owners in the Mouja where sub-component will be implemented and its adjacent areas;
- The most recent buyers and sellers of similar land in the same or adjacent locations; and
- Deed writers in the land registration office can be interviewed to know actual prices (not the prices written in the deed).

8.6.2 Market value of the land

May be calculated by the following procedures:

- The arithmetic means of the reported price by the three groups to be considered as the market price. Variation of 10% or less in the price report of the three groups will be the insignificant difference of price.
- If prices differ significantly (10% or more), the negotiation for current market price should be conducted through an open discussion with the affected and other landowners, community leaders, CBOs/NGOs and the likely forums.
- Replacement cost will be the market value of land plus its registration cost of stamp duty. Registration cost to be calculated on current market price of the land.

8.6.3 Valuation of Houses or Structures

Re placement cost of house or structure will be based on current market price of materials used to build the houses or structures such as bricks, cement, steel/iron rods, sand, bamboo, timber, GI sheet, roofing materials like straw, Golpata, etc. and labor will be based on:

- Survey of current prices of different types of materials from three to five dealers/manufacturers in the local markets.
- The replacement cost of the house/structure will be based on the lowest quoted price for each type of material, plus their carrying costs to the sites.
- The current costs of labor with different skills will be determined by interviewing local contractors, assigned engineers, or local construction workers.

Replacement costs of any other items will be determined based on the current prices of materials, labor, etc. The DRMP project may seek assistance of engineers of LGRD/ PWD, etc. in calculating the cost of replacement or market price of building materials of houses or structures.

8.6.4 Valuation of Trees and other immoveable Assets

The present market value of the trees will be based on the age, productivity, etc. of the trees. The timber traders or fuel wood trades may be surveyed and the highest offer will be accepted. The offers should be documented. Compensation for all other immoveable assets should follow the same principle as for the trees.

8.6.5 Fruits and Other Crops

Compensation for fruits and crops will be the harvest price. As many of the traders will be consulted for price and documented. The highest offer will be accepted.

Market survey for price to determine the replacement cost of all moveable and immoveable assets should start as soon as the required lands under acquisition are identified and all the procedures should be documented by the DRMP project and to be made available to review by the World Bank if desired.

8.7 Consultation

An inclusive consultation with all stakeholders will be conducted. A two-way communication strategy to be followed i.e. the proposed interventions of the project to be informed and the support and agreements on the mitigation to be solicited. The DRMP project will ascertain that consultations have been conducted with owner of lands (both with and without legitimate right) at the earliest possible time of project preparation process. The purpose and objectives of the project activities will need to be consulted.

In case the affected persons are women or small ethnic community, consultation need to be arranged in a culturally appropriate way. Consultation approach, objective and procedures during implementation of the sub-component activities has been discussed in chapter-7.

The minutes of consultation mentioning the date, time, venue with list of participants, issues of discussion, to be prepared and provided to the affected persons and the DRMP project with the receipts of acknowledgement. The DRMP project will preserve all such documented copies and provided to the World Bank as and when desired.

8.8 Preparation of RAP for Sub-components under Implementation

The DRMP project will carry out inventory of losses and census of all affected persons and decide a time limit for acknowledging the structures meant for compensation and assistance. The census will include the temporary displacement of persons for project works and this will be the cut-off date for recognition of losses for resettlement assistance. For a temporary acquisition, the DC will arrange a joint verification of affected assets with the DRMP project and the date of serving the notice under section 4.3 of the ARIPO 1982 will be the cut-off date for compensation for physical assets as per categories recognized in the joint verification.

The DRMP project and the land owner will jointly determine the replacement costs of land based on the most recent transaction made in the same or adjacent localities as per criteria The DRMP project will review the rate and get approval of the Ministry of the Fisheries and Livestock of the government of Bangladesh.

An outline of similar Resettlement Action Plan is provided below. If any amount of land required from private and public sources, detailed losses and the number of land owner and others being affected,

the alternatives considered to minimize the displacement, reviewing of the policies and legal framework related to displacement issues, mitigation measures and the matrix for entitlement, Detailed budget, Time frame, etc. The RAP preparation process will require active involvement of communities, DRMP project, the CBOs (if available), local government representatives, etc.

The DRMP project will document the impacts and the affected persons/households, Agreement with them on mitigation measures and the evidence of implementation of agreed measures.

The voluntary contribution of private land and direct purchase cases will need to be documented with verifiable evidences and must remain open for verification by the DRMP project, the World Bank and other stakeholders of the Project.

The outline of a Resettlement Action Plan is given at Appendix C.

- Resettlement Action Plan is a plan for securing livelihood of project affected persons to be involuntarily resettled. Prognostically, this project is not expected to cause large-scale involuntary resettlement)
- Objective • To identify and improve the livelihoods of affected person by the proposed project, or at least restore them • To justify their displacement after consideration of alternatives that would minimize or avoid displacement • To establish rates of compensation for nature of their losses/ physical resettlement under legal framework and Guideline • To carryout stakeholder engagement and development planning;
- Introduction (Project's profile) • Minimizing Resettlement (Consider the possible alternative ways) • Census and Socioeconomic Surveys • Legal Framework (Host country's laws, standards, policies and plans International Guideline, local Legislations, etc.) • Resettlement Sites • Income Restoration • Institutional Arrangements • Implementation Schedule • Participation and Consultation • Grievance Redress • Monitoring and Evaluation • Costs and Budgets • Annexes
- Income Restoration Strategies • The "Land for Land" and "House to House" • No fixed formula for success • Feasibility of income restoration strategies is key. • Technical • Financial-operation cost & market price • Economic • Implementation Capacity, Acceptable to PAPs • Supports for income earning opportunities, community development, awareness raising 12. Monitoring • Provide early warning of potential environmental damages • Three components •Performance monitoring (Public hearing, relocation, income restoration, etc.) •Impact monitoring •completion audit~ External evaluation • full compensation entitlements within agreed *timeframes • If necessary, changes in RAP procedure are made to improve entitlements
- Social Survey and Public Hearing.

8.9 Implementation of RAP

The DRMP project will provide the RAP (where requires) for review and approval from the relevant Government authorities and the DRMP project will submit the RAP to the World Bank for review and clearance before implementation of the project on the site. The DRMP will start implementation after getting clearance of the World Bank and approval from the Government of Bangladesh. The DRMP will initiate implementation with assistance from the consultants and the DRMP's approved manpower. Individual payment measure for each affected person and also the mitigation measures for replacement of physical structures will also be documented by the DRMP project as a reference

for future. The agreements for voluntary contribution, direct purchase or exchange of land must be executed before taking over land and remain open for disclosure to public.

9. Consultation and Participation

9.1 Introduction

Consultations on the environmental and social issues of the project interventions are required for an effective stakeholders' involvement in Project development and implementation process. Consultations with different stakeholders and related communities, at the planning, selecting and implementation stage of DRMP project interventions need a stakeholder consultation plan. This is required to ensure that an effective, inclusive and culturally suitable consultation is conducted on various environmental studies (LEA, DEA, etc.) required for diversified interventions of the DRMP project.

Public consultation is an important area of this ESMF which bears a major importance to World Bank requirements for an effective stakeholders' involvement in Project development and implementation process. Since the land acquisition and resettlement issues will not be involved in any of the intervention of DRMP project, no major problem with the affected person/ communities are expected. However, involvement of public or people's participation is necessary for the smooth and sustainable implementation process of the interventions.

Table 9.1: Consultation Checklist / Spectrum of the Consultation

Public participation issues	Objective of consultation						
	To inform	**To consult**	**To involve**	**To collaborate**	**To empower**	**To resolve**	**Other**
Goal of participation	To realize the problems, in selecting alternatives, opportunities, mitigation, etc.	To obtain public views, suggestion on different issues	To work with public to ensure that public concerns and aspirations are taken into consideration	To share public in decision making process, in developing alternatives, or in selecting the appropriate solution measures	To take final decision by the public	To solve disputed issues through public participation	Getting forum of Proponents to dispel the outcome of the EA & also the Impact of intervention
Commitment to the public	Keeping people informed with total transparency.	Keeping all informed, and acknowledging their concerns and aspiration, in decision making process	Assuring people to work with them and ensuring that their aspirations have been reflected in decisions to select interventions.	Seeking advices/ suggestions and innovative ideas from public and incorporating their recommendations as much as possible in taking decisions.	Implementation of people's decisions first.	All disputed issues arise due to interventions to be resolved through people's participation.	

9.2 Objectives of Consultation

Consultation with different stakeholders including the public in general, is needed to achieve the following objectives:

- To get a forum of proponents to dispel the outcome of the Environmental assessment in the community as well as the impacts of the interventions.
- To verify the consistency of the EA (Environmental Assessment) findings relating to the prevailing situations.
- To ensure the involvement of the stakeholders including affected parties in various decision-making process in project interventions and also to let them express their opinion freely.
- To get public cooperation in resolving conflicting issues of the project interventions.

9.3 Approaches of Consultation

A participatory approach has to be followed to make the project interventions environmentally sound, economically sustainable, pro-people oriented, beneficial to the community, reflecting the needs and aspirations of the community people through following approaches:

- Stakeholder's views and opinion have to be collected and recorded through a relevant and uniform checklist
- Environmental and social impact have to be discussed including potential benefits of the interventions.
- Institutional support has to be obtained where the institutional stakeholders (GOs, NGOs, CBAs etc.) express their opinion and suggest freely.

9.4 Issues to be Discussed in the Consultation Workshop

The Checklist may contain the following issues:

- Dairy Production, processing, marketing, value addition activities, etc.
- Meat production, Slaughterhouse issues, slaughterhouse byproducts, slaughter house sanitation, etc.
- Breed development, Feeds and fodder, production, processing, preservation, formulation, etc.
- Quarantine and check-post issues in the border for cross-country business of livestock, feed ingredients, vaccines, breeding materials, chicks, eggs, etc.
- Market development for livestock products.
- Institutional capacity building, increasing connectivity, transportation, etc.

The perceptions and the suggestions will be obtained from the stakeholders' community through the checklist to accommodate in the process of designing the project to make it a pro-people and sustainable project. The following procedures may be followed in collecting stakeholders' opinion.

9.5 Consultation Summary

Project preparation team need to confirm types of all stakeholders participating in the consultation. The inventory of checklists for sharing with stakeholders has to be prepared beforehand in the light of a specific project. Each such consultation has to be performed in appropriate venue and then all reflections received from all such venues will be summarized under this subtitle.

