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Social Management Framework
National Agricultural Technology Program
Phase-II (NATP-II), Bangladesh

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November 2014

		
<p>Traditional plough going away</p>	<p>Power Tiller replaced plough</p>	<p>Diesel operated thresher already popular</p>
		
<p>Milking Cow, man & woman together</p>	<p>Black Bengal Goat poor people's asset</p>	<p>Backyard poultry operated by women</p>
		
<p>Fishing in aquaculture pond</p>	<p>Shoulder load, a heavy work load</p>	<p>Fish van, a potential intermediate technology</p>

Abbreviations and Glossaries

<i>Aman</i>	Crop season, usually August to December
ADP/RADP	Annual Development Programme/Revised Annual Development Programme
AI	Artificial Insemination
ARAP	Abbreviated Resettlement Action Plan
ARIs	Agriculture Research Institutes (BARI, BRRI, BFRI etc)
<i>Aus</i>	Crop season, usually April to July
<i>B. Aman</i>	Broadcast <i>Aman</i>
BADC	Bangladesh Agriculture Development Corporation
<i>Bagda</i>	Shrimp <i>P. Monodon</i>
<i>Bangalee</i>	A cultural identity of people speaking Bengali
<i>Bangla</i>	Bengali
<i>Baor</i>	Oxbow lake
BARC	Bangladesh Agriculture Research Council
BARI	Bangladesh Agriculture Research Institute
BBS	Bangladesh Bureau of Statistics
<i>Beel</i>	Floodplains
BFRI	Bangladesh Fisheries Research Institute
<i>Bigha</i>	One third of an acre
BINA	Bangladesh Institute for Nuclear Agriculture
BLRI	Bangladesh Livestock Research Institute
<i>Boro</i>	Crop season, usually January to April/May
BRRI	Bangladesh Rice Research Institute
CBO	Community Based Organization
CEAL	Community Extension Agent in Livestock
CGP	Competitive Grants Program
<i>Chasi/ krishok</i>	Farmer
CIG	Common Interest Group
CSO	Civil Society Organization
DAE	Department of Agriculture Extension
DC	Deputy Commissioner, Head of district bureaucracy
DLS	Department of Livestock Services
DoF	Department of Fisheries
DECC	District Project Implementation Committee
DTW	Deep Tube Well (used for irrigation and drinking water)
EMP	Environmental Management Plan
EOP	End of Project
ERD	Economic Relations Division (of the Ministry of Finance)
ESMF	Environmental and Social Management Framework
FAO	Food and Agriculture Organization
FFS	Farmer Field School (an extension method applied in a DANIDA funded project)
FGD	Focus Group Discussion
FIAC	Farmers' Information and Advice Centre (at UP level promoted by the NATP)
FMD	Foot and Mouth Disease of Cattle

GAF	Gender Assessment Framework
GDP	Gross Domestic Product
GO	Government Organization
GoB	Government of Bangladesh
<i>Golda</i>	Prawn
Ha	Hectare
<i>Haor</i>	Low lying flooded area of Northeast Bangladesh
HCR	Head Count Ratio
HH	Household
HIES	Household Income and Expenditure Survey
HYV	High Yielding Variety (usually of crops)
IAF	
Innovative Agriculture Fund	
ICM	Integrated Crop Management – later phase of IPM
IMED	Implementation Monitoring and Evaluation Division (Ministry of Planning)
IPM	Integrated Pest Management (without using chemical pesticides)
<i>Jolmohal</i>	Public water bodies
<i>Khas land</i>	Public land, land owned by the government
Kutcha	Mud wall/ bamboo or tin fenced or mud floor house
LAP	Land Acquisition Proposal
LEAF	Local Extension Agent in Fisheries
LGB	Local Government Body
LGED	Local Government Engineering Department
LLP	Low Lift Pump (used mainly for irrigation)
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
MFI	Micro-Finance Institute
ML	Medium and Large (farm)
MOA	Ministry of Agriculture
MoFL	Ministry of Fisheries and Livestock
<i>Mouza</i>	A village map prepared by the officials of the land revenue administration
MT	Metric Ton
NARS	National Agricultural Research System (Coordinated by the BARC)
NATP	National Agricultural Technology Project
NGO	Non Government Organization
O&M	Operation and Maintenance
OP	Operational Policy
PAP	Project Affected Person
<i>Paurasova</i>	Municipal Council/ Urban Local Government Unit
PD	Project Director
PMU	Project Monitoring Unit
PO	Producer Organization

PRA	Participatory Rural Appraisal
PRSP	Poverty Reduction Strategy Paper
PSC	Project Steering Committee
<i>Pucca</i>	Brick Cement construction
RAP	Resettlement Action Plan
SA	Social Assessment
SCD/ VCD	Supply Chain Development/ Value Chain Development
SCD	Supply Chain Development
SHG	Self Help Group
SIA	Social Impact Assessment
SMF	Social Management Framework
SMF	Small and Marginal Farm
SPGR	Sponsored Public Goods Research
SRDI	Soil Resources Development Institute
STW	Shallow Tube Well (used mainly for irrigation)
<i>T. Aman</i>	Transplant <i>Aman</i>
SEVCP	Small Ethnic and Vulnerable Communities' Development Plan
SEVCPMF	Small Ethnic and Vulnerable Communities' Management Framework
<i>UP</i>	Union Parishad, Grassroots local government council
UNO	Upazila <i>Nirbahi</i> (Executive) Officer, Head of Sub district bureaucracy
<i>Upazila/ UZ</i>	Sub district – lowest administrative unit, second tier of rural local government
WB	World Bank
WFP	World Food Program

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Executive Summary

1. Introduction

Background:

Government of Bangladesh has been implementing National Agricultural Technology Project Phase-1 (NATP-1) since 2008 with the assistance of the World Bank, IFAD and US-AID which is going to be completed by 2014 and a new phase is expected to commence from 2015 for additional six years. The NATP has been developed as a comprehensive long term program to be implemented nationwide in three phases. This Social Management Framework concerns the NATP-2. The NATP-2 is proposed to be implemented in a total of 270 *upazilas* of 56 districts including 120 first phase *upazilas* in 25 districts and 30 Additional Financing *upazilas* in six districts.

Country Context:

Bangladesh has made considerable progress in economic and social development, sustaining high rates of economic growth of around 6.0 percent annually over the last twelve years and reducing poverty from 49% to 40% between 2000 and 2005 and further down to 31.5% in 2010. One of the main contributors to this growth and more importantly in poverty reduction is the agriculture sector which was growing at about 4.1% annually in the recent past and is still growing at round 3%, more than double the pace of population growth of 1.44% between 2001 and 2011. The country has achieved near self-sufficiency in terms of production of its staple food—rice and has achieved a number of MDG targets already, such as gender equality in primary and secondary school enrolment and reducing poverty and child mortality. However, despite good progress, 33% of the children dropped out from primary schools, 45% of the children are under weight and 42% of the adults are categorized illiterate. One constraint to further enhancing economic growth and reducing poverty is frequent natural calamities like flood and cyclones including the cyclone SIDR of 2007 and cyclone AILA of 2009 and recent flood and riverbank erosion of 2014. Also, there are infrastructural, institutional and governance related constraints to development.

A number of geographically backward and ecologically constrained areas like the coastal belt in the southwest (Barisal and Khulna), hill areas (Chittagong Hill Tract), *haor* areas (Sylhet) and chars (Rangpur) are facing severe challenge for climate change effects and various natural disasters hence deserve special attention to overcome the challenges. The Bangabandhu Jamuna Bridge has improved road connectivity of the northwest districts but the southwest, the hill areas, the *haors* and the chars remained constrained.

Despite gradual shrinkage of share, agriculture remains the largest economic sector, contributing about 17% to the GDP in 2013-14 and more importantly and it still employs 44% of the labor force. Rice remains the dominant crop and 55% of rice produced is Boro. There has been substantial change, a move away from rain-fed and mainly local varieties of *Aus*, *Aman* and traditional wetland *Boro* paddy to irrigation-dependent dry season HYV *Boro*, and recently, hybrid *Boro*. Country's tripling of rice production in about three decades has been mainly due to this transformation, popularly known as seed-fertilizer-irrigation technology. The increased rice production led to shift of land from mainly other winter crops to HYV *Boro*, reducing area and production of pulses, spices and oilseeds. Over the last few years however, increased emphasis on high-value crops like maize, vegetables and fruits have made some change and crop diversification is taking place again. But lack of application of appropriate technology in storage, processing and marketing has constrained the speedy move to this direction.

Government of Bangladesh has quite extensive infrastructure in agricultural research, education, and extension. However, though the input supply has been largely privatized but quality assurance is not getting proper attention. There has been weak linkage among the service providers and particularly the institutions still lack capacity and motivation to adequately meet up the farmers' needs. Limited number of NGOs are active in the agriculture sector; a few of them achieved considerable success to reach the farmers at the grass roots; and numerous community based organizations have been formed and assisted under various projects but their sustainability remains a concern and efforts tend to end when a particular project ends. Private seed

companies and agro-chemicals and processing companies are becoming active but many of them could not yet earn trust of the farmers and of the consumers. Effective farmer organization is particularly lacking.

Project Description:

The NATP-2 will be framed drawing lessons learned from NATP-1 and will follow a holistic and demand-driven approach to agricultural research, extension and value chain development services conducive to farmer-research-extension linkage and enhanced private sector participation. The NATP-1 has achieved considerable success by increasing efficiency and effectiveness of the agricultural research and extension systems, but there is need to broaden and deepen such achievement as well as to add greater value to the output of the agricultural sector by strengthening its commercialization. One key lesson learned from the NATP-1 is the need to look beyond productivity increase and focus equally on market linkages, sustainability of farmer groups and of producer organizations.

The proposed development objective of the NATP-2 is to:

Increase agricultural productivity of smallholder farms and improve smallholder farmers' access to market.

The NATP-2 will achieve the Project Development Objective by:

- (i) Strengthening the capacity of the National Agricultural Research System (NARS) and the extension services to generate and diffuse agricultural technologies aimed at increasing farm productivity and reducing post-harvest loss; and
- (ii) Promoting the sustainability of existing and newly created farmer groups and producer organizations by strengthening their linkages with markets.

The NATP-2 has two main features to follow a differentiated approach for the vertical and horizontal scaling up efforts where the new project will deepen the interventions in existing *upazilas* and expand geographic coverage to include new districts and *upazilas*. As second main feature, the NATP-2 will include a new financing arrangement called Agriculture Innovative Fund (AIF). The AIF it aims at providing matching grant funding for eligible research and three sub sector related development proposals on competitive basis. The AIF comprises of three windows, one each for supporting research, extension and value chain development related proposals.

NATP-2 Components

Component 1: Enhancing Agricultural Technology Generation

The project will support a demand-driven, market-oriented and decentralized approach to agricultural research that takes into account the multiplicity of actors involved in agricultural technology generation, the need for increasing yield while adapting to climate variability and longer-term climate change, the evolving domestic demand for diversified, enhanced availability of safer and nutritious food, and opportunities for supplying international markets with selected agricultural and food products. The component 1 will receive assistance from window 1 of the Agriculture Innovation Fund.

Component 2: Supporting Crop Development

Through this component, the project will support the DAE ensuring that extension workers are sufficiently skilled and adequately equipped to improve the delivery of their services to (CIG and non-CIG) farmers. The NATP-2 will support strengthening of Farmers Information and Advice Center (**FIAC**) to operate as fully equipped technology and knowledge sharing centers in the Union Parishad level. NATP-2 will aim under this component to add new crop CIGs (about 15,000) in 150 *upazilas* to the existing CIGs (about 13,000) in 120 *Upazilas* formed and trained under NATP-1. Besides existing support, the eligible existing and new crop CIGs and Producer Organizations will receive additional matching grants from the Agriculture Innovation Fund (AIF).

Component 3: Supporting Fisheries Development

NATP-2 will continue providing support to the sustainable development of the capture fish (open freshwater), and culture fish (aquaculture) as well as the marine fish sub sectors. Building on lessons learned from NATP-1, the component will promote community-based fisheries management and support the participation of fisheries CIGs in value chains. The number of private Local Extension Agents for Fisheries (LEAF) is expected to be increased to over 1,500 in about 270 *upazilas*. The fisheries component will also support farmer-to-farmer extension, in line with the principles of NAEP. To that effect, the component will encourage the development of a network of CIG lead farmers. In addition, the fish farming and fisher communities will be able to liaise with the **upgraded FIACs** for further advisory services by technical specialists and to gain access to knowledge and learning material, as well as relevant research outcomes. NATP-2 will aim to add some 4,000 CIGs in 150 new *upazilas* to the existing 2,670 CIGs formed and trained under NATP-1 in 120 *upazilas*. Besides existing support, the eligible existing and new crop CIGs will receive additional matching grants from the Window 2 of the Agriculture Innovation Fund (AIF).

Component 4: Supporting Livestock Development

Number of private Community Extension Agents for Livestock (CEAL) is expected to be increased to over 3,000. In the absence of public field level extension staff from DLS, NATP-1 recruited and trained 1,280 CEALs; an additional 1,900 CEALs are expected to be mobilized under NATP-2. The project will aim to add some 9,500 livestock CIGs in 150 new *upazilas* to the 3,892 livestock CIGs formed and trained under NATP-1 in 120 *upazilas*. The NATP-2 will support the strengthening of **FIAC** to operate as fully equipped technology and knowledge sharing centers. Besides existing support, the CIGs and POs will receive additional matching grants support from the Window 2 of the Agriculture Innovation Fund (AIF).

Component 5: Project Management and Coordination

The objectives of this component are:

- (i) to ensure that the project is carried out in line with the provisions in the Financing Agreement and relevant project documents,
- (ii) to act as a liaison between the World Bank and the project, as well as between the project and the GoB, and
- (iii) to lead the implementation of selected overarching project activities.

This component will cover a range of fiduciary activities including overall financial management, reporting and auditing, implementation of the project's Governance Accountability Action Plan (GAAP), procurement and corresponding support to other components, and coordination and monitoring of environmental and social safeguards compliance. This component will also fund the compilation of the project's Manual of Operations, which will include, among others, a volume on financial and administrative procedures, a volume on project monitoring and activity reporting, and a volume on the operation and procedures for the Agriculture Innovation Fund (AIF). This component will be responsible for coordination and overall Project Monitoring and Impact Evaluation (M&IE) and reporting activities of the project. This component will be entrusted with the responsibility of managing the AIF.

2. Socio-Economic Setting

Demographic Profile

Compared to national level population density of 976 per km population density is highest in Dhaka division (1521) and lowest in Barisal division (629). Sex ratio is nearly balanced nationally while Dhaka division has more males while Chittagong and Barisal division has fewer males than females. Average family size is higher in Sylhet and Chittagong and lower in Rajshahi and Rangpur compared to national average 4.4. Literacy rate is average 52% nationally which is higher, 57 and 54 percent in Barisal and Dhaka and lowest 45% in Sylhet.

Trend of Poverty Reduction

Head count ratio of poverty by upper poverty line decreased in the country from about 49% in 2000 through 40% in 2005 and 31.5% in 2010. During the period, hardcore poverty in the country decreased from 34% through 25% to 18%. Despite development over the past two decades poverty remained high in the western

half of the country (Barisal, Khulna, Rajshahi and Rangpur division) compared to the eastern half (Dhaka, Chittagong and Sylhet). Poverty remained high particularly in Rangpur and Barisal divisions which are more vulnerable to flood and cyclone. Chittagong has lowest incidence of poverty but Dhaka did not improve much may be because of the influx of poor people from other areas.

Housing condition and other basic amenities

About 85% of all houses in Bangladesh are Kutcha, 10% are semi-pucca and only about 4% are pucca houses. Housing condition appeared rich in Sylhet, Khulna and Chittagong but poor in Barisal and Rangpur which is consistent with the rank by poverty level. About 60% households use electricity for lighting including 3% using solar energy. Electricity use appeared high in Comilla and Sylhet representing Chittagong and Sylhet divisions but low in Gaibandha and Patuakhali representing Rangpur and Barisal divisions. Electricity connection appeared low also in Faridpur, a district in Dhaka division but outside of the influence of Dhaka city and surroundings. About 62% households use sanitary latrine, better in Dhaka and Chittagong but poor in Gaibandha of Rangpur. Electricity use is 60% nationally which is high in relatively developed districts like Comilla (75%) but low in backward districts like Patuakhali and Gaibandha 32 and 29 percent.

Profile of the Agriculture Sector

Landholding, Tenancy, Irrigation and Cropping Intensity: Of the 28.7 million enumerated holdings in Bangladesh as per Agriculture Census 2008, 53% are farm holdings (operating minimum 0.05 acre cultivated land) and 47% are non-farm holdings (landless or below 0.05 acre). Of the farm holdings, 84.4% are small and marginal farms, 14.1% are medium farms and only 1.5% large farms. Of the total holdings, 65% are owner-operated, 22% are owner cum tenant operated and 13% are tenant holdings. About 31% of all holdings are agricultural labor holdings. Average holdings have 0.08 acre homestead area while average farm holdings have 1.26 acres cultivated area. Of the 19 million acres cultivated area in the country about 63% is irrigated. Percentage of cultivated area irrigated is highest in Rajshahi (78%) followed by Dhaka (69%). Irrigated area is lowest in Barisal (only 14%). Potential to further increase irrigation is highest in Barisal followed by Sylhet and Chittagong still having unexplored potential to expand surface water irrigation. Cropping Intensity was 173% in 2008 which has increased to 191% by 2010-11. Cropping Intensity was highest (206%) in Rangpur division and lowest 154% in Sylhet division in 2010-11. In districts like Kushtia and Jessore cropping intensity was as high as 256% and 228% while it was lowest in Khulna (coastal) and Bandarban Hill district 134 and 138 percent.