The Summary will contain at least the following:

- Types of stakeholders attending the consultations
- Summary of shared concept and interventions
- Views expressed by the stakeholders/ beneficiaries on interventions proposed
- Mitigation/enhancement suggestions provided by stakeholders

Appendix-F and G Provides a practical guidance about conducting a consultation meeting and its outcomes as reference.

9.6 Framework for Future Consultation

A series of consultation will be required in course of planning, selecting, designing and implementing the project. The Stakeholder consultation process will continue throughout the identification stage, sub-project planning and designing stage, implementation stage and also during review and evaluation stages. The 'stakeholder consultation workshop' so far conducted in adjacent four districts including Dhaka has been included in this framework. This consultation is the first step of this process. An information dissemination and consultation framework for different stages of the project has been given below:

Table 9.2: Consultation Framework for Dissemination of Information

Project Stage	Information to be disclosed	Steps of Consultation
Selecting Sub-components for Planning and Designing to implement.	At this stage, the ESIA team will conduct a detailed assessment on the proposed intervention and will be disclosed to all the affected parties of community people. This will include the following information: i) Prevailing situation of environment in the proposed areas ii) Potential environmental impact that may happen due to the interventions. iii) Enhancement measures to protect any deterioration of the environmental situation. (if risk exists) iv) A detailed profile of the affected person/ community affected due to project intervention.	A detailed investigation to be conducted on base line situation for Environmental assessment (LEA and/or DEA). Potential impact and possible mitigation measure for the project interventions to be consulted so that the community has received the perception on the interventions as well as the possible impact they might encounter and to provide their opinion to finalize the plans and designs or to select alternatives according to their needs. The project team will also discuss their findings to the public through EA report.
Before finalizing the plans and designs of the interventions,	Institutional personnel at local level will disclose the information of the interventions after getting environmental assessment analysis from the team. The information must include:	At this stage of project selection process LEA/DEA and EMP will be disclosed to community people, affected persons/community and stakeholder, etc. for their comment.

Project Stage	Information to be disclosed	Steps of Consultation
	i) The design of the interventions ii) The mechanism of implementation iii) Detailed outline of mitigation measure to combat the problem and mitigation mechanism for residual impact. iv) Duration and cost of the project implementation. v) Financing mechanism of the project vi) Grievance Redress Mechanism vii) Monitoring mechanism	Public hearing may be needed to be organized. The project approval will be completed if the, community people, stakeholders and the relevant authorities agree with the interventions meant for execution.
Implementation stage	During this stage, the implementation authority will provide updated report on progress which must include; i) Level of compliance of recommendations of LEA and/or DEA ii) Settlement status of dispute with the affected people (if any) iii) If any sorts of compensations required at all, to be reported.	Dispute mitigation through consultation with the affected parties and other stakeholders.
Monitoring and Evaluation Stage	During this stage, it is necessary to see whether the objectives of the interventions have been achieved, all grievance have been settled, the environmental mitigation measures are in practice or functioning to reduce negative impacts, and recommendations in the ESMP are being complied with or followed.	The progress will be monitored by the DLS/MOFL/IMED and other Government authorities as deemed necessary. A local committee needs to be formed with the community people to perform regular monitoring on environmental and social issues (if required). Implementing authority should consult with local people/community on regular basis to ensure effective performances.

9.7 Disclosure Requirements

The disclosure of the environmental studies is required for the local and national level stakeholders through different methods and means as mentioned below:

9.7.1 Workshop

Workshop would be organized at local and national level to disclose the findings of the Environmental studies (LEA & DEA) of the DRMP project. The disclosure will include project's objectives, description, potential impacts and summary of EA). Representative of implementing agency, the government officials from different departments (DLS, DAE, DOF, department of Environment and Forest, department of Social welfare, etc) representatives from local government institutions, Ministries, NGOs, different professional groups, local elite of the civil society and journalist should be invited in the workshops to share the views and observations with the study team. Suggestions and recommendations on different issues from the participants would be incorporated in the

environmental assessment study (LEA/DEA). The workshops will also help to resolve conflicting issues in the community.

9.7.2 Websites

The implementing agency (DLS) will follow all the procedures of disclosure to meet the disclosure requirements of the World Bank. The final draft will be available in the website of the DLS and also in the website of the CEGIS after the Bank's clearance is obtained. Summary of the projects in Bangla version will be available in the website pages with request for comments and views from stakeholder communities, relevant organized societies/Associations (like; Dairy farmers association, Poultry farmers association, Tanneries associations, etc.), NGOs, civil societies and also from general people. The ESMF will also be posted in the website of the DLS for public opinion. Project related information will be disclosed at different stage of project planning through execution process. It will be disclosed by all relevant agencies including World Bank and also be made available at World Bank Info Shop.

9.7.3 Accessible Hard Copy Documents

The Environmental study related documents will be made available for public and stakeholders' comment in the office of the Project Director at DLS in both English and Bangla version. The summary of the study will be disclosed in the website of DLS. Hard copy of ESMF and EA study will be available in all PIUs in six divisions including Project coordination unit (PCU) at DLS.

9.8 Disclosure Status

The Components and their sub-components of the DRMP projects need to be passed through the World Bank's policy of disclosure requirement and subject to be disclosed to the public through different means of disclosure of information. The key stakeholders and the community people (including beneficiaries and affected people) will be made aware of the project's components and subcomponents in the light of possible impacts in respect of environmental and social aspects. Consultation with the mass people will be conducted and documented for any intervention under DRMP project during environmental screening process or environmental categorization of the sub-component in the process of selecting for implementation.

With a view to fulfill this requirement four of the Stakeholder consultation workshops in four different districts have already been conducted.

Consultation and disclosure is an important part of ESMF and of course necessary for the project planning exercise. The thematic approach of disclosure is to confirm the people of reflecting their opinions/views and sustentions in the detailed implementation plans and mitigation measures for the proposed interventions. Therefore, the project will be socially acceptable and environmentally sound.

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Appendix A: Environmental and Social Impact Assessment form USED in PREPARING ESMF

Questionnaire presented before the stakeholder to collect their views and information regarding possible pollution that may happen due to implementation of the DRMP project interventions.

Name: ---------- Occupation: ---------- Cell Phone No:----------Upazila---------- District: ----------Duration in the occupation: Year:-------- Month----------

Sl. No.	Activities of the Project	What Positive impact the project will exert if implemented. (Some points are given, please add few more)	What negative impact may be experienced	Please reflect your idea, what other pollution may be experienced.	Suggest the mitigation measures
1	Support to small holder in production, management and marketing process	Saves time / saves cost / producer will be encouraged, so, Production----------, A good system will be--------	Air pollution/Noise pollution/ may occur due to transportation, Diseases may transmit from farm to farm due to vehicle		
2	Demonstration on Feeds & Fodder preservation.	Learning by seeing, supply during emergency will ---------	Improper method of preservation may cause rotten of the feeds & fodder.		
3	Capacity development for production of key animal vaccines, disease surveillance, diagnosis and reporting;	Vaccine will be available, quality of treatment improves, So, disease and Pest problem will be ----------	There is a potential risk of diseases if low quality vaccine is produced		
4.	Expanded capacity for biosecurity including border check posts, quarantine facilities, and facilities for producing semen, feed, and vaccines;	Prevents spread of new diseases in the country, Risk of health problem will---------- --------	Import of breeding materials, feed ingredients, and vaccine may cause cross-country diseases.		
5.	expansion of semen delivery infrastructure;	Helps in Breed improvement with sub-sequent----------of meat and milk	Semen transportation system may cause noise and		

Sl. No.	Activities of the Project	What Positive impact the project will exert if implemented. (Some points are given, please add few more)	What negative impact may be experienced	Please reflect your idea, what other pollution may be experienced.	Suggest the mitigation measures
			air pollution, spread of diseases,		
6.	Open nucleus improvement program for quality bucks and rams;	Increase breeding facility and subsequent ---------- in production	Degradation of soil and crop, characteristic odor and noise pollution may occur.		
7.	Capacity development for delivery of quality chicks.	Chick supply increases, sub-sequent ----------in production	Noise and air pollution, spread of diseases, Hatchery waste may cause water and soil pollution.		
8.	Developing and promoting low-cost housing designs to improve productivity and reduce diseases	Disease problems will be reduced, Protects health, So, production will be increased and environment will ----------	Improper management may cause: Air, soil and water pollution		
9.	Promoting manure management technologies, including biogas converters to manage manure;	Reduce the risk of diseases, Environmental condition will----------, Cooking fuel will be available, so, depletion of trees will reduce resulting---------- environmental condition.	Digested effluents may overflow to cause: Soil and water pollution; Odor and fly problems to neighbors; Social problem may arise.		
10.	Promoting processing options to reduce nutrient losses and add value to manure;	Wastes will turn into resources, Soil fertility will be maintained resulting ---------- crop production and Environment ---------- ----------	Initial processing practices through aerobic digestion may cause: Air, soil and water pollution; Odor and fly problems to neighbors; Social problem may arise.		
11.	Providing of a package of climate smart services and inputs to new producers.	They will be Encouraged resulting increased production, Unemployment Problem will be ----------, Environment ----------	Traditional practices may cause environmental degradation		

Sl. No.	Activities of the Project	What Positive impact the project will exert if implemented. (Some points are given, please add few more)	What negative impact may be experienced	Please reflect your idea, what other pollution may be experienced.	Suggest the mitigation measures
12.	Slaughterhouses improvement	Quality meat will be available, Blood and other by-products will be utilized, Environment will be----------	Soil, water and air pollution, Health hazard, Bacterial contamination, Movement may transmit diseases.		
13.	Renewable energy installations (solar panels, bio-digesters)	Environmental condition will----------	Soil and water pollution, air Pollution, Health hazard, Odor and social problem due to overflow from the digester.		
14.	Climate smart transportation connecting production areas to markets	Time and cost will be saved, Marketing will be easier, ----------	Air and Noise pollution from the transportation; Risk of disease transmission		
15.	Upgrading or replacing dilapidated and decaying buildings to protect health and welfare of workers, livestock, consumers and that take climatic risks into account.	Environment friendly, healthy and safe working place will be created, service quality and volume will be increased. ----------	Air Pollution, dust from decaying building materials, Risk of injuries and Dampness may cause health problems.		
16.	Upgrading of selected farm to market and transportation means	Communication will be easier, farm management will improve, quality milk will be available in the market. Farmers will be---------- to produce more milk.	Air and Noise pollution from the transportation; Risk of disease transmission.		
17.	Planned investments to Gender Issue, private sector participation	Women will be empowered, Female entrepreneur will be created resulting more production, nutritional problem will ----------, environment----------	Unplanned investment may lead to loosing of capital; Hazards may likely to arise due to unplanned activities.		

Sl. No.	Activities of the Project	What Positive impact the project will exert if implemented. (Some points are given, please add few more)	What negative impact may be experienced	Please reflect your idea, what other pollution may be experienced.	Suggest the mitigation measures
18.	Public education campaign using traditional and new media tools:	Environment will improve, Public awareness will be created, Pollution will reduce----------	Media tools may not be in proper use; without awareness building, Environment cannot be maintained		
19.	Awareness building on: dairy, beef, broiler management and Processing, food safety, and better nutrition practices.	Quality food will be available. Public health will be ensured, people will be aware about safe food.	Soil, air and water bodies and even underground water may be polluted by the pollutant generated and indiscriminate disposal.		
20.	Campaign targeting mothers and school children to change behavior regarding public health issues, and nutritional food	Good nutritional practices will be created among the children, Malnutrition problem will be reduced, good workforce in the nation will be ----------	Behavioral change on public health issues and nutritional knowledge may not be effective means to uphold the environmental quality		
21.	Conducting school milk program as it pertains to livestock product Consumption.	Malnutrition of the children will be reduced. Healthy and good workforce will be created.			
22.	Strengthening DLS for (a) Evidence based Policy formulation at the MoFL. Elaborating related regulations, procedures and manuals taking consideration of Gender issues, Environmental Pollution, climate risks and GHGs;	Helps in maintaining good environment, Skilled and efficient persons will be created, Services to the nation will increase, and addressing the climate change realities will be easier. ----------	Traditional service oriented practices and policies are not adequate to cope with the climate change realities and therefore, environmental degradation may occur, Prevention of environmental degradation is not possible without		

Sl. No.	Activities of the Project	What Positive impact the project will exert if implemented. (Some points are given, please add few more)	What negative impact may be experienced	Please reflect your idea, what other pollution may be experienced.	Suggest the mitigation measures
			proper regulatory functions and implementation of laws.		
23.	Support to academic and vocational training to produce a cadre of high-quality graduates with the knowledge and professional skill needed to spur the development of livestock	Efficient manpower will be produced, Quality services will be ensured.	Livestock activities generate a lot of pollutant, without efficient knowledgeable persons; environmental degradation cannot be controlled.		
24.	Market linkage through productive partnership	Oligololistic market influence will give place to competitive market, ensuring fairer price to producers and sustainability of farm economy	Partnership choice may be erratic, leading to exploitation of the weaker partner		
25.	Livestock insurance	Insurance of the stock will make enterprises sustainable and veterinary services and animal health aspects are likely to be efficient	Farmers of Bangladesh have limited or no experience in insurance. A weak clientele paradigm may handicap insurance activities		

NB: Please mention any point left in the checklist in regard to activities, nature of pollution and its mitigation measure that you think 'important to add'.

Appendix B: Environmental and Social Screening Format

Environmental Screening Format

General Information	1. Name of Component & sub-component:				
	2. Location:				
	3. Type of work Please Tick mark (√):	New Construction		Renovation	
	a)	Others (please specify)			
	4. Objective of the proposed sub-component and brief description:				
	b)				

1) Potential Environmental Impact during Establishment Phase:

Ecological impacts:

- Felling of trees — Significant □ — Moderate □ — Minor □ — Number of tress
- Clearing of vegetation — Significant □ — Moderate □ — Minor □
- Presence of protected area, key biodiversity area in the location of the sub component — Yes □ — No □

Note: *If answer to the above question is "Yes", then a detail analysis of alternative location would be carried out to identify possible locations that would eliminate/reduce risk to biodiversity, vegetation, and habitat.*

Physicochemical impacts:

- Noise pollution — Significant □ — Moderate □ — Insignificant □
- Air pollution — Significant □ — Moderate □ — Insignificant □
- Water pollution — Significant □ — Moderate □ — Insignificant □
- Soil pollution — Significant □ — Moderate □ — Insignificant □

Bio-securities issues:

- Transmission diseases from farm to farm — Yes □ — No □ — Unlikely □
- Transmission of cross-country diseases — Yes □ — No □ — Unlikely □
- Odor and fly problems to neighbors — Yes □ — No □ — Unlikely □
- Transmission of zoonotic diseases — Yes □ — No □ — Unlikely □

2) Potential Environmental Impact during Operational Phase:

Physicochemical impacts:

• Noise pollution	Significant □	Moderate □	Insignificant □
• Air pollution	Significant □	Moderate □	Insignificant □
• Water pollution	Significant □	Moderate □	Insignificant □
• Soil pollution	Significant □	Moderate □	Insignificant □

Bio-securities issues:

• Transmission diseases from farm to farm	Yes □	No □	Unlikely □
• Transmission of cross-country diseases	Yes □	No □	Unlikely □
• Odor and fly problems to neighbors	Yes □	No □	Unlikely □
• Transmission of zoonotic diseases	Yes □	No □	Unlikely □

3) Summary of Possible environmental impacts of the sub component :

4) Overall Comments:

Prepared by :(Name, designation, mobile number, signature, date) ----------

Reviewed by:(Name, designation, mobile number, signature, date) ----------

-

Social Screening Format

General Information	5. Name of Component & sub-component:					
	6. Location:					
	7. Type of work Please Tick mark (√):	New Construction		Renovation		
	c)	Others (please specify)				
	8. Objective of the proposed sub-component and brief description:					
			Please Tick mark (√)			
	9. Does the proposed sub-component involve all types and classes of the people in the location of sub-components		Yes	No	Not applicable	
B. Social Impact	1. Is there any chance of resettlement of people living in the land for the implementation of the sub-component?		□	□	□	
	2. Is there any chance of land acquisition from public for the implementation of the sub-component?		□	□	□	
	3. Is there any chance of destruction of homestead land?		□	□	□	
	4. Is there any chance of resettlement of people living in the government land for the implementation of the sub-component?		□	□	□	
	5. Is there any chance of destruction of religious and cultural place?		□	□	□	
	6. Is there any chance of loss of employment of the people of lower down the living standard for the implementation of the sub-component?		□	□	□	
	7. Is there any chance of destruction of cultural tradition of people?		□	□	□	
	8. Mitigation Measure		□	□	□	
C. Livelihood Impact	1. Is there any chance of losing access to the usual productive area due to implementation of the sub-component?		□	□	□	
	2. Is there any chance of losing means of livelihood due to the implementation of the sub-component?		□	□	□	
	3. Is there any chance of losing private community-based livestock rearing facilities like grazing field?		□	□	□	
	4. Is there any chance of losing existing social or financial safety network due to implementation of the sub-component?		□	□	□	
	5. Is there any chance of being vulnerable to or come under the wrath of local elite due to producers organizations with this sub-component?		□	□	□	
D. Small Ethnic Communities (ethnic People)	1. Is any sub-component located in an area where small ethnic communities live?					
	N.B. If yes, please answer the following questions					
	2. Are the ethnic people involved in the planning and implementation of the sub-component?		□	□	□	
	3. Is there any chance of ethnic people be affected?		□	□	□	
	4. What are the feelings of ethnic people to the proposed sub-component?					

	Positive	□
	Negative	□
	Not any one	□
	If the answer of the question number 4 is negative, please briefly describe the reason and mitigation measure:	
Other Information (if any)		
Name & Signature of the Assessor:		
Date:		

Appendix C Outline of Resettlement Action Plan

Resettlement Action Plan (RAP) prepared shall contain the following.

- *Description of the project*: General description of the project and identification of the project area.
- *Potential impacts:* Identification of (a) the project component or activities that give rise to resettlement; *(b) the zone of i*mpact of such component or activities; (c) the alternatives considered avoiding or minimizing resettlement; and (d) the mechanisms established to minimize resettlement, to the extent possible, during project implementation.
- *Objectives*: The main objectives of the resettlement program.
- *Census and Socio-economic survey:* The findings of census and socioeconomic studies conducted including(a) the results of a census survey covering (i) current occupants of the affected area to establish a basis for the design of the resettlement program and to exclude subsequent inflows of people from eligibility for compensation and resettlement assistance; (ii) standard characteristics of displaced households, including a description of production systems, labor, and household organization; and baseline information on livelihoods (including, as relevant, production levels and income derived from both formal and informal economic activities) and standards of living (including health status) of the displaced population; (iii) the magnitude of the expected loss--total or partial--of assets, and the extent of displacement, physical or economic; (iv) information on vulnerable groups or persons for whom special provisions may have to be made; and (v) provisions to update information on the displaced people's livelihoods and standards of living at regular intervals so that the latest information is available at the time of their displacement; (vi) land tenure and transfer systems, including an inventory of common property natural resources from which people derive their livelihoods and sustenance, non-title-based usufruct systems (including fishing, grazing, or use of forest areas) governed by local recognized land allocation mechanisms, and any issues raised by different tenure systems in the project area; (vii) the patterns of social interaction in the affected communities, including social networks and social support systems, and how they will be affected by the project's (viii) public infrastructure and social services that will be affected; and(ix) social and cultural characteristics of displaced communities, including a description of formal and informal institutions (e.g., community organizations, ritual groups, nongovernmental organizations (NGOs)) that may be relevant to the consultation strategy and to designing and implementing the resettlement activities.
- *Legal framework*: The findings of an analysis of the legal framework
- *Institutional framework:* The findings of an analysis of the institutional framework covering (a) the identification of agencies responsible for resettlement activities and NGOs that may have a role in project implementation; (b) an assessment of the institutional capacity of such agencies and NGOs; and (c) any steps that are proposed to enhance the institutional capacity of agencies and NGOs responsible for resettlement implementation.
- *Eligibility*: Definition of displaced persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cut-off dates.
- *Valuation of and compensation for losses*: The methodology to be used in valuing losses to determine their replacement cost; and a description of the proposed types and levels of

compensation under local law and such supplementary measures as are necessary to achieve replacement cost for lost assets.