Main crops: Bangladesh agriculture is predominantly rice based and *Boro* rice is the dominant crop followed by *Aman*. About 55% of the rice produced comes from *Boro* and 38% from *Aman* while only about 7% comes from *Aus*. Total *Aus* area is only about 1.3 million ha and production is 2.6 million MT with yield about 2 MT per ha. About 40% *Aus* area is local variety and Local *Aus* yield is 1.8 MT/ha compared to *Aus* HYV yield 2.2 MT/ ha. *Aman* production is 12.8 million MT from an area of 5.6 million ha with average yield of 2.3 MT/ha. Yield of HYV *Aman* is 2.6 MT/ha compared to 1.2 MT/ ha local B. *Aman* and 1.6 MT/ha local T. *Aman*. Seventy percent of *Aman* area is under HYV while B. *Aman* local area is below 8% and T. *Aman* local area is about 22%. Total *Boro* production is 18.6 million MT from an area of 4.8 million ha with average yield of 3.9 MT/ha. Yield of *Boro* local, HYV and Hybrid varieties are 2.0, 3.8 and 4.8 MT/ha respectively. About 83% of the *Boro* area is under HYV while 14% is under Hybrid and only 3% under local *Boro*.

Non-rice major crops are wheat, maize, potato and jute. In the whole country jute, potato, wheat and maize areas are 709, 671, 547 and 409 thousand ha and yield of these crops are 11.8, 18.9, 2.2 and 2.5 MT per ha. Total area under pulses was a little over half million ha but yield was low, about 444 kg/ha. Mustard is more widely cultivated between *Aman* and *Boro* rice seasons in about 623,294 ha but yield is low at 395 kg/ha. Major spices produced are chili, onion, garlic with areas 253, 316 and 304 thousand ha and yield 0.7, 3.3 and 2.0 MT/ ha while turmeric, ginger and coriander seed areas are 57, 23 and 28 thousand ha and yield 2.2, 3.3 and 0.3 MT/ha. Important spices producing areas are Chittagong (Hill districts), Dhaka (greater Faridpur), Rajshahi and Rangpur. Sylhet and Barisal are less important in terms of spices production.

Vegetables and Fruits: Area under summer and winter vegetables are 251 and 256 thousand acres and yield per acre are 2.5 and 3.2 MT respectively. Areas under leafy vegetables and tomato are 94 and 62 thousand acre and their yields are 2.4 and 3.8 MT/acre respectively. Among the fruits mango, pineapple, litchi, jackfruit

and guava have areas 842, 37, 65, 1005 and 182 thousand acres and yields are 1.1, 5.9, 1.0, 1.0 and 1.5 MT/acre. Among other fruits melon, water melon, banana and papaya areas are 12, 30, 131 and 113 thousand acres and yields are 4.0, 6.9, 6.1 and 1.1 MT/acre respectively.

Livestock sub sector contributes about 2% to the GDP. In 2011-12 the country produced about 5 million MT of milk, 3.6 million MT of meat and 6.7 billion numbers of eggs. In about five years (2007-12) country's milk production doubled, meat production more than tripled and egg production increased by 50 percent. Despite this rapid growth the country needs about tripling of milk production, more than doubling of meat production and quadrupling of egg production. The country has quite large number of domestic animals and birds but problem remains with low productivity. About 54% of the farm households have cattle, average 2.7 cattle per rearing household and about 1% rear buffaloes, average 3.2 buffaloes per rearing household. About 30% farm households rear goat, average 2.7 goats per rearing household and 2% rear sheep, average 3.4 sheep per rearing household. As high as 95% of the farm households are rearing poultry, average 7 birds per household while 52% rear duck, average 5 ducks per rearing household.

Fisheries subsector experienced fastest growth within agriculture sector over the past years and it grew at 5 to 9 percent in various years and it contributes 4% to the GDP. The subsector experienced structural change where the share of inland capture and marine fishery declined while that of aquaculture increased over the decades. In the 1980s inland and marine capture contributed nearly 79% and aquaculture contributed only 21%. Now it is reversed. Total fish production comprising capture and culture as of 2009-10 is about 2.9 million MT. Of this total, share of inland capture is 35% and that of marine capture is 18% and the main contributor is now aquaculture (47%).

Agriculture Extension System: The extension agencies have varying institutional facilities and field presence. The DAE has Sub Assistant Agriculture Officers in the grassroots level (effectively at UP), average three officers in each Union Parishad. In the UPs having newly constructed UP Complex, the DAE is provided an office room and in the NATP areas the project has established Farmer Information and Advice Center (FIAC). The DLS and DoF do not have any staff in the UP level. Hence they have engaged Local Extension Agent in Fisheries (LEAF) and Community Extension Agent in Livestock (CEAL) to provide extension service in the village level in the NATP area while the office is located everywhere in the *upazila* level. It was found in the *upazilas* visited that LEAF and CEAL are not getting monthly allowance for about one year hence their activities are not properly carried out. FIAC in the UP level is established in the UP complex but the UPs not having new building to accommodate FIAC could not establish it. NATP-2 will support establishing FIAC in all UPs and where necessary office will be rented. Also the FIAC will be strengthened with IT facilities and needed equipment and training and supply of extension materials etc.

3. Approach and Methodology

Rationale and Purpose of Social Management

Social Management is one of the major concerns of development in market economies that aim growth-led productivity enhancement and increasing income and profitability. In this perspective, it is particularly important to ensure that the poor, asset less, women and other disadvantaged and vulnerable groups are not deprived of their due share of project benefits. Another purpose of the social management is to prevent and mitigate undue harm to people and society due to any project activity. Typically, agricultural projects are beneficial to the society including the farmers belonging to the vulnerable groups. Further, it was experienced during the NATP I the smallholder farmers and women farmers had largely participated in and benefited from the project interventions. Even though, for better addressing the social issues, the project intends to have a Social Management Framework (SMF) for providing a set of implementation guidelines for various project activities.

The NATP does not involve land acquisition and resettlement. Some crop loss may occur in narrow strip of land during the installation of buried pipe for irrigation and such losses will be covered by the beneficiary farmers. However, the net amounts are likely to be insignificant. The SMF under this assignment provided overall guidelines for addressing various social issues of importance.

Approach of the new SMF

Despite the objective of attaining positive impacts, development projects may cause adverse social impacts on general and women and other vulnerable groups in particular in an agriculture sector development project. For examples, female headed households may lack access to producer organization or FIAC and the poor women may feel discouraged to join CIG as their farm holdings are too small and the extension workers may feel it unimportant to reach them..To avoid such negative impacts the NATP 1 project prepared an SMF. The SMF helped to achieve good social impacts. The relevant assessments show that women acquired leadership and voice to attain their rights through the project. To ensure that NATP 2 also maintain and accelerate this process of attaining positive social impacts for its intended beneficiaries, this SMF has been prepared. The new SMF includes:

- (i) Consultation with the relevant stakeholders from the national to community level.
- (ii) A set of guidelines to be used in the NATP-2 in all components and will apply to all activities and subprojects.
- (iii) Assessments of likely social impacts in line with the World Bank Operational Policies, particularly the OP 4.10 concerning Indigenous Peoples and OP 4.12 concerning Involuntary Resettlement.
- (iv) Evaluation of consistency of the SMF with the GOB policies, laws and regulations as well as with the World Bank Safeguard Policies, particularly social and environmental.

Methodology

The preparation of SMF comprised:

- i. Review of relevant documents.
- ii. Collection, compilation and presentation of relevant secondary information by administrative division and concerning three sub sectors performance.
- iii. Stakeholder consultation meetings with the relevant GOB agencies.
- iv. Consultation in the community level.
- v. Stakeholder Feedback
- vi. Finalizing Report, Providing Summary in Bangla

4. Legal and Policy Framework

The GoB Social Regulative Framework

a. Constitutional provisions:

The constitution of the people's republic of Bangladesh pledges

- a society, " free from exploitation in which the rule of law, fundamental human rights, freedom, equality and political, economic and social justice will be secured for all citizens".
- "Participation of women in all spheres of national life."
- "Emancipate the toiling masses – the peasants and workers – and backward sections of the people from all forms of exploitation".
- "Radical transformation in the rural areas through the promotion of a agricultural revolution"

b. The GoB Policies, Laws, Rules and Strategies:

The Government of Bangladesh has several important policies pertaining to development of agriculture – crops agriculture, fisheries and livestock. Such policies are many in number. However, only a few most directly relevant ones are listed here:

1. National Agriculture Policy, 2013
2. BARC Act, 2012
3. National Fisheries Policy, 1998
4. National Livestock Policy, 2007
5. National Food Policy, 2006
6. National Women Development Policy, 1997 revised in 2004 and 2011.
7. Sixth Five Year Plan 2011-15
8. Land Acquisition Ordinance 1982

The above GOB policies in general emphasize equity and give special attention to the disadvantaged groups.

c. The World Bank Safeguards Policies

This SMF briefly examined the applicability of World Bank operational policies on social safeguards related to Indigenous Peoples (OP 4.10) and involuntary resettlement (OP 4.12).

The NATP will not acquire any land acquisition and therefore, no resettlement is foreseen and therefore OP 4.12 is not triggered in the case of NATP-2. The project however may require temporary use of private land for setting buried pipes where small scale irrigation is included as a project component. In the case of flexible pipes, there is no land issue. In the case of buried pipe too there is not much land issue. It will simply require digging land to set pipes and after that the pipes will be covered by earth filling. There is great demand for this technology among farmers as it more than doubles irrigation efficiency and reduces the land requirement for setting up extra irrigation equipment. The project will mobilize farmers groups who voluntarily want to use buried pipes (demand is far greater than supply according to assessments carried out by the government) in order to create mutual and individual benefits accruing from the technology. Pipes will only be set once standing crops have been harvested or will be laid in the boundary of plots where there are no crops planted. This takes a small amount of time and leaves no significant adverse impact. The experience of NATP I where the same methodology was applied in the case of buried pipes and subsequent field visits and consultations undertaken for the purpose of preparing this SMF, show that farmers are eager to use this technology voluntarily. The farmers groups will constitute adjoining landowners who decide voluntarily to allow buried pipes in their lands. The concerned CIGs and the POs will take care of the consultation and dialogue and the concerned executing agency will have a facilitating/mobilizing role and ensure that no conflicts arise or if any are resolved. Where the pipes will be laid is agreed upon via community consultation and consensus. The project will plan and operationalize a grievance mechanism before undertaking any project activities. The project will ensure that proper consultation with full documentation is completed before the pipes can be installed. The documentation must show the mutually agreed upon terms and voluntary nature of the activity. Where no consensus is reached the project will ensure that installation of pipes is not undertaken. It is advisable that, in the case of supplementary irrigation buried pipes will not be allowed (as it is expensive) and also in the case of permanent nature of irrigation sub projects, buried pipes will be avoided as much as possible and other alternatives like flexible pipe will be preferred. As mentioned above this was the identical methodology applied in NATP I with good results, as huge advantages accrued to poor farmer groups through the use of the pipes.

The project may involve limited amount of construction work for establishing mini-laboratory which will be simply a couple of extra rooms and be executed by horizontal or vertical extension of the existing GOB facility requiring no additional land and no involuntary resettlement. Another activity related to marketing facility for fruits and vegetables concern establishing commodity collection centers in selected markets which are accommodated during the NATP-I mostly in hired sheds and in a limited number of cases construction of sheds on available and encumbrance free public lands. The same strategy will be applied during the NATP II. Moreover, the project will ensure that there are no squatter in the public land that will be required for construction of such sheds and extension of min-laboratories. No squatters, residential or commercial may be removed under the project and no adverse impacts on any on-going livelihood activities, formal or informal, being undertaken by people with or without title will be permissible under the project. These have been clearly incorporated in a negative list for the project which will be used to screen all sub-project proposals. Thus, no land acquisition and involuntary resettlement are involved in it, and on the basis of this OP 4.12 is not triggered for the project. The NATP II in the screening process will discard any proposal requiring land acquisition and resettlement as these are included in the negative list for the project. t.

The NATP-1 did not include hill areas hence did not have presence of small ethnic minority communities in the phae-1 Upazilas and therefore Small Ethnic and Vulnerable Communities' Development Plan was not

triggered. But during the phase-2, the project will include some upazilas from the Chittagong Hill Tracts where main farming communities are small ethnic minority communities and some upazilas from the plain land areas having presence of farmer groups belonging to the small ethnic minority communities. SEVCDP is triggered and a simple format to prepare SEVCDP is provided in the Annex.

5. Likely Social Impacts and Mitigation

Likely Social Impacts of the NATP-2 Interventions

Possible Social Impacts under Promoting Agricultural Innovation Component: Although no adverse social impacts are envisioned under this component, the issues like prioritization and inclusion of research sub projects on the basis of needs identified by the farmers and the extension agencies should be addressed properly.

Possible Social Impacts under Supporting Crop, Fisheries and Livestock Development Components: Although no adverse social impacts are envisioned under these project components, the proper identification and targeting of project beneficiaries and developing a participatory and inclusive communication and consultation strategy is imperative. Increased use of pesticides may aggravate water pollution causing deterioration of open water fisheries resource and thereby negatively affect the livelihoods of the fishers. Seepage of agro chemicals to ponds can affect aquaculture production affecting the livelihoods of the fish farmers. These are discussed in the EMF and the OP 4.09 is triggered. Awareness has increased and produces using harmful chemicals are rejected by the consumers, hence by the consumers also. Demand has been generated to produce and supply chemical free fruits and vegetables and both farmers and traders are responding to it. NATP 2 will further improvement in this direction.

There is no land acquisition involved hence no resettlement will be needed. However, there will be a need for reaching agreement between the landowners and water users for the installation of buried pipes. Any attempt to setting pipe by force or without proper consultation may lead to conflicts between the adjoining landowners and the beneficiaries of irrigation if they are not same people. The experience of NATP I showed that as this is a largely beneficial activity the farmers welcome it and agree on mutually beneficial terms through consultation in the CIGs and POs where to install the pipes and when (usually a time when no standing crops are present). The impact is short term and the civil works are basic and light. The concerned lands will be affected temporarily when the trenches will be dug and pipes set. After completing installation of pipes the landowners will be able to use the land as usual. The project will ensure that proper consultation with full documentation is completed before the pipes can be installed. The documentation must show the mutually agreed upon terms and voluntary nature of the activity. Where no consensus is reached the project will ensure that installation of pipes is not undertaken. The problem can be eliminated or minimized by setting a time when the lands do not have any standing crops. Also the proper alignment can be made to make use of roadside or walkways so that crop land is not affected. The project will facilitate a community consultation process .

Screening Process

To ensure that the project meets its main objectives and the relevant safeguards, a set of exclusion criteria will be applied. The screening process will ensure that:

- The sub projects requiring land acquisition and involuntary resettlement are excluded. Moreover, the exclusion criteria will be applicable in cases of the displacement of squatters from public/private lands, disruption or closure of livelihood activities carried out by untitled farmers, share croppers, crop loss or damage of any sort. The exclusion criteria will include any activity that has likelihood of leading to economic or physical displacement, whether the impact is temporary or permanent and whether it affects people with or without title.
- Activities likely to adversely affect wildlife, fish habitat and common property resources like pasture land and livelihoods of marginalized groups etc. are excluded.
- The sub projects involving large scale water management particularly requiring canal excavation will be avoided as it may involve land acquisition and involuntary resettlement.

- Sub projects requiring constructing permanent structures on private land will be excluded. In cases of temporary structures, if private land is used, it will have to be based on completely voluntary consent of the owner and/or rent or lease arrangements, that will have to be documented appropriately.

The screening process will include a desk appraisal in the Upazila level while consolidating the UP level Micro Plans. The desk appraisal will determine if all relevant information provided by the extension teams and they have considered the probable adverse effects (social and environmental) and included mitigation measures.

Inclusiveness-Gender and Vulnerability

The NATP-2 will facilitate socially inclusive design and ensure increased participation of small and marginal farmers, women farmers and Small Ethnic and Vulnerable Communities and will maximize project benefits for them and safeguard them against social vulnerability during implementation of subprojects.

Mitigation Measures

The project beneficiaries include the poor and vulnerable groups such as poor and female headed households and small ethnic minority households will also be targeted. The SMF incorporated an impact matrix and suggested several mitigation measures to enhance inclusiveness and participation. The measures include clear understanding of inclusion and exclusion criteria, strong representation of the marginalized groups and effective monitoring of implementation.