- *Resettlement measures:* A description of the packages of compensation and other resettlement measures that will assist each category of eligible displaced persons to achieve the objectives of the policy. In addition to being technically and economically feasible, the resettlement packages should be compatible with the cultural preferences of the displaced persons, and prepared in consultation with them.
- *Community participation*: Involvement of resettles and host communities, (a) a description of the strategy for consultation with and participation of resettlers and hosts in the design and implementation of the resettlement activities; (b) a summary of the views expressed and how these views were taken into account in preparing the resettlement plan; (c) a review of the resettlement alternatives presented and the choices made by displaced persons regarding options available to them, including choices related to forms of compensation and resettlement assistance, to relocating as individuals families or as parts of preexisting communities or kinship groups, to sustaining existing patterns of group organization, and to retaining access to cultural property (e.g. places of worship, pilgrimage centers, cemeteries); and (d) institutionalized arrangements by which displaced people can communicate their concerns to project authorities throughout planning and implementation, and measures to ensure that such vulnerable groups as indigenous people, ethnic minorities, the landless, and women are adequately represented.
- *Grievance procedures:* Affordable and accessible procedures for third-party settlement of disputes arising from resettlement; such grievance mechanisms should consider the availability of judicial recourse and community and traditional dispute settlement mechanisms.
- *Organizational responsibilities*: The organizational framework for implementing resettlement, including identification of agencies responsible for delivery of resettlement measures and provision of services; arrangements to ensure appropriate coordination between agencies and jurisdictions involved in implementation; and any measures (including technical assistance) needed to strengthen the implementing agencies' capacity to design and carry out resettlement activities; provisions for the transfer to local authorities or resettlers themselves of responsibility for managing facilities and services provided under the project and for transferring other such responsibilities from the resettlement implementing agencies, when appropriate.
- *Implementation schedule*: An implementation schedule covering all resettlement activities from preparation through implementation, including target dates for the achievement of expected benefits to resettlers and hosts and terminating the various forms of assistance. The schedule should indicate how the resettlement activities are linked to the implementation of the overall project.
- *Costs and budget:* Tables showing itemized cost estimates for all resettlement activities, including allowances for inflation, population growth, and other contingencies; timetables for expenditures; sources of funds; and arrangements for timely flow of funds, and funding for resettlement, if any, in areas outside the jurisdiction of the implementing agencies.
- *Monitoring and evaluation*: Arrangements for monitoring of resettlement activities by the implementing agency, supplemented by independent monitors as considered appropriate by the Bank, to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; involvement of the

displaced persons in the monitoring process; evaluation of the impact of resettlement for a reasonable period after all resettlement and related development activities have been completed; using the results of resettlement monitoring to guide subsequent implementation.

In case affected persons are less than 20 households, an abridged RAP needs to be prepared. The content of Abridged Resettlement Action Plan (ARAP) is as under:

(a) a census survey of displaced persons and valuation of assets;

(b) description of compensation and another resettlement assistance to be provided;

(c) consultations with displaced people about acceptable alternatives;

(d) institutional responsibility for implementation and procedures for grievance redress;

(e) arrangements for monitoring and implementation; and

(f) a timetable and budget.

Appendix D: Terms of Reference for Initial Environmental Examination (IEE) of Sub-Components under DRMP

Terms of Reference for Initial Environmental Examination (IEE) of Sub-Components under DRMP

Background

Department of Livestock Services (DLS) requires conducting Initial Environmental Examination (IEE) for Proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project, as per the DOE and World Bank guideline. The IEE reports will be submitted to DOE for obtaining clearance as well as suggestions on further environmental impact assessment. The LEA/IEE will be conducted for the following detail activities:

- Establishing greater capacity for sampling and expanding laboratory capacity at central and regional level for testing food and feed samples;
- Upgrading of selected farm to market and transportation means.
- Developing and promoting low-cost housing designs to improve productivity and reduce diseases
- Food processing
- Development of Slaughterhouses

The IEE study should be conducted according to following scope of works.

Objective

Main objective of the IEE study to identify possible environmental impacts and mitigation measures and preparing environmental management plan, which will help to implement the sub-projects in environmental friendly manner.

Scope of works

(i) Design and conduct environmental screening to collect the baseline information on the physical, biological and socioeconomic characteristics of the study area. The consultant will ensure that primary data and laboratory testing (for ex: soil testing, air quality, flora, fauna, etc.) are collected for the necessary parameters at all sites. Based on the field visit baseline data needs to be cross checked with secondary sources, if available. Include information on any changes anticipated before the project commences. This section should indicate the accuracy, reliability and sources of the data and consequences for assessing impacts and their mitigation;

(ii) Conduct detail public consultation in the project areas with local NGOs, public, civil society and other relevant stakeholders;

(iii) Suggest mitigation measures to reduce negative impact including cumulative impacts, where appropriate, due to project location, and related to project design, construction, and operations. Potential environmental enhancement measures and additional considerations will also be covered;

(iv) Prepare a general environmental monitoring plan for the proposed projects which will describe the impacts to be monitored, and time, location and frequency of monitoring activities, and person/authority to carry out the activity. The tentative environmental monitoring and

mitigation costs should also be described;

(v) Prepare an IEE report for each of the project component/sub-component.

Structure of the IEE report

IEE report should be prepared as per following structure.

1. Executive Summary
2. Introduction: This section will include (i) purpose of the report and (ii) extent of the IEE study.
3. Description of the Project: This section will provide a brief but clear picture about (i) type of project; (ii) category of Project; (iii) need for project; (iv) location (use maps showing general location, specific location, and project site); (v) size or magnitude of operation;(vi) proposed schedule for implementation)
4. Description of the Environment: This section will provide sufficient information on the existing environmental resources in the area affected by the project, including the following:

   (i) Physical Resources: e.g. environmental quality, climate, topography and soils, surface water & groundwater, geology/seismology.

   (ii) Ecological Resources: e.g. terrestrial flora, faunal diversity, protected areas

   (iv) Social and Cultural Resources: (e.g. population and communities (e.g. numbers, locations, composition, employment), health facilities, education facilities, socio-economic conditions (e.g. community structure, family structure, social wellbeing), physical or cultural heritage, current use of lands, Indigenous Peoples, structures or sites that are of historical, archaeological, paleontological, or architectural significance.
5. Screening of Potential Environmental Impacts and Mitigation Measures: Mitigation measures, where appropriate, will also be recommended to address environmental problems due to project location, and related to project design, construction, and operations as well as cumulative impacts of the project. Potential environmental enhancement measures and additional considerations will also be covered.
6. Analysis of Alternatives: This section will describe the alternative options of the project interventions and their impacts. Also, the justification for selection of best alternative should be explained here.
7. Institutional Requirements and Environmental Monitoring Plan: The environmental monitoring plan will describe the impacts to be monitored, and when and where monitoring activities will be carried out, and who will carry them out. The environmental monitoring and mitigation costs should also be described.
8. Public Consultation and Information Disclosure: This section will describe the process undertaken to involve the public in project design and recommended measures for continuing public participation; summarize major comments received from beneficiaries.
9. Findings and Recommendations: This section will include an evaluation of the screening process and recommendation will whether significant environmental impacts exist needing further detailed study or EIA. If there is no need for further study, the IEE itself may need to be supplemented by an EMP. If an EIA is needed, then this section will include a brief terms of

reference (TOR) for the needed follow-up EIA, including approximate descriptions of work tasks, professional skills required, time required, and estimated costs.

10. Conclusions: This section will discuss the result of the IEE and justification.

Appendix E: Terms of Reference for Environmental and Social Impact Assessment (ESIA) of Sub-Components under DRMP

Terms of Reference for Environmental and Social Impact Assessment (ESIA) of Sub component under DRMP Project

Background

Environmental pollution due to indiscriminate disposal of slaughter house effluents and wastes is a major concern. A strong regulatory function along with awareness building in the society on environmental issues may be an important priority option for the planners because it is a major public health concern. Department of Livestock Services (DLS) requires conducting Environmental and Social Impact Assessment (ESIA) for the proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project, as per the DOE and World Bank guideline. The ESIA will be conducted for development of large scale slaughterhouses. The ESIA reports will be submitted to DOE for obtaining environmental clearance. The ESIA study should be conducted according to this Terms of Reference (ToR).

Objective

The objective of the ESIA study is to assess the impacts of the proposed interventions on the environmental and social components and suggest an environmental management plan for sustainable development of the project. The ESIA will ensure to involve beneficiaries in project conceptualization, Planning and Implementation. The specific objectives are:

- To provide a consistent and common basis for the application of ESIA to protect environment and society by ensuring that the project is environmentally and socially sound.
- To assist ESIA practitioners in identifying, quantifying and evaluating the potential environmental and social consequences of development of slaughterhouses so that the impacts of the projects are highlighted and the project design can be altered or management measure can be developed to enhance positive impacts and lesson or alleviate negative impacts.
- To ensure that all development with full consideration for economic and environmental optimization, and for a long-term sustainability and equitability of environmental social resource conservation.

Scope of works

The main scope of services for the study are as follows:

- Establish the environmental and social baseline conditions of the project;
- Select environmental and social components likely to be impacted by the proposed project interventions;
- Assess environmental and social impacts of the proposed interventions to be proposed by feasibility study team;
- Conduct adequate consultations for ensuring public participation;

- Prepare an environmental social management plan (ESMP), which would include mitigation measures, enhancement measures, compensation measures and an environmental monitoring plan; and
- Prepare an ESIA report.

Study Output:

The study will come up with ESIA report which would contain the following

- A report will be produced at the end of the "Environmental and Social Impact Assessment (ESIA) for development of slaughterhouses at large scale;
- ESIA report will be submitted incorporating the findings of the ESIA study including an environmental management plan (EMP) with cost of suggested mitigation measures, enhancement measures, compensation measures and an environmental monitoring plan considering pre-construction, construction and post-construction phases;

ESIA process

As suggested in the EIA Guidelines, the process to be followed for the environmental and social impact assessment study of the proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project. Activities to be carried out at the different steps of the ESIA process are specified in the following sections.

Review of Project Proposal

The detailed project interventions will be prepared while conducting feasibility study of the DRMP project. The consultant will collect the information on type of project, category of Project, need for project, location (use maps showing general location, specific location, and project site), size or magnitude of operation, proposed schedule for implementation, and Activities during Pre-project, Implementation and Post-implementation Phases from project authority. Then the study team will review the project proposal.

Background Data Collection and Baseline Description

The baseline condition of the project influence area will be drawn according to information collected from secondary and primary sources through literature review, field investigations and consultation with different stakeholders.

The baseline condition will be established in respect of Physical resources (climate, metrology, geology, topography, land resources, soils, and water resources), Biological resources (fisheries, agriculture and ecosystems), Socio-cultural resources (socio-economic conditions) and Environmental conditions (noise, water and soil quality). During baseline data collection, identification of problems in respect of the proposed interventions, effluent and waste disposal location and adjoining area will also be collected from the peoples through consultations.

Scoping

A scoping process will be followed for selecting Important Environmental and Social Components (IESCs) which are likely to be impacted by the proposed project interventions. Scoping will be done in two stages. Individual professionals of ESIA study team will make a preliminary list of the components pertaining to their disciplines, which are likely to be impacted by the project activities.

The second stage will include village scoping sessions where stakeholder perceptions will be obtained about the important environmental and social components. Professional judgment of the ESIA team members as well as the stakeholder opinion obtained in the scoping sessions will be considered in selecting the IESCs.

Bounding

Area likely to be impacted (project influence area/study area) by the project interventions will be tentatively delineated considering the watersheds of the river, surrounding land use, the drainage area and patterns, irrigation and other socio-economic issues such as river dependent settlements, hat bazar, agriculture land, road network etc. Digital Elevation Model (DEM), spatial land use and road network data will be used for delineating study area boundary. Necessary consultation with the DLS officials and feedback from the local people during baseline field visit will also be considered. The entire area likely to be influenced by the proposed project interventions will be considered as the potential area to be impacted.

Major Field Investigation

The ESIA study team members will collect intensive data on possible positive and negative impacts, direct and indirect impacts and immediate and long-term impacts of the project after procuring the detailed project descriptions from the DLS. Intensive data on the IESCs will be collected from the project site as well as surroundings during major field investigation stage. In this case, information on the IESCs will be gathered through public/ stakeholder consultations using checklists.

Intensive consultation with the local people will be carried out in each case for securing people's participation. The multidisciplinary ESIA study team members will also make professional observations during the field visits which will be concentrated on the historical status and public responses for the IESCs and the possible condition of the same against the proposed project.

Prediction of Environmental and Social Impact

Two sets of scenarios will be generated for assessing the impacts of the project on the environmental and social components considering positive and negative impacts, direct and indirect impacts, and immediate and long-term impacts. The future-without-project (FWOP) scenario will predict the status of the IESCs if the proposed work would not be undertaken while the future-with-project (FWIP) will predict the status of the IESCs if the project would be implemented as per plan. Difference between the FWIP and FWOP will be taken as the impact of project on the environmental and social components.

Impact Quantification and Evaluation

Attempts will be made to quantify the impacts due to the proposed project interventions. But it may not be possible to quantify all impacts, especially the impacts on some of the environmental and social components. In those cases, qualitative impacts will be assessed and scores will be assigned with (+) sign for positive impacts and (-) sign for negative impacts. The magnitude of both positive and negative impacts should be indicated considering sustainability, magnitude, extent, duration and reversibility.

Environmental Management Plan

The environmental and social management plan (ESMP) should be prepared suggesting mitigation measures for minimizing the effect of the negative impacts, enhancement measures for increasing the benefit of the positive impacts, compensation measures for compensating the negative impacts that

cannot be mitigated and an environmental monitoring plan for monitoring changes taking place through implementation of the project. Cost estimate for implementing the ESMP should also be suggested for inclusion in the project cost estimate.

Mitigation plan

The negative impacts of the specified project, assessed at the environmental and social impact assessment stage, should be picked up for inclusion in the mitigation plan. Measures aimed at minimizing the impact of the negative impacts should be suggested in the mitigation plan. Residual impacts shall be measured considering the mitigation plan.

Enhancement plan

The positive impacts of the project, assessed at the environmental and social impact assessment stage, should be picked up for inclusion in the enhancement plan. Measures aimed at increasing the benefit of the positive impacts should be suggested in the enhancement plan.

Compensation plan

Negative impacts for which mitigation measures cannot be suggested should be picked up for the compensation plan that should indicate monetary compensation to be paid.

Monitoring Plan

Monitoring plan should consider the important environmental and social components likely to be impacted by the specified project. The monitoring plan should include the list of indicators with suggestions on data to be collected, processed, analyzed and interpreted to detect changes taking place in the impacted area. Location and frequency of data collection on each indicator along with institutional arrangement of environmental monitoring should be suggested in the monitoring plan.

Structure of ESIA Report

The Consultant is required to prepare an ESIA report that is concise and limited to significant environmental issues. The main text should focus on findings, conclusions and recommended actions, supported by summaries of the data collected and citations for any references used in interpreting those data. Detailed or uninterrupted data are not appropriate in the main text and should be presented in appendices or a separate volume. Unpublished documents used in the assessment may not be available and should also be assembled in an appendix.

ESIA Report should be prepared as per following key contents, but not limited to:

1. **Executive Summary**
2. **Introduction:** This chapter should include Background, Project and study objective, Study area, Scope of work, Limitation, The EIA Team, Structure of the Report/Report Format
3. **Policy, Legal and Administrative Framework:** This chapter should include Introduction, Relevant National Policies and Legislations, Social Policies and Regulatory Framework, World Bank Safeguard Policy and Compliance with EIA Guidelines
4. **Approach and Methodology of the ESIA Study:** This chapter should include Overall Approach **which are** Project Design and Description, Baseline Data Collection and Analysis, Scoping, Bounding, Major Field Investigation, Impact Assessment and Quantification, Evaluation of Impact, Mitigation Measures, Assessment of Residual Impacts, Environmental and social Management Plan, Public Consultation and Disclosure, and EIA Report Preparation

5. **Project Description:** This Chapter should provide a brief but clear picture about (i) type of project; (ii) category of Project; (iii) need for project; (iv) location (use maps showing general location, specific location, and project site); (v) size or magnitude of operation;(vi) proposed schedule for implementation) and Activities during Pre-project, Implementation and Post-Implementation Phases
6. Environmental and Social Baseline: This Chapter should provide sufficient information on the existing environmental and social resources in the area affected by the project, including the following:

   (i) Physical Resources: e.g. environmental quality, climate, topography and soils, surface water & groundwater, geology/seismology.

   (ii) Ecological Resources: e.g. terrestrial flora, faunal diversity, protected areas

   (iv) Social and Cultural Resources: (e.g. population and communities (e.g. numbers, locations, composition, employment), health facilities, education facilities, socio-economic conditions (e.g. community structure, family structure, social wellbeing), physical or cultural heritage, current use of lands, Indigenous Peoples, structures or sites that are of historical, archaeological, paleontological, or architectural significance.

7. Public Consultation and Disclosure: This chapter should include Introduction, Objective of Public Consultation and Disclosure Meeting, Approach and Methodology of Public Consultation and Disclosure Meeting, Public Consultation Meeting (PCMs) and Public Disclosure Meeting (PDMs)
8. Identification of Important Environmental Components: This Chapter should include Important Environmental and Social Components with their rationale of selection.
9. Impact Assessment: This Chapter should include Introduction, Impact Screening, Impacts on physical and Biological environment, Environmental quality, Socio-economic resources during pre-implementation, implementation and post-implementation phases.
10. Environmental Management Plan: This Chapter should include Introduction, Mitigation Plan, Enhancement Plan, Compensation Plan and Monitoring plan during pre-implementation, implementation and post-implementation phases and Cost Estimation for Environmental Management and Monitoring Plan
11. List of References

Appendixes

Appendix F: Gender Action PLAN

A tentative gender action plan has been prepared for the project to consider by the DRMP project and relevant agencies before implementation of sub-components based on social screening, social impacts assessment and designing the activities for implementation. A specific gender action plan will be developed based on the available analysis at the implementation level. The draft gender action plan has been proposed in Table below:

Draft Gender Action Plan for the DRMP

Objectives	Measures	Targets	Responsibility/Means of verification
Gender inclusive social impact analysis	Attention to gender concerns in social impact analyses. Include analyses of gender risks, constraints, and opportunities Ensure adequate reflection of women's voices in the analysis	Attaining at least 30% participation of women in all structured surveys; Attaining 40% participation of women in consultations; Ensure women's response recorded in data collection process.	DRMP project/ In the design of sub-components.
Gender equity in livestock production and value chain process in marketing	Assessment of key constraints for women in milk and meat value chains, and mapping their potentials in growth or remunerative segments to increase women's economic participation. A gender inclusive value chain mapping/ assessment:	Increase in women's participation in economic activities.	DRMP project. Designing stage for each activity, and at monitoring level
	Assessment to identify areas and constraints for women already in livestock and poultry related employment and income generation opportunities	Women friendly work environment in milk and meat sector activities.	DRMP project. Survey at monitoring and evaluation
Gender mainstreaming in livestock and poultry value chain governance and management	Revisions in policies e.g., NLDP-2007, National Poultry Development policy- 2008, to include more opportunities for women. Increase participation and training opportunities for women in livestock value chain governance and management. Identify suitable and optimum levels of women's participation in governance and management Identifying opportunities to strengthen gender equity in	Increase in women's economic participation in every aspect of value chain activities including governance and management.	DRMP project, DLS and MoFL. Design stage for each activity, and at monitoring phase.

Objectives	Measures	Targets	Responsibility/Means of verification
	institutional setup (including gender sensitization training needs)		
Gender mainstreaming in Milk and Meat production system	Needs assessment to flag any actions needed to protect the gender specific interests of women workers. Training and capacity building for women workers involved in food safety. Action research on back-yard poultry and small ruminant rearing where women's involvement is practically high. Supporting in networks and platforms of women's organizations and within producer and trader organizations to reflect interests of women in these sectors.	Increase in women participation in milk and meat production system.	DoF/SDF Design stage for each activity, and at monitoring level
Gender equality in community empowerment and livelihoods	Providing both men and women (Couples) with information and skills for alternative livelihoods Vocational skills training to youths (male and female) Building of social capital and influence and leadership in the community, through women's community saving groups and women's participation in area- wise sub groups and development associations. Prioritizing recruitment of women extension and training officers and community facilitators Engaging equal number of female and male facilitators	Promotion of women in project management and livelihood opportunities	DRMP project, DLS and MoFL. Design stage for each activity, and at monitoring level
Gender balance in access to nutrition and food security	Nutrition component to address food security issues and improve dietary practices especially for pregnant women and children.	Ensuring that Women enjoy equal access to food and nutrition.	DRMP project and DLS. Beneficiary feedback survey

Appendix G: Stakeholders' Consultation

Stakeholders' Consultation

Consultation Workshop was conducted with the Stakeholders' representative of different occupational communities and also witnessed by the officials and representatives of MoFL, WB, DLS, and Experts from different project/organizations and reflected their views. Participants of different level stakeholders are represented in the following Table.