Disclosure

The Draft SMF will be made available for public consultation by the implementing agencies, with key portions translated in *Bangla*. It will be displayed at places accessible to affected people, primary stakeholders and members of the civil society. It will also be available at all offices of the involved executing agencies and the MOA and NATP and the World Bank websites. Comments will be invited from all. Once all comments have been addressed and document modified by the MOA. After the World Bank finally approves the document the implementing agencies will once again make the final version publicly available with key portions translated in Bangla, electronically on their respective websites and place hard-copies in easily accessible offices of the executing agencies.

Grievance Redress Mechanism (GRM)

In case some conflict arise between stakeholders (not very likely) or in case some stakeholder deprived of participation or in case some stakeholder adversely affected by any project activity (unlikely except in installation of buried pipe), the aggrieved person will be able to complain and get remedy. As **first tier** of GRM, an officer at the Upazila level assigned this responsibility will be the first level contact for an aggrieved person. The Upazila offices of the concerned agencies will respond to the complaints and resolve cases on monthly basis and those requiring higher level attention will be forwarded to the district level. As **second tier** of GRM, an Integrated Grievance Redress Mechanism (IGRM) will be established at the district level. Most grievances are expected to be resolved at this level including appeal. **At the third tier** the project will have a central grievance redress committee which will have mainly oversight and monitoring role. As part of IGRM, a Grievance Redress Cell (GRC) will be set up at project headquarters under each component.

6. Institutional Arrangement

The GoB ministries involved in the project for overall direction, periodic monitoring and oversight are the Ministry of Agriculture for the support to crop development including value chain development, the BARC for the agriculture innovation component, and the Ministry of Fisheries and Livestock for the support to fisheries and livestock development components. The components of the project involve several implementing agencies under the two abovementioned ministries.

The enhancing agricultural technology generation involves (a) Bangladesh Agriculture Research Institute, (b) Bangladesh Rice Research Institute, (c) Bangladesh Institute of Nuclear Agriculture, (d) Bangladesh Livestock Research Institute, (e) Bangladesh Fisheries Research Institute, and (f) Bangladesh Agriculture Research Council (as apex body of the NARS), four under the Ministry of Agriculture and two under the Ministry of Fisheries.

The implementing agencies involved in the support to crops, fisheries and livestock development components are (a) Department of Agriculture Extension, (b) Department of Fisheries and (c) Department of Livestock Services. The Value Chain Development activities will be implemented by the DAE with technical support from the Hortex Foundation under the Ministry of Agriculture.

Apart from the above, several other ministries and divisions of the government are involved in the project planning and implementation process including the (a) Ministry of Finance, (b) Economic Relations Division, (c) Planning Commission, and (d) Implementation Monitoring and Evaluation Division of the Ministry of Planning.

To manage this multi sub-sector and multi-agency project the GoB has a Project Steering Committee for the NATP headed by the Secretary, Ministry of Agriculture and co chaired by the Secretary, Ministry of Fisheries and Livestock. Other members of the PSC include representatives of the Ministry of Finance (Finance Division and ERD), Ministry of Planning (Planning Commission and IMED), and representatives of all implementing agencies.

Besides the PSC, there will be a Project Management Committee (PMC) to be headed by the Additional Secretary, MOA. The PMC will comprise the PD, PCU of the NATP-2 and the component heads from the concerned implementing agencies. The implementation arrangement will include a monitoring and evaluation system comprising internal monitoring and external review and evaluation. The M&E system will be participatory in nature rather than official reporting.



1. Introduction

1.1 Background

Government of Bangladesh has been implementing National Agricultural Technology Project Phase-1 (NATP-1) since 2008 with the assistance of the World Bank, IFAD and US-AID which is going to be completed by 2014 and new phase is expected to commence from 2015 for additional six years. The NATP has been developed as a comprehensive long term program to be implemented in three phases. The National Agricultural Technology Project Phase-2 (NATP-2) is now under preparation as second phase of the program and this Social Management Framework concerns the NATP-2. The NATP-2 is proposed to be implemented nationwide in a total of 270 *upazilas* of 56 districts including 120 first phase *upazilas* in 25 districts and 30 Additional Funding *upazilas* in six districts¹.

1.2 The Country Context

1.2.1 Economic Growth and Reduction of Poverty

Bangladesh has made considerable progress in economic and social development, sustaining high rates of economic growth of around 6.0 percent annually over the last twelve years and reducing poverty by 9% between 2000 and 2005 (from 49% to 40 %) and further down to 31.5% in 2010. One of the main contributors to this growth and more importantly in poverty reduction, is the agriculture sector which was growing at about 4.1% annually in the recent past and still growing at round 3% (crops 2%, livestock 2.8% and fisheries 6.5% in 2013-14)², much faster than population growth (1.44%) and the country has achieved near self-sufficiency in terms of production of its staple food—rice. The country has achieved a number of MDG targets of 2015 already, such as gender equality in primary and secondary school enrolment and is on track in achieving several other targets such as reducing poverty down to 29%, under 5 mortality down to 48 per thousand live birth by 2015 (which has already come down to 50) from 146 of 1990.

On the whole, the country has achieved success to increase primary school enrolment from 60.5% in 1990-91 to 95% in 2010 but due to high dropout, only 67% of the enrolled children complete primary education. Adult literacy increased to 58% in 2010 from 37% in 1990-91 but is still below the MDG target of 100% primary school completion and 100% adult literacy. Further, despite increasing food production faster than population growth, 45% children are underweight (low from 48% in 1990-91) but is far away from the MDG target 33 percent.

One constraint to further enhancing economic growth and reducing poverty is frequent natural calamities like flood and cyclone SIDR of 2007, cyclone AILA of 2009 and recent flood of 2014. Another challenge is improving governance and stable democratic process which could place the country to the highway of social and economic development and real “freedom³ of people”.

While head count poverty decreased from by about 20% in one decade and the backward areas like Barisal, Khulna, Rangpur and Rajshahi divisions showed faster improvement, still such areas lag behind Dhaka and Chittagong divisions. The geographically backward and ecologically constrained areas like the coastal belt in the southwest (Barisal and Khulna), hill areas (Chittagong Hill Tract), *haor* areas (Sylhet) and chars (Rangpur) are facing severe challenge for climate change effects and various natural disasters hence deserve special attention to overcome the challenges. The

¹ List of NATP-1 and NATP-2 Upzilas provided in Annex-1

² BBS. Statistical Yearbook 2012 and Economic Review 2014. The Sixth Five Year Plan projected agriculture sector growth of 5.0 percent but actual achievement is 3 to 4 percent.

³ A. Sen (1999: Development as Freedom. Oxford University Press) saw development as economic, social and political freedom rather than mere increase of income or GDP growth.

Bangabandhu Jamuna Bridge has improved road connectivity of the northwest districts but the southwest and the hill areas, the *haors* and the *chars* remained constrained.

1.2.2 Current Scenario of the Agriculture Sector

Despite gradual shrinkage of share, agriculture remains the largest economic sector, contributing about 17% of the GDP in 2013-14 and more importantly, it still employs 44% of the labor force. Rice remains the dominant crop but there has been substantial change, a move away from rain-fed and mainly local varieties of *Aus*, *Aman* and traditional wetland *Boro* paddy to irrigation-dependent dry season HYV *Boro*, and recently, hybrid *Boro*. Country's tripling of rice production in about three decades has been mainly due to this transformation, popularly known as seed-fertilizer-irrigation technology. The increased rice production led to shift of land from mainly other winter crops to HYV *Boro*, reducing area and production of pulses, spices and oilseeds. Over the last few years however, increased emphasis on high-value crops like maize, vegetables and fruits have made some change and crop diversification is taking place again. But lack of appropriate technology application in storage, processing and marketing has constrained a speedy move to this direction. Also there have been changes in farming system. Shorter duration *aman* varieties increased particularly in the northwest which has made possible to grow oilseed, potato, pulses, onion etc. between *aman* and *boro* and short duration *aus* between *boro* and T. *Aman*. In the several northern and southern districts like Madaripur, Shariatpur, Gopalganj, Tangail and Sirajganj mustard is grown in large areas between *aman* and *boro*.

Government of Bangladesh has quite extensive infrastructure in agricultural research, education, and extension although input supply has been largely privatized with regulatory authority kept with the government but quality assurance not getting proper attention. There has been weak linkage among the service providers and particularly the institutions still lack capacity and motivation to adequately meet up the farmers' needs. Limited number of NGOs are active in the agriculture sector; a few of them achieved considerable success to reach the farmers at the grass roots; and numerous community based organizations have been formed and assisted under various projects but their sustainability remains a concern and efforts tend to end when a particular project closed. Private seed companies and agro-chemicals and processing companies are becoming active but many of them could not yet earn trust of the farmers and the consumers. Effective farmer organization is particularly lacking.

1.3 Project Description

1.3.1 Learning from the NATP-1

The NATP-2 will be framed drawing lessons learned from NATP-1 and will follow a holistic and demand-driven approach to agricultural research, extension and value chain development services that is more conducive to strengthening the linkages between farmer-research-extension and enhanced private sector participation.

The medium-term objective of the NATP-1 was to increase income and reduce extreme poverty and hunger by improving agricultural productivity and performance of the national agricultural technology system. NATP-1 has achieved some gains in it by increasing efficiency and effectiveness of the agricultural research and extension systems, but there is need to broaden and deepen such achievement as well as to add greater value to the output of the agricultural sector by strengthening its commercialization.

One key lesson learned from the implementation of NATP-1 is the need to look beyond productivity increase and focus equally on facilitating market linkages to ensure sustainability of farmer groups, and in particular of producer organizations, yet to be firmly established. It is also experienced that

the smallholders in Bangladesh are generally poorly integrated into post-harvest agricultural value-chains, resulting in continuation of a high gap between the price received by farmers and the retail price paid by the consumers. Principal contributory factors to the limited price pass-through include, among others: inordinately lengthy chains with multiplicity of intermediaries, poor linkages among chain participants, high information asymmetry and postharvest loss and quality deterioration, etc. The sector also suffers from food safety concerns that limit access to high-value markets like super shop and exporter.

To complement IDA funding, NATP-2 will be co-financed by IFAD and USAID. The structure will address some of the shortcomings identified with the NATP-1 design, in particular the need to further strengthen the linkages between extension and research, to take on a more inclusive approach based on the prevailing agricultural innovation system⁴, to focus on selected value-chains for facilitating smallholders' access to high-value markets, and to improve fiduciary efficiency and project monitoring.

1.3.2 The NATP-2 Development Objective and Purpose

The proposed development objective of the NATP-2 is to:

Increase agricultural productivity of smallholder farms and improve smallholder farmers' access to market

To this effect, NATP-2, like its earlier phase, will support a decentralized, demand-driven agricultural research and extension services and will promote market-oriented smallholder production. NATP-2 will continue supporting the Ministry of Agriculture's (MoA) and the Ministry of Fisheries and Livestock's (MoFL) priority to enhance agricultural productivity by improving agricultural research and agricultural extension. Since a sustained increase in farm productivity is expected to lead to higher agricultural production (thereby contributing to household food security), NATP-2 will further enhance support to access markets for the smallholder farmers by facilitating their linkages with selected value chains, contributing in turn to increased farm income and sustainability of farmer groups and producer organizations formed by the project.

The NATP-2 will achieve the PDO by:

- (iii) Strengthening the capacity of the National Agricultural Research System (NARS) and the extension services to generate and diffuse agricultural technologies aimed at increasing farm productivity and reducing post-harvest losses; and
- (iv) Promoting the sustainability of existing and newly created farmer groups and producer organizations by strengthening their linkages with markets.

1.3.3 Focus of the NATP-2

While building on lessons learned and scaling up successful activities from NATP-1, the strategic focus of some activities proposed to be continued under NATP-2 will be reviewed and updated. This evolution in the approach and activities of the new project is driven by:

- (i) The unmet demand from smallholders (the non-CIG members) for access to knowledge and technologies, including in the *upazilas* covered by NATP-1;
- (ii) The need for strengthening linkages between research and extension; and
- (iii) The sustainability of the producer groups "Common Interest Groups" and Producer Organizations (latter is yet to firmly established) require stronger market orientation of agricultural production – and of the related research and extension services.

Thus, to account for the above three parameters, the proposed project will enhance the human, physical and institutional capacity of the core agencies in the national agricultural innovation system,

⁴ "An *Innovation System* is a network of organizations, enterprises, and individuals focused on bringing new products, new processes, and new forms of organizations into economic use, together with the institutions and policies that affect their behaviour and performance" noted in "Agriculture Innovations Systems: An Investment Sourcebook (World Bank, 2012)". Key components of AIS are: agricultural research, agricultural extension and advisory services, agricultural education and training, public agencies, agro enterprises and other private sector, as well as consumers.

and take a value chain approach (to include small and medium entrepreneurs) for activities and investments to be implemented at the local level. This approach is fully aligned with the principles and strategic objectives of the National Agriculture Policy (NEP, 2013) and the Bangladesh Agricultural Research Council Act (BARC, 2012). It directly supports GoB efforts towards decentralized, demand-driven, extension services for all crop, livestock and fish producers, and towards strengthened linkages between farmers, research, extension and markets.

Vertical and horizontal scaling up

NATP-2 will follow a differentiated approach for executing project activities at field level to account for the vertical and horizontal scaling up efforts. The new project will deepen the interventions in existing *upazilas* (vertical scaling up) while expanding the geographic coverage to include new districts and *upazilas* (horizontal scaling up)⁵. At field level, the project will develop and implement comprehensive support packages for stakeholders, including for CIGs, extension workers, lead farmers, researchers, and small and medium entrepreneurs. Packages designed for CIGs will include, among others, specialized learning and knowledge tools for skills development and improved market-oriented research, extension and production planning, as well as matching grants for early adoption of production and post-harvest technologies. Support packages will be adjusted to the maturity level of the CIG/PO, and its position on the 'CIG development path' (see in Figure 1).

The project will put a special focus on enhancing farmer-to-farmer extension, and in particular on promoting the interaction of CIGs with non-CIG producers in order to multiply spillover effects and further increase technology adoption. While promoting a more market-led production and a better integration of smallholder producers in commodity value chains for the sustainability of the CIGs and POs, the project will give a special attention to issues of adaptation to climate change (through the promotion of climate smart technologies) and gender dimensions (through the promotion of homestead gardening, further contributing to improving nutrition at household level).

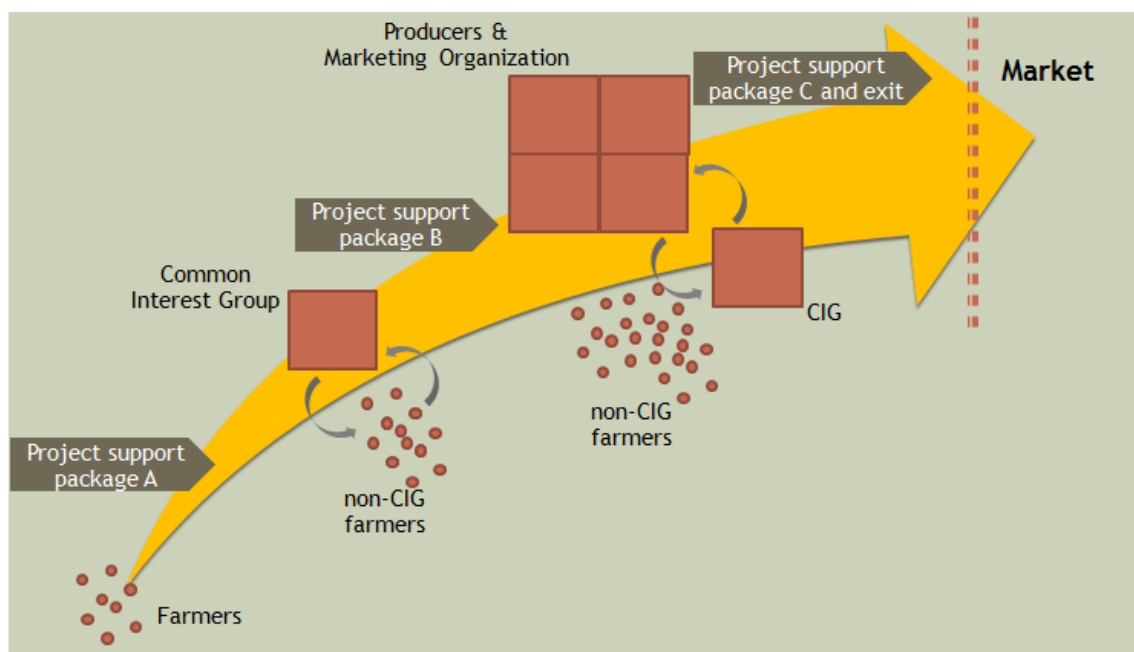
The NATP-2 will support the development of sustainable, inclusive (CIG and non-CIG farmers) market-oriented producer organizations (POs), and adopt a **gradual phasing-out** of project support for mature CIGs and help them become sustainable. In working at CIG level, NATP-2 will give a particular attention to Homestead Gardening CIGs to address the **gender** dimension in agriculture and contribute to improving **nutrition** at household level.

Agriculture Innovation Fund

To scale up and replicate NATP-1 achievement, the proposed project design includes – embedded in the different project components – an Agriculture Innovation Fund (AIF). The AIF is at the core of NATP-2 scale-up strategy; it aims at providing grant funding for eligible research and micro-project proposals to be implemented by potential project beneficiaries. The AIF is fully aligned with the holistic approach to agricultural innovation promoted by the project. In order to contribute to achieving the PDO, the AIF includes the following three funding windows: (i) AIF-1 will promote agricultural technology generation through a competitive research grant program; (ii) AIF-2, through matching grants, will promote farmers' adoption of innovative technologies generated by the research community; and (iii) AIF-3, through matching grants, will support private operators in developing business and market opportunities for farmers, as well as in providing relevant private service to farmers. NATP-2 will use calls for proposals, scientific and technical peer reviewing them and transparent selection mechanisms for the allocation of all grants under the AIF, on the basis of a Bank-approved AIF Manual of Operational Guidelines and Procedures.

Fig-1: Technology Dissemination, Productivity Enhancement and Market Linkage Path

⁵ The listing of districts and *upazillas* to be covered by NATP-2 will be agreed upon with the Ministry of Agriculture and the Ministry of Fisheries and Livestock during project preparation.



Source: World Bank Concept Note on NATP-2 and Zero Draft of PAD

1.3.4 NATP-2 Components

Component 1: Enhancing Agricultural Technology Generation

The objective of this component is to improve the performance of agricultural research system (NARS) by supporting the development of innovative agricultural technologies and by strengthening research institutions. To that effect, the project will support a demand-driven, market-oriented and decentralized approach to agricultural research that takes into account (i) the multiplicity of actors involved in agricultural technology generation, (ii) the need for increasing agricultural output per unit of arable land while adapting to climate variability and longer-term climate change, (iii) the evolving domestic demand for diversified, safer and nutritious food, and (iv) opportunities for supplying international markets with selected agriculture and food products.

This component will support a demand-driven, market-oriented and decentralized approach to agricultural innovation that takes into account: (i) the multiplicity of actors involved in agricultural technology generation, (ii) the need for increasing agricultural output per unit of shrinking arable land while adapting to climate variability and longer-term climate change, (iii) the evolving domestic demand for diversified, safer and nutritious food, and (iv) opportunities for supplying international markets with selected agricultural and food products. Component 1 will support the research agenda of the NARS by enhancing the institutional capacity of BARC and the Agricultural Research Institutes (ARIs), by funding research initiatives through research grants, and by helping to build human capital for agricultural research. The component will also finance a number of activities (including specific studies, policy notes, training, research-extension linkages, and others) in support of the BARC Act, 2012 implementation.

To strengthen the institutional capacity of the NARS, NATP-2 will invest in: (i) building the institutional and human capacity of the NARIs, including technical assistance to BARC, BFRI and BLRI, as well as support for human capital development through a limited number of funded doctoral studies; (ii) developing research infrastructure facilities at NARS institutes (e.g., renovations, laboratories, equipment); and (iii) developing a comprehensive agricultural research

and development web-based platform that will also serve as a research database and knowledge center for the country's agricultural innovation system.

To support the development of innovative agricultural technologies, mobilize available research capacity, stimulate scientific creativity and promote efficiencies in the research system, AIF-1 will support: (i) a Competitive Research Grant Program (CRGP) for ARIs and other recognized in-country public and private research providers, as well as (ii) block grant funding for a limited number of comprehensive core research programs led by ARIs. AIF-1 will be designed taking into potential synergies with similar research grant programs, e.g. under the Bank-funded Higher Education Quality Enhancement Project (HEQEP) or the Krishi Gobeshona Foundation (KGF)⁶.

Component 2: Supporting for Crop Development

The objective of this component is to increase crop productivity, quality and output through the enhanced transfer of technologies, as well as to facilitate farmer participation in selected crop value chains. To achieve this objective, Component 2 will implement a comprehensive program of activities will include:

- (a) improving the outreach and quality of **crop extension and advisory services** by investing in public extension workers from DAE, promoting the use of ICT-based extension methodologies and supporting farmer-to-farmer extension;
- (b) developing the skills of CIG and non-CIG farmers to scale-up the dissemination of Good Agricultural Practices (GAP) developed under NATP-1, as well as identifying technologies (e.g. integrated pest management, climate-smart agriculture) for a sustainable production of safer food;
- (c) promoting farm and off-farm **mechanization** to increase crop productivity and farm output and diversification, as well as to increase efficiency in crop handling, reduce post-harvest losses and support processing;
- (d) facilitating stronger collaboration with private sector on agro-processing, value-chain integration of smallholders, as well as for the establishment of machinery hire-services;
- (e) supporting the institutional strengthening of key entities involved in the crop sector (e.g. renovating selected DAE horticulture centers, transforming Farmers Information and Advisory Centers (FIAC) into ICT-based one-stop knowledge and learning centers for crop, livestock and fish farmers⁷) through capacity development and selected investments in infrastructure (e.g. seed testing laboratory, agro-meteorological stations).

Number of total Crop CIGs in 270 *upazilas* will be about 28,000 including about 13,000 Crop CIGs formed and supported during the NATP-1 in 120 *upazilas*.

Aligned to the component 2, a program of matching grants (funded through AIF-2) will be designed and implemented to facilitate technology transfer. The main objective of the AIF-2 program is to provide a one-time grant to eligible crop CIGs (and POs) to facilitate their adoption of new technologies (e.g. generated under Component 1). Under this component, grants will be allocated to selected micro-project proposals that promote crop development. AIF-2 grants will be matched by a cash contribution from beneficiaries. It is expected that since the grant will work as an increase in the CIG's own capital (that includes CIG savings), some of the farmer groups will be able with technical assistance to develop bankable investment projects (e.g. for small-scale irrigation

⁶ Under NATP-1, KGF has been implementing the projects Competitive Grants Program and intends to pursue this program outside NATP-2 with its own resources.

⁷ Under NATP-1, 732 FIACs have been set up in facilities provided by the local *union* administration. An additional 1,143 FIACs are expected to be established under NATP-2, subject to availability of *union* facilities, for a total of 2,875 FIACs under operation by the end of NATP-2. Each FIAC hosts 3 DAE extension officers, 1 private Local Extension Agent for Fisheries (LEAF), and 1 private Community Extension Agent for Livestock (CEAL).

schemes, farm machinery, storage facilities). NATP-2 will explore opportunities to link bankable grant recipients with financing institutions engaged in programs/projects with a rural finance component (e.g. IFAD's PACE project).

To further enhance market access for smallholders, Component 2 will also directly finance local investments aimed at improving marketing activities. Such investments could range from setting up CIG or PO-run collection points for the washing, sorting, grading of specific commodities, to improving the physical infrastructure in a few rural markets. Subject to the outcomes of an independent performance assessment of the 24 existing Commodity Collection and Marketing Centers (CCMCs) supported under NATP-1, the new project could consider limited investments for their sustainability and replication to other locations.

Component – 3: Supporting Fisheries Development

The objective of this component is to promote an integrated approach to achieve productivity, quality and output increases through technology transfer, as well as a better integration of fish farmers in selected value chains. The NATP-2 will provide support for the sustainable development of inland culture fisheries (small scale aquaculture ponds) and inland capture fisheries (open water fisheries in *beel* and *haor*). To achieve the component objective, the project will scale-up NATP-1 Good Aquaculture Practices for the production systems prevailing in the project area, promote community-based fisheries management, support the participation of fisheries CIGs and POs in value chains, reinforce research-extension-farmers linkages and strengthen the capacity of fisheries institutions. The high degree of economic opportunities and benefits offered by the currently available and underutilised aquatic areas for aquaculture development, as well as the gender and nutrition dimension of fisheries, will be a major consideration for NATP-2.

It is expected that the number of LEAF will increase to about 1500 in about 270 Upazilas. An additional 4000 Fisheries CIGs are expected to be organized and supported in addition to existing 2670 Fisheries CIGs.

The Fisheries component will contribute to achieving the PDO by prioritizing investments in: (i) the promotion of specific fish production models involving improved fish varieties, (ii) the production of better quality fish seed, (iii) the introduction of appropriate fish feed, (iv) the application of relevant fisheries management tools, (v) the restoration of aquatic habitat, and (vi) the creation of more suitable market linkages for better access to markets and improved realization of value for the product. Through this component, NATP-2 will also invest in promoting climate-resilient and innovative aquaculture technologies.

Based on lessons learned from the previous project, NATP-2 will expand the delivery of extension services to fish farmers through Local Extension Agents for Fisheries (LEAF). In the absence of public field-level extension staff from the Department of Fisheries (DoF), this component will further strengthen existing LEAFs and mobilize additional LEAFs to reach out to fish farmers in the new *upazillas*. LEAFs will operate out of the FIACs. The project will focus on the quality of the services LEAFs deliver to farmers by investing in: (i) developing the technical skills of the LEAFs, (ii) increasing their mobility, (iii) facilitating ICT-based access to current and relevant knowledge, and (iv) strengthening linkages with fisheries research. NATP-2 will also address the **sustainability** of the LEAF-based extension model by identifying fee-based advisory services, equipping LEAFs with a "starter kit", and introducing a performance-based system that takes into account the degree of client satisfaction as reported by fish farmers (e.g. through e-scorecards). To complement the work of the LEAFs and increase the outreach to non-CIG farmers, this component will also develop a network of lead CIG-farmers and promote farmer-to-farmer extension.

The AIF-2 funding window will provide matching grants to eligible fisheries and aquaculture CIGs (and POs) to facilitate their adoption of productivity enhancing, post-harvest loss reducing,

innovative technologies (including those introduced under NATP-1 and new ones validated under Component 1). AIF-3 will support eligible private operators whose operations support improved farmer access to market or delivery of specific services to fish farmers (e.g. cold storage, transport, processing, fingerlings, fish feed).

Component - 4: Support to Livestock Development

The objective of this component is to promote an integrated approach to achieve productivity and output increases through enhanced technology transfer, service delivery, as well as a better integration of livestock farmers in selected value chains. To achieve the component's objective and contribute to the PDO, NATP-2 will focus on: (i) strengthening livestock institutions (including research, food safety and quality, animal health), improving livestock extension services, and reinforcing the linkages between research, extension and livestock farmers; (ii) scaling up outreach programs to reach out to a larger number of CIG and non-CIG farmers; and (iii) facilitating the participation of smallholder farmers in selected livestock value chains. To achieve significant and lasting productivity development in the dairy and beef sector, NATP-2 will work with public agencies to ensure that sophisticated artificial insemination and national breeding programs, currently prioritized by DLS, are accompanied by basic farmer programs focused on improving farm management (including fodder) and animal husbandry.

Number of LEAF is expected to increase to about 3000 in total 270 *upazilas* from the existing 1280 in 120 phase 1 *upazilas*. Number of CIG is expected to increase to about 9500 from the existing 3892 formed during the NATP-1.

This component will seek to strengthen the linkages between the research agenda at the Bangladesh Livestock Research Institute (BLRI) and other relevant research entities. NATP-2 will support better interaction between BLRI and the Central Cattle Breeding Station and Dairy Farm; particular attention will be given on the need for complementarity and synergies between BLRI's dairy research program and the herd improvement program of the Breeding Station. Component 4 will also facilitate the generation and adoption of climate resilient technologies relevant to the livestock farmers (e.g. fodder production and conservation). Further, Component 4 will promote the control of environmental impacts from the livestock sector through innovative technologies to mitigate CHG emission.

The project will improve the quality and outreach of livestock extension services and focus on the sustainability of the technology and knowledge transfer model developed. In the absence of DLS extension staff at the local level, NATP-2 will promote and expand the delivery of livestock extension services and technology transfer through Community Extension Agents for Livestock (CEAL) introduced under NATP-1. Additional CEALs will be mobilized under this component to account for NATP-2's geographic expansion. To improve the **quality of services** delivered, a comprehensive CEAL package will be developed that includes specialized training, improved mobility and connectivity, and equipment for the provision of primary animal care and breeding services. CEALs are hosted at the FIACs along with the DAE extension agents and the LEAF. AIF-2 will provide matching grants to livestock CIGs to accelerate technology adoption.

To complement the work of the CEALs and increase the outreach to non-CIG farmers, this component will also develop a network of lead CIG-farmers and promote **farmer-to-farmer** extension, as well as other forms of private technical advisory services, in line with the NAEP principles. As for fisheries, the extension system promoted by the project (FIAC, CEAL, lead-CIG farmer) will be subject to continuous ICT-based feedback reporting from smallholders (**civic engagement**) to allow for timely adjustments. Unlike for the LEAFs, the experience from NATP-1 indicates that CEALs generate considerable income from **fee-based services** provided to the livestock farmers, significantly contributing to the sustainability of the livestock extension system developed. Under this component, outreach programs will be scaled-up and facilitated through the extension system supported; outreach programs will cover, among others, fodder development,

preventive animal health care, artificial insemination and reproductive management services.

Livestock value chains selected by DLS are dairy, mutton and beef. Under this component, activities will be implemented to facilitate the participation of smallholder farmers in those value chains, as well as to promote food and feed safety issues in those value chains. AIF-3 will provide matching grants to support arrangements between private operators seeking to process livestock commodities from farmers.

Component – 5: Project Management and Coordination

This component will: (i) to ensure that the project is carried out in line with the provisions in the official project documents, (ii) establish liaison mechanisms between the Bank and the project, as well as between the project and the GoB, and (iii) coordinate the implementation of selected overarching project activities. Under this component a range of fiduciary activities will be carried out, including overall financial management, reporting and auditing, implementation of the project's Governance Accountability Action Plan (GAAP), coordination of procurement and corresponding support to other components, and monitoring of environmental and social safeguards compliance. This component will further coordinate the overall Project Monitoring and Impact Evaluation (M&IE) and reporting activities of the project, including baseline, midline and endline surveys for the impact evaluation. The project will implement all activities related to communication, public awareness and outreach, including setting up a comprehensive project website that will also accommodate a space for lodging stakeholders' complaints and other observations regarding project activities.

Finally, under this component, the project will finance a variety of technical reports as well as analytical studies in support of evidence-based policy decisions relevant to agricultural research, extension, production, post-harvest handling and commercialization. This work will include comprehensive, commodity specific market and value chain analyses, and the elaboration of sector policy notes for senior decision makers. Studies would also include the development of strong analytical underpinnings in support of the preparation of a follow-up investment operation (possibly an NATP-3). It will also fund an independent performance review of the AIF.

1.4 Layout of the report

The report comprises six chapters. Chapter 2 gives elaborated social setting which includes Socio-economic profile by administrative division including detailed description of the crops, fisheries and livestock subsectors. Chapter 3 briefly describes the approach and methodology applied to carry out this SMF. Chapter 4 provides a description of relevant legal and policy framework comprising GOB regulatory framework and the applicable World Bank Operational Policies. Chapter 5 describes the pertinent social issues, a screening process and mitigation measures. Finally, the Chapter 6 describes the required institutional arrangement and an M&E Framework.

The report contains seven annexes. Annex 1 provides a List of 120 NATP-1 *upazilas* and 30 Additional Financing *upazilas*. Annex 2 provides an indicative NATP-2 organogram and Institutional arrangement, Annex-3 Provides Poverty as of 2010, Annex-4 describes a procedure for preparing Small Ethnic and Vulnerable Communities' Development Plan, Annex-5 provides an outline of a consultation related to installation of buried, Annex 6 provides a format for preparing Sub Projects to be included in the Union Micro Plan and Annex 7 provides a Report of Field Visits including List Persons Met during the Field Visit.

2. Socio-Economic Setting

2.1 Background

The NATP is a nationwide program to be implemented in three phases over 15 years. NATP-1 was implemented in 120 *upazilas* of 25 districts in all of the seven administrative divisions during 2008-2014 while NATP-2 is planned to be implemented in 270 *upazilas* of 56 districts in all of the seven administrative divisions during the next six years (2015-21)⁸. NATP-3 is expected to cover all of the 480 *upazilas* in all 64 districts possibly during the third phase (2022-26).

This chapter provides a generalized description of the social setting of the project comprising an overview of the socio-economic profile, a description of the agriculture sector, the extension systems in the macro level as well as in the micro level in the *upazilas* visited during the study.

2.2 Socio-Economic Profile by Administrative Division

2.2.1 Demographic Profile

Table 2.1 below provides basic demographic data by administrative division. Compared to national level population density of 976 per km² density is highest in Dhaka division (1521) and lowest in Barisal division (629). Sex ratio is nearly balanced nationally while Dhaka division has more males while Chittagong and Barisal division has fewer males than females. Average family size is higher in Sylhet and Chittagong and lower in Rajshahi and Rangpur. Literacy rate is average 52% nationally which is higher, 57 and 54 percent in Barisal and Dhaka and lowest 45% in Sylhet. The country has overall 1.1% small ethnic communities which is high in Chittagong Division because of three hill districts.