Participants Present in Stakeholders' Consultation

District	Venue	Officials participated	Consultants attended	Representative from occupational communities
Manikgonj	Officers' club Conference Hall	Dy. Secretary to the MOFL (Key person), Director (Ext.) of DLS, Dy. Director (Dhaka Division) of DLS, DLO-Manikgonj, ULOs & VSs of all Upazila, Principal Scientific Officer of Disease Investigation Laboratory, Manikgonj UNO, Manikgonj Sadar.	National Consultants for Dairy, National Consultants for Waste management and National Consultants for Food Safety &Quality control of DRMP project and Dairy Expert, Animal Health Expert and the Environmental and social study team from CEGIS.	Dairy Farmer, Poultry Farmer, Feed Seller/ Manufacturer, Meat (beef & mutton) sellers, Sweetmeat maker, Milk Collector, Poultry sellers and processors in the live-bird market, etc.
Narayangonj	LGED Conference Hall	Joint Secretary to the MOFL (Key Person), Director (Ext.) of LS, Dy. Director (Dhaka Division) of LS, DLO-Narayangonj, ULOs & VSs of all Upazila in the district, UNO, Narayangonj Sadar,WB Representative.	National Consultants for Dairy, National Consultants for Waste management and National Consultants for Food Safety &Quality control of DRMP project and Dairy Expert, Animal Health Expert and the Environmental and Social study team from CEGIS.	Dairy Farmer, Poultry Farmer, Feed Seller/ Manufacturer, Meat (beef & mutton) sellers, Sweetmeat maker, Milk Collector, Poultry sellers and processors in the live-bird market, etc.
Savar (Dhaka)	Govt. Dairy Farm Conference Hall	DG of DLS (Key person), Director (Ext.) of DLS, Dy. Director (Dhaka Division) of LS, DLO-Dhaka, ULOs & VSs of all Upazila in the district, WB representative.	National Consultants for Dairy, National Consultants for Waste management and National Consultants for Food Safety &Quality control of DRMP project and Dairy Expert, Animal	Dairy Farmer, Poultry Farmer, Feed Seller/ Manufacturer, Meat (beef & mutton) sellers, Sweetmeat maker, Milk Collector, Poultry sellers and processors in the live-bird market, etc.

District	Venue	Officials participated	Consultants attended	Representative from occupational communities
			Health Expert and the Environmental and Social study team from CEGIS.	
Gazipur	Walton Tower (Private Venue) Conference Room	Director (Ext.) of DLS, Dy. Director (Dhaka Division) of DLS, DLO-Gazipur, ULOs & VSs of all Upazila in the district	National Consultants for Dairy, National Consultants for Waste management and National Consultants for Food Safety &Quality control of DRMP project and Dairy Expert, Animal Health Expert and the Environmental and Social study team from CEGIS.	Dairy Farmer, Poultry Farmer, Feed Seller/ Manufacturer, Meat (beef & mutton) sellers, Sweetmeat maker, Milk Collector, Poultry sellers and processors in the live-bird market, etc.

The officials of MOFL, DLS, and the representatives from occupational communities agreed and opined that a revolutionary and drastic change in milk and meat production, processing, value addition, marketing, consumption of quality products is the demand of present day context and for nutritional requirements of the nation. The Joint Secretary to the MOFL suggested to follow strictly the mitigation measures and to maintain highest level of environmental quality. He said that there is a vast scope of development of livestock sector but never at the cost of environmental degradation. In regard to public health concern, DG of DLS suggested to follow the recommended safety level of the quality standard for livestock products for Sanitary and Phyto-sanitary (SPS) measures regulated by the World Organization for Animal Health (OIE).

Issues Discussed in the Consultation Workshop

The DRMP project is a project of multi-dimensional interventions/activities. So, the participants were asked through a checklist of 23 activities consisting different intervention that may cause environmental and public health concern. They were requested to reflect their views on interventions on environmental and health related issues and to identify the problems that the stakeholders generally encounter. The mitigation measures were also requested from them to combat or prevent the situations.

The Checklist contained the following issues:

1. Dairy Production, processing, marketing, value addition activities, etc.
2. Meat production, Slaughterhouse issues, slaughterhouse byproducts, slaughter house sanitation, etc.
3. Breed development, Feeds and fodder, production, processing, preservation, formulation, etc.
4. Quarantine and check-post issues in the border for cross-country business of livestock, feed ingredients, vaccines, breeding materials, chicks, eggs, etc.
5. Market development for livestock products.

6. Institutional capacity building, increasing connectivity, transportation, etc.

The perceptions and the suggestions were obtained from the stakeholders' community through the checklist to accommodate in the process of designing the project to make it a pro-people and sustainable project. The following procedures were followed in collecting stakeholders' opinion.

Consultation Summary

Four stakeholder consultation workshops were organized at the adjacent districts (Manikgonj, Narayangonj, Gazipur and also one at Savar in Dhaka district) along with the checklists for collecting information from the key stakeholder community like Dairy farmers, Poultry farmers, Feed seller/manufacturers, Sweetmeat makers/sellers, Meat (beef & mutton) sellers, Poultry sellers and processors in the live-bird market, etc. Since the project comprises multi-dimensional interventions, a variety of issues was necessary to discuss in the workshop. The facilitators explained properly all relevant points and issues in the workshop to enable the participants to understand the main components and interventions/activities and to respond accordingly. The participants were asked to point out the potential problems and solutions of the environmental and health concerns of the interventions. Participants responded and reflected their opinion on environmental and health related issues and possible mitigation measures against each of the activities. List of participants with signature and photograph of the consultation workshop is given in Appendix G. Outcomes of the Stakeholder consultation workshop are summarized below.

All the participated stakeholders have opined that the interventions/activities under the different components of DRMP project will exert benefit to them.

- They all agreed that certain level of pollutant will be produced during implementation of the interventions under DRMP Project but can be minimized or prevented/ mitigated by adopting/ practicing some strict control measures.
- They agreed that awareness building, training, technological and some financial support is required to achieve the goals of the project interventions.
- They all said that strict bio-security protocol is necessary to control and prevent the transmissible diseases in the livestock and poultry enterprises.
- They opined that fodder production, demonstration and preservation need to be intensified and training on fodder production and preservation is necessary. They suggested to create silage pit properly; Keep fodder in dry place; Use modern tools and techniques; Training; Produce feed free from getting sour; Demonstration plot; to use modern transportation system, and not to use any pesticide;
- They agreed that capacity development for production of key animal vaccines, disease surveillance and diagnosis is required to protect major diseases. Testing of imported vaccine is necessary.
- Regarding biosecurity including border check posts, quarantine facilities, and facilities for producing semen, feed, and vaccines; the stakeholders suggested that the quarantine acts should be followed strictly. Adequate quarantine station is necessary. Transports carrying inputs should be sterilized.
- Semen delivery infrastructure should be increased, Training of the personnel and safety rules to be followed.

- To upgrade or replace dilapidated and decaying buildings need to follow the environmental rules of the country to avoid pollution, health hazard as well as the safety of the workers and public.
- Awareness building on: dairy, beef, broiler management and processing, food safety, and better nutrition issues of the project can be achieved through proper waste management, Training on these issues are required.
- Campaign targeting mothers and school children to change behavior regarding public health issues, and nutritional food consumption practices can be achieved through changing behavior and nutritional knowledge of the mothers and children through practices.
- Strengthening DLS for Evidence based policy formulation at the MoFL, consideration of Gender issues, Environmental Pollution, climate risks and Green House Gases (GHGs); the participants feel necessity of a strong manpower group in regulatory mechanisms of the country in livestock sector, particularly the executives of the DLS and the Ministry of Fisheries and Livestock (MOFL).
- Training of the graduates need to be arranged in country and abroad to get high-quality graduates having knowledge and professional skills to stimulate the development of livestock sector to a desired level.

The above noted comments, views and suggestions have been incorporated in the tables provided for possible negative impacts and their mitigation measures (in Chapter-5.7).

Appendix H: Participant's Lists and Photographs

List of Participants of stakeholder Consultation Meeting at Manikganj

Attendance Sheet

Consultation workshop on ESMF and PMP for Proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project

Venue: Officers Club, Sadar Upazila, Manikganj Date: 20.12.2017

Sl. No.	Name	Address / Designation	Mobile No.	Signature
1.	Nigar Sultana	Deputy Secretary, MoFL	01552459651	20.12.17
2.	Dr. Md. Mehedi Hossain	Ex Director DLS	01912316861	
3.	Dr. Badal Krishna Halder. P.S.O. Manikganj	P.S.O. Manikganj	01712042740	20/12/17
4	Dr. Hiresh Ranjan Bhowmik	Director DLS	01711579847.	20.12.17.
5	Dr. Khan Shahidul Hasan	EX DG, BLRI Env-ILM Manager Expert, DRMP	01552376788	20/12/17
6.	Md. Shahabuddin Miah	DD. Dhaka Division. DLS	01711-963468	20/12/17
7.	Dr Md. Khaled	DL Manik.	01711461886	
8.	Dr. Md. Golam Rabbani	DPD, DRMP	01731243454	20.12.17
9.	Md. Kawsar Hossain	Dairy Expert, CEGIS.	01732-119419	
10	Dr. Aralendu Kumar Saha	Consultant. CEGIS	01714256434	20.12.17
11.	Md. Nasim Ali Mandal	National Dairy Expert, DRMPP	01715111570	20/12/17
12.	DR. MD. Abdur Razzak	ULO Saidpur, Nilphamari	01711-221688	20/12/17
13.	DR. A. M. Rezzaqul Haider.	ULO, Shibalaya	01711-175866	20/12/17
14.	DR. Md. Khorshed Alam	ULO Saturia	01711332003	20/12/17

CEGIS Center for Environmental and Geographic Information Services
(A Public Trust under the Ministry of Water Resources)
House 6, Road 23/C, Gulshan-1, Dhaka-1212, Bangladesh.
Tel: 88 02 58817648-52, 9842561, 9842551, 9842542 Fax: 88 02 9855935; 88 02 9843128 e-mail: cegis@cegisbd.com http://www.cegisbd.com

Attendance Sheet

Consultation workshop on ESMF and PMP for Proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project

Venue: Officers club, Sadar Upazila. Manikganj Date: 20.12.17

Sl. No.	Name	Address / Designation	Mobile No.	Signature
15	Dr. Md. Habibul Islam	upazila livestock officer, ghior, Manikganj	01712245599	
16.	Dr. Faruque Ahmed	Upazila Livestock Officer, Singair, Manikganj	0189-563475	
17	Dr. Abdeer Razzaque	VLO Daulatpur	01711703067	
18.	Mirjamun Rahman	President of Bondhusomiti	01728181072	
19.	Dewan Dalowar Hossain	PRO: Sweet heaven.	01719956379	
20	[illegible]	[illegible]	01714886080	
21.	M. A. IRAD	Kanishi agro.	01717-760397	
22.	Shahidul	Mogsinul	01715431505	
23.	Ranjit Sarkar.	Silli	01718059854	
24	MD. KAMAL-	MANIKGONG	01711954069	
25	preodip das	Manikgonj	01711137790	
30	ABUL-KASHEM	MANIKGONJ	01717273873	
31	Ab: Karim	Manikgonj	01928[illegible]	
32	Kazi Zahangir Hossain	Manikgonj V.F.A.	01762546967	
33	Amanullah	VFA-	01733652217	Amanullah