Table-2.1: Area, Population, Literacy and Ethnicity by administrative division

SL	Particulars	Dhaka	Chittagong	Rajshahi	Rangpur	Khulna	Barisal	Sylhet	Country Total
1	Area (Sq km)	31,178	33,908	18,154	16,181	22,285	13,226	12,635	147,570
2	Household (000)	10,849	5626	4487	3818	3740	1863	1,791	32,174
3	Population (000)	47,424	28423	18,488	15,788	15,688	8,324	9,910	144,044
4	Density/sq km	1,521	838	1,018	976	704	629	784	976
5	Sex Ratio (M/F*100)	104	96	100	100	100	97	99	100.3
6	Av. Household Size	4.32	5.01	4.09	4.11	4.17	4.45	5.52	4.44
6	Literacy Both Sex	54.19	52.69	48.05	47.19	53.23	56.75	45.01	51.77
7	Literacy (Male)	57	53.94	50.5	50.65	55.72	57.62	46.96	54.11
8	Literacy (Fem)	51.27	51.52	45.6	43.82	50.75	55.93	43.1	49.44
9	Small ethnic community people %	0.31	3.16	1.33	0.65	0.26	0.04	1.50	1.1

2.2.2 Spatial Variation of Poverty

⁸ The first phase 120 *upazilas* of NATP I are relatively developed *upazilas* located near or in good road link with the district towns. The 30 additional funding *upazilas* are relatively isolated and located in disaster prone areas. The remaining 120 *upazilas* to be included during the NATP II are less developed ones and include about a dozen *upazilas* from the Chittagong Hill Tracts having high concentration of small ethnic and vulnerable communities .

Table 2.2 below shows percentage of population living below upper and lower poverty lines (2122 and 1805 cal) as per Household Income and Expenditure Survey 2000, 2005 and 2010. Head count ratio of poverty by upper poverty line decreased in the country from about 49% in 2000 through 40% in 2005 and 31.5% in 2010. During the period, hardcore poverty in the country decreased from 34% through 25% to 18%. During 2000-2005 poverty decreased faster in the relatively developed areas like Dhaka and Chittagong divisions while during 2005-2010 poverty decreased faster in the less developed divisions like Barisal and Khulna. Still, poverty remained high in the western half of the country (Barisal, Khulna, Rajshahi and Rangpur) compared to the eastern half (Dhaka, Chittagong and Sylhet). Poverty remained high particularly in Rangpur and Barisal divisions which are more vulnerable to flood and cyclone. Chittagong has lowest incidence of poverty but Dhaka did not improve much may be because of the influx of poor people from other areas to Dhaka in search of low-paid employment such as in the garments industry and non-motorized transport operation. Poverty by administrative district is provided in [Annex- 3](#).

Table 2.2: Poverty by Administrative Division 2000, 2005, 2010 (Head Count Ratio)						
Division/Region	All Area	Rural Area	All Area	Rural Area	All Area	Rural Area
All Poor (2122 cal)	2000		2005		2010	
Barisal (South)	53.1	55.1	52.0	54.1	39.4	39.2
Greater Rajshahi (Northwest)	56.7	58.5	51.2	52.3	35.7	36.6
Rajshahi excluding new Rangpur division					29.8	30.0
New Rangpur Division					46.2	47.2
Khulna (Southwest)	45.1	46.4	45.7	46.5	32.1	31.0
Dhaka (Central)	46.7	55.9	32.0	39.0	30.5	38.8
Chittagong (Southeast)	45.7	46.3	34.0	36.0	26.2	31.0
Sylhet (Northeast)	42.4	41.9	33.8	36.1	28.1	30.5
Country Average	48.9	52.3	40.0	43.8	31.5	35.2
Hardcore Poor (1805 cal)	2000		2005		2010	
Barisal (South)	34.7	35.9	35.6	37.2	21.7	27.3
Greater Rajshahi	42.7	43.9	34.5	35.6	21.6	22.7
Rajshahi excluding new Rangpur division					16.8	17.7
New Rangpur Division					30.1	30.8
Khulna (Southwest)	32.3	34	31.6	32.7	15.4	15.2
Dhaka Division (Central)	34.5	43.6	19.9	26.1	15.6	23.5
Chittagong (Southeast)	27.5	30.1	16.1	18.7	13.1	16.2
Sylhet (Northeast)	26.7	26.1	20.8	22.3	20.7	23.5
Country Average	34.3	37.9	25.1	28.6	17.6	21.1

Source: BBS, Household Income and Expenditure Survey 2000, 2005 and 2010

2.2.3 Housing condition and other basic amenities

Table 2.3 shows that about 85% of all houses in Bangladesh are Kutcha (mainly tin roof mud, tin or bamboo fenced and mud floor), 10% are semi-pucca (brick wall, tin roof, brick-cement floor) and

only about 4% are pucca houses (brick wall, concrete roof and brick-cement floor). Thatched houses are now rare, only about 1percent. Housing condition appeared rich in Sylhet, Khulna and Chittagong but poor in Barisal and Rangpur which is consistent with the poverty level by administrative division as of 2010.

About 60% households use electricity for lighting including 3% using solar energy. Electricity use appeared high in Comilla and Sylhet representing Chittagong and Sylhet divisions but low in Gaibandha and Patuakhali representing Rangpur and Barisal divisions. Electricity connection appeared low also in Faridpur, a district in Dhaka division but outside of the influence of Dhaka city and surroundings.

Access to safe drinking water is about 97 percent and there are pockets of problem areas with arsenic or salinity intrusion. About 62% households use sanitary latrine, better in Dhaka and Chittagong but poor in Gaibandha of Rangpur.

Table 2.3: Housing, Sanitation, Electricity and Drinking water access of the households in representative districts in each division⁹

SL	Housing Condition	Dhaka (Faridpur)	Chittagong (Comilla)	Rajshahi (Bogra)	Rangpur (Gaibandha)	Khulna (Jesore)	Barisal (Patuakhali)	Sylhet (Sylhet)	Country Total
1	Pucca (Brick wall, RCC roof)	4.8	9.9	5.7	2.0	16.4	2.6	21.7	4.0
2	Semi-pucca (Brick wall, Tin roof)	28.7	15.7	20.8	12.8	33.6	5.7	31.2	10.1
3	Kutcha (Mud/ bamboo fenced, tin roof)	64.9	73	72.1	83.1	44.9	86.6	44.9	84.5
4	Jhupri: Thatched house	1.5	1.3	1.4	2.1	5.2	5.0	2.1	1.4
5	Access safe drinking water (% HH)	97.4	94.9	97.7	95.9	98.2	97.7	76.9	95.6
6	Electricity (% HH)	48.7	74.9	52.6	29.4	61.1	31.8	62.9	60.0
7	Sanitary Water Sealed Toilet	32.5	21.9	33.6	10.7	28.6	23.9	23.1	27.8
8	Sanitary non-Water Sealed Toilet	47.4	54.8	31.8	19.8	31.7	47.5	38.7	33.8
9	Non-Sanitary Toilet	17.6	20.2	24.5	43.7	35.2	25.3	32.7	31.4
10	No Toilet	2.6	3.1	10.2	25.9	4.5	3.4	5.5	7.0

Source: BBS, Bangladesh Census of Population and Housing 2011.

2.3 Profile of the Agriculture Sector

2.3.1 Land Ownership and Tenancy Pattern

Table 2.4 below provides number and percentage distribution of all non-farm and farm holdings by administrative division. The country had 28.696 million enumerated holdings as per Agriculture Census 2008 of which 53% are farm holdings (operating minimum 0.05 acre cultivated land) and

⁹ BBS 2011 Census Data are not yet organized division wise. Therefore data of a medium category district from each division are presented here.

47% are non-farm holdings (landless or below 0.05 acre). Of the farm holdings, 84.4% are small and marginal farms, 14.1% are medium farms and only 1.5% large farms.

Of the total holdings, 65% are owner-operated, 22% are owner cum tenants and 13% are tenant holdings. About 31% of all holdings are agricultural labor holdings. Nearly

Table 2.4: Number and percentage distribution of farm and non-farm holdings by administrative division Numbers in
Thousand

SL	Division	All Non-farm/ landless holdings <.05 acre	All Farm holdings >= 0.05 acre	Small & Marginal Farms (.05-2.49 acre)	Medium farm (2.5-7.49 acres)	Large farms (7.5 acres and above)	All holdings	Owner Cultivator	Owner cum Tenant	Tenant	Agr Lab HH
1	Dhaka	5,299	4,158	3,592	521	44	9,457	5,900	1,750	1,807	2,282
	% by farm size	56.0	44.0	86.4	12.5	1.1		62.4	18.5	19.1	24.1
2	Chittagong	2,368	2,515	2,235	253	28	4,883	3,439	1,000	445	1,271
	% by farm size	48.5	51.5	88.9	10.1	1.1		70.4	20.5	9.1	26.0
3	Rajshahi including Rangpur	3,263	4,400	3,580	732	89	7,663	4,882	1,952	830	3,011
	% by farm size	42.6	57.4	81.4	16.6	2.0		63.7	25.5	10.8	39.3
4	Rangpur										
	% by farm size										
5	Khulna	1,331	2,105	1,762	313	29	3,435	2,177	941	317	1,346
	% by farm size	38.7	61.3	83.7	14.9	1.4		63.4	27.4	9.2	39.2
6	Barisal	554	1,177	1,001	158	18	1,731	1,229	378	124	480
	% by farm size	32.0	68.0	85.0	13.4	1.5		71.0	21.8	7.2	27.7
7	Sylhet	697	829	643	160	26	1,526	1,108	258	161	456
	% by farm size	45.7	54.3	77.6	19.3	3.1		72.6	16.9	10.6	29.9
8	Country Total	13,513	15,183	12,812	2,136	234	28,696	18,735	6,278	3,683	8,844
9	% by farm size/	47.1	52.9	84.4	14.1	1.5		65.3	21.9	12.8	30.8

Table 2.5: Land Use and Cropping Intensity 2008 Number in thousand and area in thousand acres

Type	Dhaka	Chittagong	Rajshahi	Khulna	Barisal	Sylhet	Country Total
All Holding (Number)	9,457	4,883	7,663	3,435	1,731	1,526	28,696
Farm holding (number)	4,158	2,515	4,400	2,105	1,177	697	15,183
Homestead area	734	378	578	235	114	127	2,166
Av homestead area (acre)	0.08	0.08	0.08	0.07	0.07	0.08	0.08
Net cultivated area	4,819	2,595	6,282	2,640	1,388	1,374	19,098
Av cultivated area/ farm hh	1.16	1.03	1.43	1.25	1.18	1.97	1.26
Irrigated area	3,344	1,167	4,870	1,699	200	701	11,981
% irrigated	69.4	45.0	77.5	64.4	14.4	51.0	62.7
Gross cropped area	7,514	3,592	11,684	3,980	2,103	1,613	30,486
Cropping Intensity	165	165	192	168	178	126	173

Source: Agriculture Census 2008

Table 2.5 shows that average holdings have 0.08 acre homestead area while average farm holdings have 1.26 acres cultivated area. Of the 19 million acres cultivated area in the country about 63% is irrigated. Percentage of cultivated area irrigated is highest in Rajshahi (78%) followed by Dhaka (69%). Irrigated area is lowest in Barisal (only 14%) as crop production in this division remains rain-fed or tide-fed. Potential to further increase irrigation is highest in Barisal followed by Sylhet and Chittagong still having unexplored potential to expand surface water irrigation. Cropping Intensity was 173% in 2008 which has increased to 191% by 2010-11 (BBS, Yearbook of Agriculture 2014).

Cropping Intensity was highest (206%) in Rangpur division and lowest 154% in Sylhet division in 2010-11. In districts like Kushtia and Jessore cropping intensity was as high as 256% and 228% while it was lowest in Khulna (coastal) and Bandarban Hill district 134 and 138 percent (Table 2.6).

Table 2.6: Cropping Intensity by Region and Division				
Regions/ Division	Total Area	Net Cropped Area (000 acres)	Total Cropped Area (000 acres)	Cropping Intensity (%)
Bandarban	1107	64	88	138
Rangamati	1511	84	121	144
Khagrachhari	667	72	153	212
Chittagong Hills	3285	220	362	165
Chittagong	2035	605	1203	199
Cornilla	1660	1078	1957	182
Noakhali	1525	689	1457	211
Chittagong Plains	5220	2372	4617	195
Sylhet	3113	1502	2314	154
Dhaka	1838	946	1626	172
Faridpur	1726	1084	2086	192
Jamalpur	839	584	1337	229
Kishoreganj	1380	880	1538	175
Mymensingh	1078	724	1556	215
Tangail	844	540	1039	192
Dhaka Division	7705	4758	9182	193
Barisal	2040	1154	2033	176
Patuakhali	1245	751	1119	149
Barisal Division	3285	1905	3152	165
Jessore	1623	1088	2482	228
Khulna	3062	968	1297	134
Kushtia	861	552	1412	256
Khulna Division	5546	2608	5191	199
Bogra	960	714	1682	235
Pabna	1201	762	1547	203
Rajshahi	2333	1728	3116	180
Rajshahi Division	4494	3204	6345	198
Rangpur	2377	1579	3186	202
Dinajpur	1644	1220	2577	211
Rangpur Division	4021	2799	5763	206
Bangladesh	36669	19368	36926	191

Source: BBS. Yearbook of Agriculture 2014

2.3.2 Major Crops: Area and Yield

Table 2.7 provides area in ha, production in MT and yield in MT/ha of Aus rice by variety, region, administrative division. Total Aus area is 1.3 million ha and production is 2.6 million MT with yield about 2 MT per ha. About 40% Aus area is local variety and Local Aus yield is 1.8 MT/ha compared to Aus HYV yield 2.2 MT/ ha.

Table 2.7: Area, yield and production of Aus Rice by region/ administrative division

Area ha, prod MT, Yield MT/ha)

Region/ Division	Aus Local			Aus HYV			Aus Total		
	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production
Bandarban	5,751	1.650	9,491	1,944	2.297	4,464	7,695	1.814	13,955
Khagrachari	639	1.288	823	1,818	2.159	3,940	2,457	1.939	4,763
Rangamati	4,511	1.468	6,625	1,257	2.112	2,655	5,768	1.609	9,280
Chittagong Hill	10,901	1.554	16,939	5,019	2.203	11,059	15,920	1.759	27,998
Chittagong	7,040	1.387	9,765	41,845	2.538	106,201	48,885	2.372	115,966
Comilla	4,038	1.118	4,514	77,082	2.159	166,386	81,120	2.107	170,900
Noakhali	55,800	1.198	66,845	50,676	2.046	103,659	106,476	1.601	170,504
Chittagong Plain Land	66,878	1.213	81,124	169,603	2.218	376,246	236,481	1.934	457,370
Sylhet Div	5,751	1.650	9,491	70,252	2.303	161,760	76,003	2.253	171,251
Dhaka	757	0.682	516	4,026	1.661	6,688	4,783	1.506	7,204
Faridpur	30,745	0.828	25,472	22	2.000	1,603	30,767	0.880	27,075
Jamalpur	1,455	0.962	1,400	7,181	1.914	13,747	8,636	1.754	15,147
Kishoreganj	1,586	1.561	2,476	21,454	2.003	42,965	23,040	1.972	45,441
Mymensingh	890	1.118	995	55,421	1.857	102,906	56,311	1.845	103,901
Tangail	885	0.787	696	100	1.680	169	985	0.878	865
Dhaka Div	36,318	0.869	31,555	88,204	1.906	168,078	124,522	1.603	199,633
Barisal	82,052	1.449	118,929	71,582	2.093	149,807	153,634	1.749	268,736
Patuakhali	72,213	2.017	145,646	72,213	2.017	145,646	144,426	2.017	291,292
Barisal Div	154,265	1.715	264,575	143,795	2.055	295,453	298,060	1.879	560,028
Jessore	9,350	1.147	10,721	76,602	2.388	182,926	85,952	2.253	193,647
Khulna	7,714	1.206	9,304	15,923	2.344	37,322	23,637	1.973	46,626
Kushtia	47,037	2.405	113,122	47,037	2.405	113,122	94,074	2.405	226,244
Khulna Div	64,101	1.765	113,122	139,562	2.389	333,370	203,663	2.192	446,492
Bogra	22,210	1.959	43,510	22,210	1.959	43,510	44,420	1.959	87,020
Pabna	11,634	1.683	19,583	11,634	1.683	19,583	23,268	1.683	39,166
Rajshahi	141,344	2.271	320,959	141,344	2.271	320,959	282,688	2.271	641,918
Rajshahi Div	175,188	2.192	384,052	175,188	2.192	384,052	350,376	2.192	768,104
Dinajpur	4,415	2.000	8,830	4,415	2.000	8,830	8,830	2.000	17,660
Rangpur	231	1.867	432	231	1.867	432	462	1.870	864
Rangpur Div	4,646	1.994	9,262	4,646	1.994	9,262	9,292	1.994	18,524
Bangladesh	518,048	1.757	910,120	796,269	2.184	1,739,280	1,314,317	2.016	2,649,400

Source: Yearbook of Agriculture Statistics 2011

Table 2.8: Area, yield and production of Aman Rice by region/ administrative division (Area in ha, production in MT and yield in MT/ha)

Region/ Division	B. Aman Local			T. Aman Local			T. Aman HYV			Aman Total		
	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production
Bandarban	-	0	-	338	1.981	669	7,854	2.268	17,813	8,192	2.256	18,482
Khagrachari	-	0	-	1,426	1.848	2,635	29,186	2.925	85,366	30,612	2.875	88,001
Rangamati	-	0	-	285	2.013	573	9,257	2.569	23,779	9,542	2.552	24,352
Chittagong Hill Tract	-	0	-	2,049	1.892	3,877	46,297	2.742	126,958	48,346	2.706	130,835
Chittagong	-	0	-	39,064	1.548	60,452	221,187	2.830	625,966	260,251	2.638	686,418
Comilla	75,881	1.116	84,707	19,330	1.716	33,163	167,217	2.640	441,451	262,428	2.131	559,321
Noakhali	-	0	-	141,371	1.538	217,380	128,064	2.734	350,119	269,435	2.106	567,499
Chittagong Plain Land	75,881	1.116	84,707	199,765	1.557	310,995	516,468	2.745	1,417,536	792,114	2.289	1,813,238
Sylhet Div	31,080	1.622	50,396	125,818	1.933	243,166	213,112	2.937	625,915	370,010	2.485	919,477
Dhaka	70,681	0.976	68,990	16,048	1.527	24,511	83,978	2.836	238,164	170,707	1.943	331,665
Faridpur	96,949	1.184	114,830	7,590	1.429	10,843	78,055	2.372	185,111	182,594	1.702	310,784
Jamalpur	-	0	-	57,736	1.637	94,518	135,839	2.557	347,363	193,575	2.283	441,881
Kishoreganj	-	0	-	57,350	1.510	86,600	157,272	2.500	393,199	214,622	2.236	479,799
Mymensingh	-	0	-	70,829	1.541	109,170	202,441	2.364	478,592	273,270	2.151	587,762
Tangail	32,221	1.055	34,001	30,470	1.601	48,791	79,876	2.543	203,129	142,567	2.006	285,921
Dhaka Div	199,851	1.090	217,821	240,023	1.560	374,433	737,461	2.503	1,845,558	1,177,335	2.071	2,437,812
Barisal	8,152	1.485	12,109	276,472	1.684	465,651	129,025	2.454	316,620	413,649	1.920	794,380
Patuakhali	-	0	-	234,840	1.537	360,896	71,171	2.334	166,142	306,011	1.722	527,038
Barisal Div	8,152	1.485	12,109	511,312	1.617	826,547	200,196	2.411	482,762	719,660	1.836	1,321,418
Jessore	19,322	1.283	24,794	8,846	1.551	13,721	286,275	2.462	704,788	314,443	2.364	743,303
Khulna	9,885	1.282	12,674	83,441	1.727	144,133	180,106	2.621	472,013	273,432	2.300	628,820
Kushtia	1,558	1.335	2,079	914	1.360	1,243	144,297	2.583	372,668	146,769	2.562	375,990
Khulna Div	30,765	1.285	39,547	93,201	1.707	159,097	610,678	2.537	1,549,469	734,644	2.380	1,748,113
Bogra	-	0	-	17,918	1.761	31,547	233,685	2.298	536,940	251,603	2.259	568,487
Pabna	57,232	1.262	72,241	15,937	1.487	23,692	101,519	2.458	249,556	174,688	1.978	345,489
Rajshahi	23,093	1.395	32,211	37,627	1.553	58,443	323,595	2.693	871,411	384,315	2.503	962,065
Rajshahi Div	80,325	1.300	104,452	71,482	1.590	113,682	658,799	2.517	1,657,907	810,606	2.314	1,876,041
Dinajpur	-	0	-	25,507	1.593	40,642	420,439	2.772	1,165,340	445,946	2.704	1,205,982
Rangpur	-	0	-	46,466	1.627	68,290	500,513	2.538	1,270,292	546,979	2.447	1,338,582
Rangpur Div	-	0	-	71,973	1.514	108,932	920,952	2.645	2,435,632	992,925	2.563	2,544,564
Bangladesh	426,054	1.195	509,032	1,315,621	1.627	2,140,729	3,903,962	2.598	10,141,737	5,645,637	2.266	12,791,498

Table 2.9: Area, yield and production of BORO Rice by region/ administrative division

(Area ha, prod MT, Yield MT/ha)

Region/ Division	Boro Local			Boro HYV			Boro Hybrid			Boro Total		
	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production
Bandarban	-	0	-	3,178	2.832	8,998	117	3.93	461	3,295	2.871	9,459
Khagrachari	-	0	-	8,940	3.355	29,991	1,469	4.27	6,275	10,409	3.484	36,266
Rangamati	-	0	-	4,963	3.155	15,657	3,282	4.61	15,117	8,245	3.732	30,774
Chittagong Hill Tract	-	0	-	17,081	3.199	54,646	4,868	4.49	21,853	21,949	3.485	76,499
Chittagong	-	0	-	108,822	3.207	349,025	11,526	4.36	50,302	11,526	4.364	50,302
Comilla	1,458	2.308	3,365	310,061	3.877	1,202,226	27,107	4.64	125,639	27,107	4.635	125,639
Noakhali	-	0	-	84,170	3.484	1,202,226	34,385	4.35	149,392	34,385	4.345	149,392
Chittagong Plain Land	1,458	2.308	3,365	503,053	5.474	2,753,477	73,018	4.46	325,333	73,018	4.456	325,333
Sylhet Div	41,939	2.340	98,126	306,355	3.270	1,001,826	50,394	4.37	220,027	50,394	4.366	220,027
Dhaka	3,529	1.625	5,734	253,161	4.044	1,023,723	16,528	4.52	74,665	273,218	4.041	1,104,122
Faridpur	4,954	1.703	8,437	174,585	4.263	744,277	28,712	5.20	149,379	208,251	4.332	902,093
Jamalpur	1,708	2.044	3,492	180,731	4.004	723,566	31,256	5.19	162,165	213,695	4.161	889,223
Kishoreganj	2,331	1.996	4,651	280,730	3.976	1,116,149	52,980	5.06	267,819	336,041	4.132	1,388,619
Mymensingh	814	1.745	1,421	237,752	3.494	830,713	19,587	4.79	93,803	258,153	3.587	925,937
Tangail	1,003	2.675	1,421	160,022	3.950	632,039	3,820	4.79	18,011	164,845	3.952	651,471
Dhaka Div	14,339	1.754	25,156	1,286,981	3.940	5,070,467	152,883	5.01	765,842	1,454,203	4.031	5,861,465
Barisal	7,953	1.488	11,836	119,926	3.537	424,221	17,965	4.74	85,173	145,844	3.574	521,230
Patuakhali	2,026	2.065	4,184	2,677	2.802	7,502	158	4.61	729	4,861	2.554	12,415
Barisal Div	9,979	1.605	16,020	122,603	3.521	431,723	18,123	4.74	85,902	150,705	3.541	533,645

Region/ Division	Boro Local			Boro HYV			Boro Hybrid			Boro Total		
	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production
Jessore	463	1.273	589	279,615	3.939	1,101,486	43,288	4.79	207,457	323,366	4.050	1,309,532
Khulna	4,018	1.403	5,636	118,345	3.307	391,330	39,971	4.43	177,079	162,334	3.536	574,045
Kushtia	-	0	-	95,934	3.806	365,144	3,653	5.35	19,550	99,587	3.863	384,694
Khulna Div	4,481	1.389	6,225	493,894	3.762	1,857,960	86,912	4.65	404,086	585,287	3.875	2,268,271
Bogra	1,531	1.887	2,889	204,743	3.660	749,381	50,101	4.77	238,956	256,375	3.866	991,226
Pabna	3,577	1.707	6,107	182,990	4.262	779,933	16,103	5.22	84,093	202,670	4.293	870,133
Rajshahi	82	1.997	164	335,642	4.119	1,382,508	35,606	5.21	185,630	371,330	4.223	1,568,302
Rajshahi Div	5,190	1.765	9,160	723,375	4.025	2,911,822	101,810	5.00	508,679	830,375	4.130	3,429,661
Dinajpur	-	0	-	243,349	3.797	923,969	42,658	4.56	194,661	286,007	3.911	1,118,630
Rangpur	1,648	1.572	2,590	337,090	3.656	1,232,446	126,856	4.72	599,151	465,594	3.939	1,834,187
Rangpur Div	1,648	1.572	2,590	580,439	3.715	2,156,415	169,514	4.68	793,812	751,601	3.929	2,952,817
Bangladesh	79,034	2.049	161,903	4,033,779	3.800	15,329,343	657,524	4.75	3,125,534	4,770,337	3.903	18,616,780

Table 2.10: Area and Production of non-rice Major Crops by Region/ Division (Area in ha, production in MT, yield in MT/ha)

2010-11

Region/ Division	Wheat			Maize			Jute			Potato		
	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production
Bandarban Region	-	-	-	320	0.869	278	-	-	-	380	9.889	3,758
Khagrachari Region	-	-	-	562	0.756	425	-	-	-	373	9.568	3,569
Rangamati Region	-	-	-	1,459	1.028	1,500	-	-	-	336	9.923	3,334
Chittagong Hill Tract	-	-	-	2,341	0.941	2,203	-	-	-	1,089	9.790	10,661
Chittagong Region	8	0.943	8	92	1.576	145	-	-	-	4,301	13.128	56,464
Comilla Region	10,639	1.797	19,117	15,096	1.762	26,603	9,418	9.489	89,364	32,890	19.199	631,470
Noakhali Region	194	1.685	327	-	-	-	-	-	-	515	9.491	4,888
Chittagong Plain Land	10,841	1.794	19,452	15,188	1.761	26,748	9,418	9.489	89,364	37,706	18.374	692,822
Sylhet Region	1,044	2.007	2,096	-	-	-	135	8.419	1,085	4,660	9.456	44,065
Dhaka Region	4,475	1.726	7,724	23,109	2.062	47,644	25,867	9.969	257,868	47,168	26.764	1,262,407
Faridpur Region	53,246	2.697	143,618	253	1.111	281	181,999	12.087	2,199,902	1,677	18.994	31,853
Jamalpur Region	5,230	2.112	11,048	863	2.444	2,109	54,963	10.537	579,164	9,941	15.024	149,354
Kishoregonj Region	6,156	1.683	10,363	2,797	1.631	4,562	14,884	9.834	146,373	4,629	9.974	46,171
Mymensingh Region	1,473	1.646	2,425	574	1.767	1,014	8,760	8.105	70,999	4,279	9.415	40,285
Tangail Region	6,411	1.978	12,678	251	1.857	466	23,057	10.848	250,120	3,675	11.414	41,948
Dhaka Division	76,991	11.842	187,856	27,847	2.014	56,076	309,530	11.322	3,504,426	71,369	22.027	1,572,018
Barisal Region	3,484	2.196	7,651	938	1.662	1,559	4,104	8.422	34,566	4,589	18.119	83,146
Patuakhali Region	6	1.572	9	251	1.382	347	-	-	-	1,840	19.648	36,152
Barisal Division	3,490	3.768	7,660	1,189	1.603	1,906	4,104	8.422	34,566	6,429	18.556	119,298
Jessore Region	21,415	2.510	53,758	19,030	2.937	55,889	111,867	13.469	1,506,769	4,104	19.693	80,820
Khulna Region	1,380	2.362	3,260	350	1.157	405	15,536	12.324	191,468	4,472	15.722	70,310
Kustia Region	30,751	2.963	91,106	84,481	2.711	229,019	84,362	12.859	1,084,843	5,790	19.100	110,590
Khulna Division	53,546	7.835	148,124	105,050	2.734	287,219	211,765	13.142	2,783,080	14,366	18.218	261,720
Bogra Region	2,883	2.157	6,218	19,037	2.246	42,755	19,801	11.075	219,289	91,460	18.312	1,674,798
Pabna Region	34,651	2.649	91,801	5,751	2.372	13,639	50,582	11.675	590,569	3,729	9.259	34,527
Rajshahi Region	80,316	2.766	222,162	16,317	1.809	29,524	27,463	13.226	363,213	57,839	18.270	1,056,697
Rajshahi Division	117,850	7.572	320,181	41,105	2.090	85,918	97,846	11.989	1,173,071	153,028	18.075	2,766,022
Rangpur Region	20,936	2.179	45,626	131,385	2.407	316,279	29,381	10.075	296,025	99,168	17.559	1,741,299
Dinajpur Region	89,009	2.709	241,090	86,154	2.830	243,844	46,294	11.063	512,133	72,382	15.453	1,118,484
Rangpur Division	109,945	4.888	286,716	86,154	2.830	243,844	75,675	10.679	808,158	171,550	16.670	2,859,783
Bangladesh	547,416	2.179	1,414,268	409,070	2.489	1,018,287	708,723	11.846	8,395,840	671,802	18.801	12,630,446

Table 11: Area and Production of Summer Vegetables & Tomato by Region/ Division 2010-11

(Area in acres, Production in MT and yield MT/acre)

Region/ Division	Summer Vegetables			Winter Vegetables			Leafy Vegetables			Tomato		
	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod
Bandarban	2,831	1.816	5,142	1,779	2.686	4,778	530	1.785	946	302	2.493	753
Khagrachhari	5,384	2.385	12,842	3,267	3.076	10,049	1,118	1.767	1,975	474	2.935	1,391
Rangamati	6,912	1.898	13,120	3,242	3.012	9,766	1,158	1.451	1,680	554	1.903	1,054
Chittagong Hills	15,127	2.056	31,104	8,288	2.967	24,593	2,806	1.640	4,601	1,330	2.405	3,198
Chittagong	12,807	2.483	31,794	14,965	4.344	65,009	3,357	2.240	7,520	4,760	3.007	14,315
Comilla	9,014	1.976	17,816	12,251	3.982	48,789	4,564	2.320	10,588	5,236	3.208	16,798
Noakhali	6,377	1.609	10,261	12,374	2.518	31,161	4,306	1.678	7,225	2,296	1.603	3,681
Chittagong Plains	28,198	2.123	59,871	39,590	3.662	144,959	12,227	2.072	25,333	12,292	2.831	34,794
Sylhet Division	11,418	1.831	20,911	15,116	3.461	52,324	2,538	1.729	4,387	2,611	2.962	7,735
Dhaka	23,196	1.830	42,450	25,895	3.517	91,068	9,693	1.861	18,038	4,518	3.491	15,773
Faridpur	11,899	2.152	25,605	12,878	3.369	43,381	7,223	2.064	14,910	4,065	3.898	15,847
Jamalpur	6,225	3.320	20,666	8,787	5.303	46,595	3,081	3.076	9,476	1,466	6.021	8,827
Kishoreganj	4,781	1.786	8,538	6,875	3.305	22,723	1,675	1.909	3,197	1,347	4.635	6,244
Mymensingh	9,123	2.253	20,556	8,457	3.510	29,688	2,913	2.143	6,242	1,190	3.020	3,594
Tangail	7,550	2.465	18,607	11,684	5.390	62,977	3,639	2.644	9,623	787	6.550	5,155
Dhaka Division	62,774	2.173	136,422	74,576	3.975	296,432	28,224	2.179	61,486	13,373	4.146	55,440
Barisal	13,806	2.986	41,230	10,216	2.835	28,964	4,578	1.582	7,241	1,478	2.032	3,004
Patuakhali	1,748	1.141	1,995	2,728	1.852	5,051	1,181	1.312	1,549	396	1.066	422
Barisal Division	15,554	2.779	43,225	12,944	2.628	34,015	5,759	1.526	8,790	1,874	1.828	3,426

Region/ Division	Summer Vegetables			Winter Vegetables			Leafy Vegetables			Tomato		
	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod
Jessore	19,716	3.796	74,840	21,976	4.210	92,525	9,406	3.614	33,991	3,013	3.776	11,377
Khulna	13,609	2.739	37,275	11,579	4.615	53,439	7,005	3.041	21,302	2,125	2.952	6,273
Kushtia	17,027	3.635	61,889	13,475	4.641	62,533	6,117	3.286	20,103	2,417	4.348	10,510
Khulna Division	50,352	3.456	174,004	47,030	4.433	208,497	22,528	3.347	75,396	7,555	3.727	28,160
Bogra	7,474	3.129	23,388	6,232	4.741	29,548	1,817	2.538	4,612	751	2.862	2,149
Pabna	12,036	2.240	26,955	8,071	3.209	25,900	2,852	2.221	6,333	1,028	2.775	2,853
Rajshahi	16,717	2.435	40,709	14,021	4.348	60,967	5,675	2.195	12,459	10,883	5.208	56,674
Rajshahi Division	36,227	2.513	91,052	28,324	4.110	116,415	10,344	2.263	23,404	12,662	4.871	61,676
Dinajpur	12,961	2.073	26,871	13,180	3.159	41,633	4,113	2.136	8,787	8,100	4.109	33,280
Rangpur	18,760	2.175	40,811	16,597	3.621	60,103	5,638	1.781	10,044	1,896	2.505	4,750
Rangpur Division	31,721	2.134	67,682	29,777	3.417	101,736	9,751	1.931	18,831	9,996	3.805	38,030
Bangladesh	251,371	2.483	624,271	255,645	3.829	978,971	94,177	2.360	222,228	61,693	3.768	232,459

Source: BBS, Yearbook of Agriculture 2011

Table 12: Area and Production of Arum, Green Banana and Green Papaya by Region/ Division 2010-11 (Area in acres, Production in MT and yield MT/acre)