Venue: Officers club, Sadar Upazila. Manikganj Date: 20.12.17

Sl. No.	Name	Address / Designation	Mobile No.	Signature
34	DR. Md. Monir Hossain.	VS, Manikganj Sadar.	01712767992	

Some Photographs of stakeholder Consultation Meeting at Manikganj

List of Participants of Stakeholder Consultation Meeting at Savar

Attendance Sheet

Consultation workshop on ESMF and PMP for Proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project

Venue: Savar Dairy Training Center (SDTC), CCBDF, Savar Date: 23-12-2017

Sl. No.	Name	Address / Designation	Mobile No.	Signature
15.	Abul Monsur Ahmed	Dairy Officer CCBDF	01712272632	
16.	Dr. Gouranga Basak	Dyre officer CCBDF.	01718057544	26/12/17
17.	Dr. Mylemmad saydur Rahman	ULO Dhamrai	01913187759	26/12/2017
18.	Dr. Nurullah MD Ahsan	VO, CCB&BF	01712-751816	
19	Dr. md. Mahbubul Islam	ULO(LIR) AI Lab, Saver	01712021585	231217
20	Dr Md Asaduzzaman	DPD, BUPT DLS, Dhaka.	01711456006	26.12.17
21	DR. Mohammad Fazley Rabbi Mondal	ULO, SAVAR, DHAKA	01819462845 01716235933	22/12/17
22.	DR. Md. Enadul Haque Talukder	DLO Dhaka	01711131689	29/12/17
23	Md. Asaduzzaman Bhuiyan	Upazila Livestock Officer Savar Sadar Poultry Complex	01711542410	23/12/17
24.	Dr. Md. Hefjur Rahma.	ULO	01711187497	23/12/17
25.	Dr. Hiresh Ranjan Bhowmik	Director DLS	01711573847.	29.12.17
26.	Md. Shahabuddin Mia	D.D. Dhaka Divisia	01711-963458	29/12/17
27.	Md. Akhtaruzzaman	SSDS WB	01715201739	
28	MD. HAJY. MD. Faruque Ahmed	Shovo Chukno House	01673904741	

Attendance Sheet

Consultation workshop on ESMF and PMP for Proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project

Venue: Savar Dairy Training Center (SDTC), CCBDF, Savar   Date: 23.12.2017

Sl. No.	Name	Address / Designation	Mobile No.	Signature
15.	Abul Monsur Ahmed	Dairy Officer CCBDF	01712272632	[signature]
16.	Dr. Gouranga Basak	Byre officer CCBDF.	01718057544	[signature] 23.12.17
17.	Dr. Muhammad Sayedur Rahman	ULO Dhamrai	01913187759	[signature] 23/12/2017
18.	Dr. Nurullah MD Ahsan	VO, CCBDF	01712-751816	[signature]
19	Dr. md. mahbubul Islam	ULO(LR) AI Lab, Saver	01712021585	[signature] 23.12.17
20	Dr. MD Asaduzzaman	DPD, BUPT DLS, Dhaka.	01711456005	[signature] 23.12.17
21	DR. Mohammad Fazley Rabbi Mondal	ULO, SAVAR, DHAKA	01819462845 01716233933	[signature] 23/12/17
22.	DR. Md. Emdadul Hoque Talukder	DLO Dhaka	01711131689	[signature] 23.12.17
23	Md. Arifuzzaman Bhuiyan	Owner Agua Land Agro Complex [illegible]	01711542410	[signature] 23/12/17
24.	Dr. Md. Hafizur Rahman	ULO	01711187497	[signature] 23/12/17
25.	Dr. Hiresh Ranjan Bhowmik	Director DLS	01711573847.	[signature] 23.12.17
26.	Md. Shahabuddin Mia	D.D. Dhaka Division	01711-963458	[signature]
27.	Md. Akhtaruzzaman	SSDS WB	01715201739	[signature]
28	MD. HAJY MD. Faruque Mia	Shovo Chukno House.	01673904741	[signature]

Venue: Savar Dairy Training Center (SDTC), CCBDF, Savar   Date: 23.12.2017

Sl. No.	Name	Address / Designation	Mobile No.	Signature
29	Md. Shah Alam	Dealer Quality Feed Ltd.	01819908840	[signature]
30	ওমর ফারুক ✓	[illegible]	01722239674	[signature]

Some Photographs of Stakeholder Consultation Meeting at Savar

List of Participants of Stakeholder Consultation Meeting at Gazipur

Attendance Sheet

Consultation workshop on ESMF and PMP for Proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project

Venue: Euro-Bangla Chinese Restaurant, Shibbari Moor, Joydebpur, Gazipur   Date: 30th December, 2017

Sl. No.	Name	Address / Designation	Mobile No.	Signature
1	Md. Mazharul Alam Akanda	Director, Production DLS	01712960134	
2	Md. Zahir uddin	PSO, LR	01716720472	
3	Dr. Md. Ruhul Amin	PD, DRMP	01911737086	
4	Dipak Ranjan Roy	DLO Gazipur.	01712217585	
5	Mohd. Liaqhat Ali	DD (incharge) DLS, Dhaka	01711904468	
6	Dr. Mamunul A. Sarker	DED(O) CEGIS, Dhaka	01817006781	
7	Dr. Md. Golam Rabbani	DPD, DRMP	01731243654	
8	Dr. MD. Zahirul Islam	ULO. Sadar Gazipur.	01711157404	
9	Dr. Kazi Rafiquzzaman	ULO. Kaliakair Gazipur.	01716-290288	
10	Dr. Abdullah-Al-Monun	Veterinary Surgeon, Sadar Gazipur	01722265083	
11	Dr. Lutfur Rahman	Veterinary Surgeon, DVH Gazipur	01711064176	
12	Md Abzur uddin	H/A, DLO Gazipur	01715758981	
13	Md. Homuehabie	KA / Bel manu(ga)	01912530183	
14	জনাব: [illegible]	[illegible]	01713-512635	

CEGIS Center for Environmental and Geographic Information Services
(A Public Trust under the Ministry of Water Resources)
House 6, Road 23/C, Gulshan-1, Dhaka-1212, Bangladesh.
Tel: 88 02 9881764 8-52; 9842581, 9842551, 9842542 Fax: 88 02 9855935; 88 02 9843128 e-mail: cegis@cegisbd.com http://www.cegisbd.com

Sl. No.	Name	Address / Designation	Mobile No.	Signature
15	Abu Hanif	meat [illegible]	01920080290	
16	Mashiur Rahman Khan	Feed Seller Gazipur	01716-607530	
17	AHMED ZISHAN	SPF [illegible]	01794375448	
18	Mahadi Hasan Seroj	[illegible]	01726351223	
19	Saiful Islam	Farmer Poultry	01946089388	
20	Shadhana	Dairy farm	01712769843	
21	Sadar	Milk "	01712152377	
22	Tareq Hasan	Poultry vita Chowrasta	01712245010	
23	Dr. Md. Anisur Rahman	ULO, Kapasia Gazipur	01711247180	
24	DR. MD. SALIM ULLAH	ULO, Kaliganj Gazipur	01760760199	
25	Dr. Md. Abdul Jalil	ULO, Sreepur Gazipur.	01711469436	
26	Dr. Khan Shahidul Haque	Environment-ILM Expert DRMP, DLS	01552376788	
27	Md. Nasim Ali Mandal	National Dairy Expert, DRMPP, DLS	01715111570	
28	[illegible]	[illegible]	01711209695	
29	Md. Khairul Alam Bhuiyan	SFC Safe Food Corporation	01678709336	
30	Dr. Arabinda Kumar Saha	Consultant CEGIS	01714256434	30.12.17
31	Md. Kawsar Hossain	Consultant Dairy Expert. CEGIS.	01732119419	30/12/17
32	Md Motalib Hossain Sarker	Director	01715015419	30/12/17

Sl. No.	Name	Address / Designation	Mobile No.	Signature
33	Bashir Ahmed	[illegible]	01711816791	
34	MD. SALAH Uddin	New Agro firm	01713589078	
35.	Muhammad Badrul Ahsan	Safe food corp.	01711574836	

Some Photographs of Stakeholder Consultation Meeting at Gazipur

List of Participants of Stakeholder Consultation Meeting at Narayanganj

Attendance Sheet

Consultation workshop on ESMF and PMP for Proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project

Venue: Conference Room. LGED Bhaban. Narayanganj Date: 26/12/2017

Sl. No.	Name	Address / Designation	Mobile No.	Signature
1	Md. Kamruzzaman Joint Secretary	MoFL	01736-614873	26/12/17
2	Mahbuba Ara Khan	Deputy Executive Director	01819261274	26.12.17
3	Dr. Md. Ruhul Amin	DLS	01911737086	26/12/2017
4	Md Shahabuddin Miah	DD-Dhaka Division DLS	01711-963458	26/12/17
5	Dr. Md. Golam Rabbani	DPD, DRMP	01731243654	
6	Dr. Md. Mehedi Hossain	Food safety & Q.C. Expert DRMP	01912311861	
7	Dr. Khan Shahidul Haque	Environment -I&M Expert DRMP Project	01552376788	
8	Md. Nasim Ali Mandal	National Dairy Expert, DRMP	01715111570	
9	Dr. Md. Shafiqul Islam	ULO. Araihazar.	01711-576397	
10	Dr. Md. Farooque Ahmed	ULO, Bandar	01711-979967	
11	Dr. Khair uddin Ahmed	VS/DVH	01712019116	26.12.17
12	Md. Kawsar Hossain	CEGIS, Dairy Expert.	01732119419	26/12/17
13	Dr. Arsalan Kumar Saha	Consultant CEGIS	01716256434	26.12.17
14	Md. Mohabub Hossain Sarker	Director CEGIS	01715015419	26.12.17

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House 6, Road 23/C, Gulshan-1, Dhaka-1212, Bangladesh.
Tel: 88 02 9881648-52, 9842581, 9842551, 9842542 Fax: 88 02 9853935, 88 02 9843128 e-mail: cegis@cegisbd.com http://www.cegisbd.com

Attendance Sheet

Consultation workshop on ESMF and PMP for Proposed Livestock Development-based Dairy Revolution and Meat Productions (DRMP) Project