Region/ Division	Arum			Kachur lati			Green banana			Green Papaya		
	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod
Bandarban	900	1.970	1,773	190	1.979	376	748	6.078	4,546	112	9.455	1,059
Khagrachhari	5,219	3.988	20,811	402	2.871	1,154	836	3.794	3,172	86	6.419	552
Rangamati	1,807	3.097	5,597	236	2.487	587	832	6.126	5,097	177	15.198	2,690
Chittagong Hills	7,926	3.556	28,181	828	2.557	2,117	2,416	5.304	12,815	375	11.469	4,301
Chittagong	4,299	4.518	19,421	1,664	2.990	4,975	989	5.112	5,056	115	3.800	437
Comilla	1,050	5.382	5,651	955	3.562	3,402	511	3.006	1,536	27	19.407	524
Noakhali	1,389	2.645	3,674	1,328	1.320	1,753	765	2.186	1,672	-	-	-
Chittagong Plains	6,738	4.266	28,746	3,947	2.567	10,130	2,265	3.649	8,264	142	6.768	961
Sylhet Division	2,995	2.738	8,200	609	2.044	1,245	524	3.760	1,970	49	18.286	896
Dhaka	2,871	2.558	7,344	1,269	1.705	2,164	1,966	11.290	22,197	1,952	2.455	4,792
Faridpur	2,803	2.859	8,013	751	1.435	1,078	2,218	4.326	9,595	426	18.061	7,694
Jamalpur	954	4.371	4,170	506	2.603	1,317	571	5.201	2,970	64	18.547	1,187
Kishoreganj	1,482	4.638	6,873	616	2.411	1,485	255	5.122	1,306	34	45.676	1,553
Mymensingh	2,261	3.765	8,512	1,364	2.315	3,157	256	5.563	1,424	224	8.375	1,876
Tangail	4,100	5.402	22,147	839	1.967	1,650	501	7.766	3,891	90	12.722	1,145
Dhaka Division	14,471	3.943	57,059	5,345	2.030	10,851	5,767	7.176	41,383	2,790	6.540	18,247
Barisal	1,531	3.303	5,057	745	2.303	1,716	1,530	4.075	6,234	46	5.609	258
Patuakhali	226	1.929	436	137	0.818	112	657	3.842	2,524	137	4.839	663
Barisal Division	1,757	3.126	5,493	882	2.073	1,828	2,187	4.005	8,758	183	5.033	921

Region/ Division	Arum			Kachur lati			Green banana			Green Papaya		
	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod
Jessore	5,268	5.370	28,289	1,167	3.853	4,496	4,432	6.676	29,590	791	17.032	13,472
Khulna	2,794	5.743	16,045	435	1.501	653	2,489	7.403	18,426	232	6.478	1,503
Kushtia	5,583	6.151	34,343	14	1.429	20	1,524	8.116	12,369	257	36.339	9,339
Khulna Division	13,645	5.766	78,677	1,616	3.199	5,169	8,445	7.150	60,385	1,280	18.995	24,314
Bogra	1,536	4.447	6,831	1,823	2.691	4,906	315	7.295	2,298	179	22.933	4,105
Pabna	1,141	2.128	2,428	517	1.834	948	606	7.137	4,325	86	18.140	1,560
Rajshahi	2,290	2.630	6,022	166	1.289	214	1,757	7.634	13,413	1,085	23.965	26,002
Rajshahi Division	4,967	3.077	15,281	2,506	2.421	6,068	2,678	7.482	20,036	1,350	23.457	31,667
Dinajpur	4,421	2.361	10,440	561	1.574	883	420	4.493	1,887	122	13.508	1,648
Rangpur	2,512	2.623	6,588	646	0.690	446	520	5.512	2,866	167	15.659	2,615
Rangpur Division	6,933	2.456	17,028	1,207	1.101	1,329	940	5.056	4,753	289	14.751	4,263
Bangladesh	59,432	4.016	238,665	16,940	2.287	38,737	25,222	6.279	158,364	6,458	13.250	85,570

Source: BBS, Yearbook of Agriculture 2011

Table 13: Area and Production of perennial Fruits by Region/ Division 2010-11
(Area in acre, Production in MT, yield MT/acre)

Region/ Division	Mango			Pineapple			Jackfruit			Litchi			Guava		
	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod
Bandarban	2,300	1.223	2,812	1,507	4.868	7,336	5,705	0.893	5,095	171	1.058	181	566	0.744	421
Khagrachhari	2,164	1.303	2,819	1,746	4.549	7,942	77,994	0.479	37,356	969	1.267	1,228	1,121	1.118	1,253
Rangamati	5,349	1.080	5,777	3,167	6.964	22,056	35,382	1.124	39,787	1,393	1.280	1,783	3,656	0.977	3,571
Chittagong Hills	9,813	1.163	11,408	6,420	5.815	37,334	119,081	0.691	82,238	2,533	1.260	3,192	5,343	0.982	5,245
Chittagong	16,366	0.963	15,762	2,711	4.780	12,959	50,635	0.893	45,223	1,932	0.948	1,831	30,763	3.811	117,224
Comilla	38,018	0.945	35,911	198	3.929	778	37,040	1.174	43,476	468	1.015	475	5,909	1.183	6,992
Noakhali	4,473	1.571	7,027	167	2.341	391	8,125	0.890	7,232	248	0.843	209	2,383	1.094	2,608
Chittagong Plains	58,857	0.997	58,700	3,076	4.593	14,128	95,800	1.001	95,931	2,648	0.950	2,515	39,055	3.247	126,824
Sylhet	41,546	0.694	28,838	1,894	3.530	6,685	45,086	1.028	46,340	1,268	1.324	1,679	5,959	1.040	6,200
Dhaka	23,730	0.926	21,975	3,809	5.107	19,454	128,184	1.025	131,359	2,166	0.987	2,138	15,685	0.863	13,540
Faridpur	41,217	0.890	36,670	-	-	-	20,284	1.450	29,421	1,379	0.970	1,337	5,850	1.005	5,880
Jamalpur	14,734	1.068	15,732	161	2.863	461	26,619	1.093	29,085	1,468	1.018	1,495	2,344	1.129	2,647
Kishoreganj	27,815	0.829	23,053	104	3.981	414	29,737	1.015	30,191	2,112	1.021	2,156	2,435	1.011	2,461
Mymensingh	18,936	0.899	17,023	2,427	5.722	13,887	60,566	1.170	70,880	8,665	1.060	9,187	4,722	1.098	5,186
Tangail	10,969	0.988	10,835	17,370	7.023	121,998	57,724	0.821	47,399	786	1.038	816	2,990	1.169	3,496
Dhaka Division	137,401	0.912	125,288	23,871	6.544	156,214	323,114	1.047	338,335	16,576	1.033	17,129	34,026	0.976	33,210
Barisal	9,519	1.090	10,378	162	1.944	315	20,038	0.928	18,599	564	1.021	576	34,074	0.917	31,257
Patuakhali	18,678	0.934	17,451	320	1.509	483	6,007	1.320	7,928	99	0.949	94	1,555	0.976	1,517
Barisal Division	28,197	0.987	27,829	482	1.656	798	26,045	1.019	26,527	663	1.011	670	35,629	0.920	32,774
Jessore	34,743	1.007	34,991	223	3.552	792	33,306	1.092	36,354	4,811	1.297	6,241	10,494	1.318	13,833
Khulna	19,278	1.105	21,294	151	2.033	307	8,924	0.975	8,703	1,385	0.992	1,374	5,167	1.006	5,197
Kushtia	44,018	0.979	43,112	-	-	-	88,491	1.069	94,640	3,234	1.397	4,518	8,886	1.033	9,180

Region/ Division	Mango			Pineapple			Jackfruit			Litchi			Guava		
	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod
Khulna Division	98,039	1.014	99,397	374	2.939	1,099	130,721	1.069	139,697	9,430	1.287	12,133	24,547	1.149	28,210
Bogra	17,233	1.019	17,555	79	2.253	178	17,840	1.041	18,579	760	1.236	939	7,759	1.043	8,093
Pabna	48,678	0.986	47,982	-		-	43,890	0.761	33,419	5,779	0.863	4,986	8,388	1.032	8,657
Rajshahi	309,942	1.195	370,513	99	3.323	329	46,972	1.224	57,490	9,226	0.867	7,998	10,349	1.079	11,163
Rajshahi Division	375,853	1.160	436,050	178	2.848	507	108,702	1.007	109,488	15,765	0.883	13,923	26,496	1.053	27,913
Dinajpur	47,525	1.182	56,163	467	2.600	1,214	121,181	0.720	87,302	13,226	0.935	12,367	4,951	0.965	4,779
Rangpur	45,080	1.002	45,186	275	2.193	603	35,434	1.015	35,963	2,886	0.990	2,858	5,944	1.031	6,129
Rangpur Division	92,605	1.094	101,349	742	2.449	1,817	156,615	0.787	123,265	16,112	0.945	15,225	10,895	1.001	10,908
Bangladesh	842,311	1.055	888,859	37,037	5.902	218,582	1,005,164	0.957	961,821	64,995	1.023	66,466	181,950	1.491	271,284

Source: BBS, Agriculture Yearbook 2011

Table 14: Area and Production of Fruits Crops by Region/ Division 2010-11

(Area in acre, Production in MT, yield MT/acre)

Region/ Division	Melon			Water melon			Banana			Ripe papaya		
	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod
Bandarban	65	3.508	228	127	4.717	599	3,449	5.181	17,870	1,694	1.000	1,694
Khagrachhari	57	2.386	136	142	4.732	672	3,855	2.713	10,458	1,951	0.994	1,940
Rangamati	72	3.167	228	811	11.980	9,716	9,416	4.699	44,249	8,458	0.606	5,122
Chittagong Hills	194	3.052	592	1,080	10.173	10,987	16,720	4.341	72,577	12,103	0.723	8,756
Chittagong	1,084	4.024	4,362	3,312	6.647	22,014	3,596	4.664	16,771	3,737	0.962	3,596
Comilla	931	5.461	5,084	666	4.800	3,197	2,087	5.395	11,259	3,904	1.148	4,483
Noakhali	324	3.552	1,151	2,746	8.714	23,929	4,700	3.834	18,020	4,586	1.315	6,031
Chittagong Plains	2,339	4.531	10,597	6,724	7.308	49,140	10,383	4.435	46,050	12,227	1.154	14,110
Sylhet	116	2.655	308	1,254	4.503	5,647	1,456	1.784	2,598	4,693	1.134	5,324
Dhaka	570	4.851	2,765	201	5.050	1,015	6,148	7.211	44,336	8,419	0.967	8,144
Faridpur	1,738	5.675	9,863	1,886	7.535	14,211	5,838	7.214	42,117	3,621	1.114	4,034
Jamalpur	112	3.679	412	247	7.028	1,736	2,429	5.583	13,561	3,271	1.018	3,331
Kishoreganj	62	3.742	232	132	5.333	704	2,193	6.750	14,802	1,696	1.046	1,774
Mymensingh	82	3.244	266	96	4.844	465	5,394	3.866	20,854	3,222	1.034	3,331
Tangail	104	2.962	308	19	6.105	116	16,863	8.055	135,829	3,419	1.019	3,485
Dhaka Division	2,668	5.190	13,846	2,581	7.070	18,247	38,865	6.986	271,499	23,648	1.019	24,099
Barisal	1,743	3.497	6,095	8,247	3.343	27,566	16,566	2.166	35,876	1,853	1.848	3,424

Region/ Division	Melon			Water melon			Banana			Ripe papaya		
	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod	Area	Yield	Prod
Patuakhali	615	1.958	1,204	1,706	2.351	4,010	1,520	4.921	7,480	1,560	1.027	1,602
Barisal Division	2,358	3.095	7,299	9,953	3.173	31,576	18,086	2.397	43,356	3,413	1.473	5,026
Jessore	1,762	3.060	5,392	316	6.130	1,937	11,375	4.844	55,098	6,667	1.054	7,028
Khulna	318	2.770	881	2,232	16.875	37,665	4,031	6.288	25,345	4,401	1.097	4,829
Kushtia	227	4.811	1,092	194	6.088	1,181	8,262	12.487	103,166	11,323	1.154	13,070
Khulna Division	2,307	3.192	7,365	2,742	14.873	40,783	23,668	7.758	183,609	22,391	1.113	24,927
Bogra	103	3.631	374	91	4.363	397	2,546	7.259	18,481	2,709	0.977	2,647
Pabna	579	3.661	2,120	186	6.204	1,154	1,056	8.551	9,030	6,618	1.039	6,879
Rajshahi	471	4.720	2,223	1,308	10.409	13,615	5,702	8.266	47,131	16,973	1.587	26,931
Rajshahi Division	1,153	4.091	4,717	1,585	9.568	15,166	9,304	8.023	74,642	26,300	1.386	36,457
Dinajpur	202	3.599	727	3,800	8.537	32,440	4,360	8.055	35,120	4,057	0.717	2,907
Rangpur	178	2.157	384	129	4.093	528	7,747	9.215	71,389	3,938	0.802	3,158
Rangpur Division	380	2.924	1,111	3,929	8.391	32,968	12,107	8.797	106,509	7,995	0.759	6,065
Bangladesh	11,515	3.980	45,835	29,848	6.852	204,514	130,589	6.133	800,840	112,770	1.106	124,764

Source: BBS, Agriculture Yearbook 2011

Table 2.8 shows that total Aman production is 12.8 million MT from an area of 5.6 million ha with average yield of 2.3 MT/ha. Yield of HYV Aman is 2.6 MT/ha compared to 1.2 MT/ ha local B. Aman and 1.6 MT/ha local T. Aman. Seventy percent of Aman area is under HYV while B. Aman local area is below 8% and T. Aman local area is about 22%.

Table 2.6 shows that total BORO rice production is 18.6 million MT from an area of 4.8 million ha with average yield of 3.9 MT/ha. Yield of Boro local, HYV and Hybrid varieties are 2.0, 3.8 and 4.8 MT/ha respectively. About 83% of the Boro area is under HYV while 14% is under HYV and only 3% under local Boro. About 55% of the rice produced comes from Boro and 38% from Boro while only about 7% comes from Aus.

Table 2.10 shows area, production and yield of wheat, maize, potato and jute. In the whole country jute, potato, wheat and maize areas are 709, 671, 547 and 409 thousand ha and yield of these crops are 11.8, 18.9, 2.2 and 2.5 MT per ha.

Tables 2.11 and 2.12 showed area under selected vegetables. Area under summer and winter vegetables are 251 and 256 thousand acres and yield per acre are 2.5 and 3.2 MT respectively. Areas under leafy vegetables and tomato are 94 and 62 thousand acre and their yields are 2.4 and 3.8 MT/acre respectively. Among the fruits mango, pine apple, litchi, jackfruit and guava have areas 842, 37, 65, 1005 and 182 thousand acres and yields are 1.1, 5.9, 1.0, 1.0 and 1.5 MT/acre. Among other fruits melon, water melon, banana and papaya areas are 12, 30, 131 and 113 thousand acres and yields are 4.0, 6.9, 6.1 and 1.1 MT/acre respectively (Tables 2.13- 2.14).

Table 2.15 shows area and production of pulses and major oil seeds by administrative division. Total area under pulses was a little over half million ha but yield was low, about 444 kg/ha. Mustard is more widely cultivated between Aman and Boro rice seasons in about 623,294 ha but yield is low at 395 kg/ha.

Table 2.15: Area and Production of Pulses and Oil Seeds

Division	All Pulses			Mustard			Ground Nut		
	Area (ha)	Prod. (MT)	Yield (MT/ha)	Area (ha)	Prod. (MT)	Yield (MT/ha)	Area (ha)	Prod. (MT)	Yield (MT/ha)
Chittagong	35,715	11,957	0.335	25,179	10,009	0.398	24,611	16,568	0.673
Sylhet	455	217	0.477	3,062	1,482	0.484	2,945	1,966	0.668
Dhaka	176,511	69,034	0.391	282,363	100,332	0.355	26,378	18,968	0.719
Barisal	5,055	1,323	0.262	3,432	774	0.226	4,847	3,269	0.674
Khulna	154,220	63,095	0.409	104,805	44,025	0.420	2,450	2,114	0.863
Rajshaji	119,236	44,087	0.370	184,095	81,331	0.442	4,800	2,948	0.614
Rangpur	12,182	4,500	0.369	33,785	13,500	0.400	12,439	7,831	0.630
Bangladesh	505,904	224,739	0.444	623,294	246,494	0.395	78,470	53,664	0.684

Table 2.16: Area and Production of Spices

Division	Chili		Onion		Garlic		Turmeric		Ginger		Coriander Seed	
	Area	Prod	Area	Prod	Area	Prod	Area	Prod	Area	Prod	Area	Prod
Chittagong	46,086	21,028	5,198	10,278	3,894	4,806	14,815	22,463	9,255	34,386	4,917	1,631
Sylhet	2,343	1,751	728	1,326	342	403	724	3,189	316	807	1,139	347
Dhaka	92,454	55,198	105,288	303,488	22,953	43,677	11,582	17,576	5,469	15,168	10,269	3,535
Barisal	35,466	12,849	2,207	3,436	2,530	1,832	842	1,324	-	-	739	191
Khulna	25,832	53,185	55,347	260,581	11,173	27,443	11,546	43,357	578	1,587	5,684	2,304
Rajshahi	34,685	21,423	129,022	433,149	54,100	117,680	10,798	24,607	748	1,466	4,018	1,082
Rangpur	15,998	8,582	18,362	39,265	8,066	13,312	7,173	12,810	6,161	20,916	1,635	411
Bangladesh	252,864	174,016	316,152	1,051,523	103,778	209,153	57,480	125,326	22,527	74,330	28,401	9,501
Yield MT/ha		0.688		3.326		2.015		2.180		3.300		0.335

Table 2.16 shows area under various spices, total production of selected spices and yield per ha. Important spices producing areas are Chittagong (Hill districts), Dhaka (greater Faridpur), Rajshahi and Rangpur. Sylhet and Barisal are less important in terms of spices production.