Venue: Conference Room, LGED, Narayanganj Date: 26.12.17

Sl. No.	Name	Address / Designation	Mobile No.	Signature
15	ISHAK SOBHAN	Env Specialist WB	01772553880	
16	Dr. Md. Shahiduzzaman	DLO, Narayanganj	01796-588430	
17	Dr. Narayan Ch. Sarker	DLO. Narayanganj Sadar	01711947585	26.12.17
18	MD. Rafiqul Islam	VLO, Sonargaon.	01911-116961	26/12/17
19	Dr. A.B.M. Jahangir Ratan	ULO Rupganj	01711580926	
20	Md. Rejaul Karim	Manager Rupshi fish feed Ltd.	01709446766	
21	MD: Rahim	[illegible]	01776342686	Rahim
22	Md. Alauddin	Jalkuri West Para Bandar	01918-999359	[illegible]
23	Md. Ashraf Uddin Jaod	Chairman. Narayanganj	01675664344	
24	MD Jaled Hossain	Mc Pharly	01679987893	
25	S.M. Helaluddin Raju	Paragon Poultry Feed and Medicine	01712971902	
26	[illegible]	[illegible]	01812462871	
27	DR. Md. Shahadat Hossain	VS, Sadar	01812908866	
28	Probir ghosh	Fatulla	01911382854	Probir

Venue: Conference Room, LGED, Narayanganj Date: 26.12.17

Sl. No.	Name	Address / Designation	Mobile No.	Signature
29	Biswajit Ghosh	Fatulla	01678126919	
30	MD Enamul Haque	Fatulla	01674-917721	
31	Md. Mosharraf	fatulla	01911867096	

Some Photographs of Stakeholder Consultation Meeting at Narayanganj

Collecting Information from Poultry Farm Owner

Collecting Information from Poultry Farm Owner at Manikganj Sadar, Manikganj

Collecting Information from Poultry Farm Owner at Savar, Dhaka

Collecting Information from Poultry Farm Owner at Gazipur Sadar, Gazipur

Collecting Information from Dairy Farm Owner

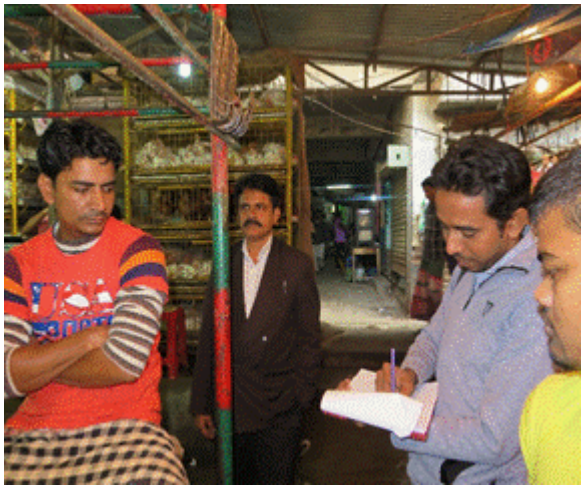
Collecting Information from Dairy Farm Owner at Manikganj Sadar, Manikganj

Collecting Information from Dairy Farm Owner at Gukulnagar, Savar, Dhaka

Collecting Information from Dairy Farm Owner at Jalkuri, Narayanganj Sadar, Narayanganj

Collecting Information from Slaughterhouse, Live Bird and Feed Market

Collecting Information from Slaughterhouse at Joydebpur Bazar, Gazipur Sadar, Gazipur



Collecting Information from Live Bird Market at Savar, Dhaka

Collecting Information from Feed Seller at Manikganj and Savar

Appendix I: Protected Areas of Bangladesh

Protected Areas of Bangladesh

Declared National Parks of Bangladesh

SL	Name of the park	Location	Area (ha.)	Gazette notification date
1	Bhawal National Park	Gazipur	5022.29	11-05-1982
2	Madhupur National Park	Tangail and Mymensingh	8436.13	24-02-1982
3	Ramsagar National Park	Dinajpur	27.75	30-04-2001
4	Himchari National Park	Cox's Bazar	1729.00	15-02-1980
5	Lawachara National Park	Moulavibazar	1250.00	07-07-1996
6	Kaptai National Park	Chittagong Hill Tracts	5464.78	09-09-1999
7	Nijhum Dweep National Park	Noakhali	16352.23	08-04-2001
8	Medhakachhapia National Park	Cox's Bazar	395.92	04-04-2004
9	Satchari National Park	Habigonj	242.91	10-10-2005
10	Khadimnagar National Park	Sylhet	678.80	13-04-2006
11	Baroiyadhala National Park	Chittagong	2933.61	06-04-2010
12	Kuakata National Park	Patuakhali	1613.00	24-10-2010
13	Nababgonj National Park	Dinajpur	517.61	24-10-2010
14	Singra National Park	Dinajpur	305.69	24-10-2010
15	Kadigarh National Park	Mymensingh	344.13	24-10-2010
16	Altadighi National Park	Naogaon	264.12	14-12-2011
17	Birgonj National Park	Dinajpur	168.56	14-12-2011

Source: Bangladesh Forest Department, 2017

Declared Wildlife Sanctuaries of Bangladesh

SL	Name of the Wildlife Sanctuary	Location	Area (ha.)	Gazette notification date
1	Rema-Kalenga Wildlife Sanctuary	Hobigonj	1795.54	07-07-1996
2	Char Kukri-Mukri Wildlife Sanctuary	Bhola	40.00	19-12-1981
3	Sundarban (East) Wildlife Sanctuary	Bagerhat	122920.90	29-06-2017
4	Sundarban (West) Wildlife Sanctuary	Satkhira	119718.88	29-06-2017
5	Sundarban (South) Wildlife Sanctuary	Khulna	75310.30	29-06-2017
6	Pablakhali Wildlife Sanctuary	CHT	42069.37	20-9-1983
7	Chunati Wildlife Sanctuary	Chittagong	7763.97	18-3-1986

SL	Name of the Wildlife Sanctuary	Location	Area (ha.)	Gazette notification date
8	Fashiakhali Wildlife Sanctuary	Cox's Bazar	1302.42	11-4-2007
9	Dudpukuria-Dhopachari Wildlife Sanctuary	Chittagong	4716.57	6-4-2010
10	Hazarikhil Wildlife Sanctuary	Chittagong	1177.53	6-4-2010
11	Sangu Wildlife Sanctuary	Bandarban	2331.98	6-4-2010
12	Teknaf Wildlife Sanctuary	Cox's Bazar	11614.57	09-12-2009
13	Tengragiri Wildlife Sanctuary	Barguna	4048.58	24-10-2010
14	Dudhmukhi Wildlife Sanctuary	Bagerhat	170.00	29-01-2012
15	Chadpai Wildlife Sanctuary	Bagerhat	560.00	29-01-2012
16	Dhangmari Wildlife Sanctuary	Bagerhat	340.00	29-01-2012
17	Sonarchar Wildlife Sanctuary	Patuakhali	2026.48	24-12-2011
18	Nazirganj Wildlife (Dolphin) Sanctuary	Pabna	146.00	01-12-2013
19	Shilanda-Nagdemra Wildlife (Dolphin) Sanctuary	Pabna	24.17	01-12-2013
20	Nagarbari-Mohanganj Dolphine Sanctuary	Pabna	408.11	01-12-2013

Source: Bangladesh Forest Department, 2017

Declared Special Biodiversity Conservation Areas

SL	Name of the Area	Location	Area (ha.)	Gazette notification date
1	Special Biodiversity Conservation Area(Ratargul)	Sylhet	204.25	31.05.2015
2	Altadighi water based Special Biodiversity Conservation Area	Naogaon	17.34	09.06.2016

Source: Bangladesh Forest Department, 2017

Declared Marine Protected Area

SL	Name of the MPA	Location	Area (ha.)	Gazette notification date
1	Swatch of No-Ground Marine Protected Area	South Bay of Bengal	173800	27-10-2014

Source: Bangladesh Forest Department, 2017

Decaled Eco-parks

SL	Name of the Eco-park	Location	Area (ha.)	Gazette notification date
1	Madhabkundu Eco-Park	Moulavibazar	265.68	2001
2	Sitakunda Botanical Garden and Eco-park	Chittagong	808	1998
3	Modhutila Eco-Park	Sherpur	100	1999
4	Banshkhali Eco-Park	Chittagong	1200	2003
5	Kuakata Eco-Park	Patuakhali	5661	2005
6	Tilagar Eco-Park	Sylhet	45.34	2006
7	Borshijora Eco-Park	Moulavibazar	326.07	2006
8	Rajeshpur Eco-Park	Comilla	185.09	-

Source: Bangladesh Forest Department, 2017

Declared Botanical Gardens

SL	Name of the Botanical Garden	Location	Area (ha.)	Gazette notification date
1	National Botanical Garden	Dhaka	84.21	1961
2	Baldha Garden	Dhaka	1.37	1909

Source: Bangladesh Forest Department, 2017

Decaled Safari Parks

SL	Name of the Safari Park	Location	Area (ha.)	Gazette notification date
1	Bangabandhu Sheikh Mujib Safari Park	Gazipur	1493.93	2013
2	Bangabandhu Sheikh Mujib Safari Park	Cox's Bazar	600	1999

Source: Bangladesh Forest Department, 2017

Decaled Ecologically Critical Areas of Bangladesh

SL	Name of the ECA	Ecosystem Type	Location	Area (ha.)	Gazette notification date
1	Cox's Bazar-Teknaf Peninsula	Coastal-Marine	Cox’s Bazaar	20,373	1999
2	Sundarbans (10 km landward periphery)	Coastal-Marine	Bagerhat, Khulna & Satkhira	292,926	1999
3	St. Martin's Island	Marine Island with coral reefs	Teknaf upazila, Cox’s Bazaar	1,214	1999
4	Hakaluki Haor	Inland Frestwater Wetland	Sylhet and Moulvi Bazar	40,466	1999

SL	Name of the ECA	Ecosystem Type	Location	Area (ha.)	Gazette notification date
5	Sonadia Island	Marine Island	Moheshkhali upazila, Cox's Bazar	10,298	1999
6	Tanguar Haor	Inland, Fresh water Wetland	Moulvi Bazar	9,727	1999
7	Marjat Baor	Oxbow Lake	Kaliganj, Jhenaidah & Chaugacha upazila of Jessore	325	1999
8	Gulshan-Baridhara Lake	Urban Wetland	Dhaka city	101	2001
9	Buriganga	River	Around Dhaka	1336	2009
10	Turag	River	Around Dhaka	1184	2009
11	Sitalakhya (around Dhaka city)	River	Around Dhaka	3771	2009
12	Balu including Tongi canal	River	Around Dhaka	1315	2009
13	Jaflong-Dawki	River	Jaflong, Sylhet	1493	2015

Source: Department of Environment, 2017