2.3.3 Livestock

Livestock sub sector contributes about 2% to the GDP compared to about 17% contribution of the whole agriculture sector. In 2011-12 the country produced about 5 million MT of milk, 3.6 million MT of meat and 6.7 billion numbers of eggs. In about five years country's milk production doubled, meat production more than tripled and egg production increased by 50 percent. Despite this rapid growth the country needs about tripling of milk production, more than doubling of meat production and quadrupling of egg production.

The country has quite large number of domestic animals and birds but problem remains with low productivity. Table 2.17 shows that about 54% of the farm households have cattle, average 2.7 cattle per rearing household and about 1% rear buffaloes, average 3.2 buffaloes per rearing household. Rajshahi division has higher percentage of farm household rearing cattle which is low in Barisal and Chittagong.

Table 2.17: Percentage of farm holding rearing cattle and buffaloes and average number per rearing household

Division	Number of Farm holdings	Number of Cattle Holdings	% of farm with cattle	Number of Cattle	Average cattle/farm	Number of Buffalo holdings	% of farm with buffalo	Number of Buffalo	Average buffalo/farm
Dhaka	4,157,552	2,135,168	51.4	5,266,482	2.5	18,540	0.4	57,283	3.1
Chittagong	2,515,205	1,098,040	43.7	2,613,276	2.4	15,641	0.6	70,654	4.5
Rajshahi	4,399,627	2,819,996	64.1	7,883,280	2.8	52,194	1.2	129,924	2.5
Khulna	2,104,930	1,235,076	58.7	3,131,588	2.5	15,327	0.7	47,127	3.1
Barisal	1,176,843	518,663	44.1	1,546,597	3.0	22,932	1.9	106,939	4.7
Sylhet	829,026	436,738	52.7	1,457,187	3.3	16,976	2.0	43,119	2.5
Country Total	15,183,183	8,243,681	54.3	21,898,410	2.7	141,610	0.9	455,046	3.2

Source: BBS. Agriculture Census 2008, Vol I Table 1.

Table 2.18: Percentage of farm holding rearing goat and sheep and average number per rearing household

Division	Number of Farm holdings	Number of Goat Holdings	% farm with goat	Goat Number	Av goat/farm	Number of Sheep Holdings	% farm with sheep	Sheep number	Av sheep/farm
Dhaka	4,157,552	1,023,661	24.6	2,508,137	2.5	56,233	1.4	176,543	3.1
Chittagong	2,515,205	409,664	16.3	1,093,224	2.7	14950	0.6	67,344	4.5
Rajshahi	4,399,627	1,807,714	41.1	5,077,419	2.8	168667	3.8	540,282	3.2
Khulna	2,104,930	940,409	44.7	2,739,782	2.9	17879	0.8	81,933	4.6
Barisal	1,176,843	212,193	18.0	622,664	2.9	5,486	0.5	37,625	6.9
Sylhet	829,026	127,993	15.4	332,333	2.6	19,350	2.3	66,184	3.4
Country Total	15,183,183	4,521,634	29.8	12,373,559	2.7	282,565	1.9	969,911	3.4

Source: BBS. Agriculture Census 2008, Vol I Table 1.

Table 2.18 shows that about 30% farm households rear goat, average 2.7 goats per rearing household and 2% rear sheep, average 3.4 sheep per rearing household.

Table 2.19: Percentage of farm holding rearing poultry and duck and average number per rearing household

District	Farm household	Number of Poultry Holdings	Poultry holder as % of FH	Poultry Number	Av poultry/holding	Number of Duck Holdings	Duck holding as % of FH	Duck Number	Av duck /holding
Dhaka	4,157,552	2,585,115	62.2	16,500,495	6	1,209,291	29.1	5,815,110	5
Chittagong	2,515,205	1,834,125	72.9	12,931,561	7	1,309,418	52.1	6,124,781	5
Rajshahi	4,399,627	2,944,859	66.9	22,599,405	8	1,483,334	33.7	8,733,223	6
Khulna	2104930	1,373,924	65.3	9,689,534	7	882,732	41.9	4,141,921	5
Barisal	1,176,843	847,181	72.0		0	626,044	53.2	4,345,531	7
Sylhet	829026	510,062	61.5	3,421,145	7	263,017	31.7	1,426,210	5
Country	15,183,182	14,462,063	95.3	97,810,095	7	7,832,415	51.6	39,432,988	5

Source: BBS. Agriculture Census 2008, Vol I Table 1.

As high as 95% of the farm households are rearing poultry, average 7 birds per household while 52% rear duck, average 5 ducks per rearing household (Table 2.19).

2.3.4 Fisheries

Fisheries subsector experienced fastest growth within agriculture sector over the past years and it grew at 5 to 9 percent in various years and it contributes 4% to the GDP. The subsector experienced structural change where the share of inland capture and marine fishery declined while that of aquaculture increased over the decades. In the 1980s inland and marine capture contributed nearly 79% and aquaculture contributed only 21%. Now it is reversed. Share of inland capture declined to 35.5% and that of marine capture declined to 18% and the main contributor is now pond aquaculture (Table 2.20).

Table 2.21 shows total inland catch and aquaculture by administrative and type of fishery. It reveals that excluding marine catch total fish production the country in 2009-10 was about 2.4 million MT of which main contributors are pond aquaculture and flood plain fishery. By administrative division Dhaka appeared prominently mainly for aquaculture while Chittagong appeared prominently for combined culture and capture. Khulna and Chittagong are important for shrimp farming while Barisal is important for inland capture fishery.

Table 2.20: Total fish catch and share of production by type of fishery

Type of Fisheries	1987-88				2009-2010			
	Area (000 ha)	Total Catch/ Prod (000 MT)	Yield (kg/ha)	% of prod	Area (000 ha)	Total Catch/ Prod (000 MT)	Yield (kg/ha)	% of prod
Inland Capture (Rivers, Floodplains etc)	4,047	424	105	51.27	4,025	1,030	0.256	35.5
Pond	147	149	1,014	18.02	351	1140	3.248	39.3
Baor	5.5	1.3	236	0.16	9	9	1	0.3
Semi closed					22	47	2.136	1.6
Shrimp farm	94	25	266	3.02	246	156	0.634	5.4
Aquaculture Total	362	175.3	484	21.2	628	1352	2.153	46.6
Total Inland	4,409	599	136	72.47	4,653	2,382	0.512	82.2
Marine		228		27.57		517		17.8
Country Total		827		100		2,899		100

BBS: Statistical Yearbook 1992 and Yearbook of Agricultural Statistics 2011

Table 2.21: Total Fish Production by Type of Fishery and Administrative Division (MT) 2010

Type of Fishery	Dhaka	Barisal	Khulna	Rangpur	Rajshahi	Chittagong	Sylhet	Country Total	% by fishery
River	12,561	67,894	4,364	1,491	4,823	48,295	1,720	141,148	5.93
Sundarbans	-	-	20,437	-	-	-	-	20,437	0.86
Beel	32,724	47	4,671	4,147	16,548	958	20,114	79,209	3.33
Kaptai Lake	-	-	-	-	-	7,336	-	7,336	0.31
Floodplain	259,413	29,799	58,138	60,983	103,902	182,920	86,652	781,807	32.82
Pond	347,626	87,770	127,611	85,547	222,046	216,857	53,027	1,140,484	47.88
Semiclosed	4,479	7,799	15,463	1,506	5,466	11,399	790	46,902	1.97
Baor	1,405	58	7,264	-	-	-	-	8,727	0.37
Shrimp farm	1,322	5,495	124,167	30	19	24,833	-	155,866	6.54
Total	659,530	198,862	362,115	153,704	352,804	492,598	162,303	2,381,916	100.00
% by division	27.69	8.35	15.20	6.45	14.81	20.68	6.81	100.00	

2.4 Present Condition of Agriculture Extension System

The extension agencies have varying institutional facilities and field presence in the district, *upazila* and Union levels. The DAE has Sub Assistant Agriculture Officers in the grassroots level (effectively at UP), average three officers in each Union Parishad. In the UPs having newly constructed UP Complex, the DAE is provided an office room and in the NATP areas the project has established FIAC in the UP level. The DLS and DoF do not have any staff in the UP level. Hence they have engaged Local Extension Agent in Fisheries (LEAF) and Community Extension Agent in Livestock (CEAL) to provide extension service in the village level in the NATP area while the office is located everywhere in the *upazila* level. It was found in the three *upazilas* visited in Dhaka division that LEAF and CEAL were not getting monthly allowance for about one year hence their activities were not properly carried out in these areas (The EMF and SMF consultants and a senior staff member of NATP visited these three *upazilas* in September October 2014 as part of social and environmental assessment of NATP II).

The DAE has established farmer groups throughout the country initially aiming to popularize organic methods of pest control called Integrated Pest Management through the IPM Clubs. The IPM Clubs are used to disseminate improved farming practices in the village level and to organize demonstration etc. In the districts with project support (like Danida), the DAE has widened the scope of IPM to ICM (Integrated Crop Management). In Greater Noakhali district and Barisal division, Danida has introduced Farmer Field School (Groups of 25 men or women farmers meeting every fortnight to discuss, learn and apply improved farming practices) as an extension approach and this has achieved considerable success. In the NATP-1 areas FIAC at the UP level was seen to functioning well but it was more effective for DAE activities but the DLS and DOF are yet to function well in the field level and the CEAL and LEAF must be activated further.

3. Approach and Methodology

3.1 Rationale for Social Management

Social Management is one of the major concerns of development in market economies that aim growth-led productivity enhancement and increasing income and profitability. In this perspective, it is particularly important to ensure that the poor, asset less, women and other disadvantaged and vulnerable groups are not deprived of their due share of project benefits. Another purpose of the social management is to prevent and mitigate undue harm to people and society due to any project activity. Typically, agricultural projects are beneficial to the society including the farmers belonging to the vulnerable groups. Further, it was experienced during the NATP I the smallholder farmers and women farmers had largely participated in and benefited from the project interventions. Even though, for better addressing the social issues, the project intends to have a Social Management Framework (SMF) for providing a set of in implementation guidelines for various project activities.

The NATP does not involve land acquisition and resettlement. Some crop loss may occur in narrow strip of land during the installation of buried pipe for irrigation and such losses will be covered by the beneficiary farmers. However, the net amounts are likely to be insignificant. The SMF under this assignment provided overall guidelines for addressing various social issues of importance.

Approach of the new SMF

Despite the objective of attaining positive impacts, development projects may cause adverse social impacts on general and women and other vulnerable groups in particular in an agriculture sector development project. For examples, female headed households may lack access to producer organization or FIAC and the poor women may feel discouraged to join CIG as their farm holdings are too small and the extension workers may feel it unimportant to reach them. To avoid such negative impacts the NATP 1 project prepared an SMF. The SMF helped to achieve good social impacts. The relevant assessments show that women acquired leadership and voice to attain their rights through the project. To ensure that NATP 2 also maintain and accelerate this process of attaining positive social impacts for its intended beneficiaries, this SMF has been prepared. The new SMF includes:

- (i) Consultation with the relevant stakeholders from the national to community level.
- (ii) A set of guidelines to be used in the NATP-2 in all components and will apply to all activities and subprojects.
- (iii) Assessments of likely social impacts in line with the World Bank Operational Policies, particularly the OP 4.10 concerning Indigenous Peoples and OP 4.12 concerning Involuntary Resettlement.
- (iv) Evaluation of consistency of the SMF with the GOB policies, laws and regulations as well as with the World Bank Safeguard Policies, particularly social and environmental.

Typically, agricultural projects are beneficial to the society. Even though, for better addressing the social issues, the project intends to have a Social Management Framework (SMF) for providing a set of in implementation guidelines for various project activities. The NATP does not involve land acquisition and resettlement. The project however may require temporary use of private land for setting buried pipes where small scale irrigation is included as a project component. This will be undertaken through consultation and agreement among farmers and land owners on mutually beneficial terms. The experience of NATP I showed that the pipes bring massive advantages to poor farmers who are more than happy to accommodate the basic and short term, low impact civil works associated with this activity on a voluntary basis. Where the pipes will be laid is agreed upon via community consultation and consensus. . The project may involve limited amount of construction work for establishing mini-laboratory which will be simply a couple of extra rooms and be executed by horizontal or vertical extension of the existing GOB facility requiring no additional land and no involuntary resettlement. Another activity related to marketing facility for fruits and vegetables concern establishing commodity collection centers in selected markets which are accommodated during the NATP-I mostly in hired sheds and in a limited number of cases construction of sheds on available public land. The same strategy will be applied during the NATP II. Moreover, the project will ensure that there are no squatter in the public land that will be required for construction of such sheds and extension of min-

laboratories. Thus, no land acquisition and involuntary resettlement are involved in it. The NATP II in the screening process will discard any proposal requiring land acquisition and resettlement as these are included in the negative list for the project.

The NATP-1 developed an SMF that provided overall guidelines for addressing various social issues of importance. It contained a screening process to exclude any activity or sub-project intervention likely to negatively impact any segment of the community such as the poor, women and Small Ethnic and Vulnerable Communities. The SMF also provided general guidelines to enhance community participation and inclusiveness, particularly of the poor and vulnerable groups in the CIGs and POs etc. and enhancing the voice of women in such organizations receiving project support.

The NATP-2 is very similar (with some exception of adding new approach and activities) to NATP-1 in scope but will cover wider geographical area (additional 175 or so *upazilas*) and the details yet to be finalized. Hence the SMF needs to be modified, fine-tuned and updated.

Purpose of the SMF

The present SMF reviews the safeguard compliance of the NATP-1 and updates the SMF for the NATP-2 considering inclusion of new areas, adding new approach and a few new interventions and learning from the NATP-1.

3.2 Scope of Work

- Review social safeguard compliance in NATP (NATP-1 along with additional financing) with regards to WB Social Safeguard Policies.
- Carry out Social Assessment as part of SMF
- Prepare resettlement policy framework if acquisition of any private land is involved for any project activity or if some squatters or existing users are needed to be evicted even if the land legally belongs to the government.

- Develop screening mechanism to exclude any activity that may have negative social impacts and that cannot be effectively mitigated
- Develop Small Ethnic and Vulnerable Communities' Development Framework with the identification of specific small ethnic group being impacted positively or negatively by any project activity or subproject, mitigate for expected negative impacts and enhance positive benefits where possible for the communities
- Identify and define important M&E indicators and criteria for social assessment performance
- Prepare SMF for the NATP-2 including grievance redress mechanism. M&E plan (with indicators), implementation arrangement, reporting and budget indication.

Duration of assignment

The SMF has been prepared during mid September to mid November 2015 including visits to several NATP-1 *upazilas* during late September to mid October (Tour report provided in Annex 7). The Draft Report of the SMF was prepared during the second half of October and draft report modified by mid November.

3.3 Approach

The NATP-2, like the NATP-1 would promote demand driven technology generation, dissemination and value chain development. But how demand is generated in the market economies? In the prevailing market condition, tobacco could be more profitable than fruits and vegetables, genetically modified brinjal could be more profitable (low cost of production) than indigenous variety of brinjal, environmentally destructive chemical could be less expensive than integrated pest management, farming of piranha fish could be more profitable than farming major carps, marketing chemical

containing drinks could be more profitable than producing and marketing milk and intensification of aquaculture in the wetland areas could be more profitable than conservation of open water fisheries. In all these, there are environmental and social concerns.

Besides impact on various social groups in general there could be some concerns especially important to the women and children as these may have varying impacts on men, women and children. Examples are: female headed households may lack access to producer organization or FIAC and the poor women may feel discouraged to join CIG as their farm holdings are too small and the extension workers may feel it unimportant to reach them considering that their share in total production is too small. But tiny little production of these smallholder women farmers are very important to their household economy, their food security, nutrition, education of children and enhancing women's role in the household and in the society. A pair of cows, a few goats, half a dozen poultry birds, a small homestead pond or homestead fruits and vegetables garden could be small in terms of total production but very important in the household level.

In addition there are health and food safety concerns such as for excessive use of chemicals and use of harmful chemicals and harmful genetic modification in the whole value chain such as varietal development, seed production and preservation to production, transporting, preserving, processing and marketing of the output.

Understanding and awareness of these are important for designing new SMF. In this regard, the consultant will:

- (i) Consult the relevant stakeholders from the national to community level.
- (ii) The new SMF will as a set of guidelines to be used in the NATP-2 in all component and will apply to all activities and subprojects.
- (iii) The SMF is expected to assess social consequences (likely social impacts) in line with the World Bank OPs, particularly the OP 4.10 concerning Indigenous Peoples and OP 4.12 concerning Involuntary Resettlement (this will not be triggered based on the assessment) for the NATP-2 interventions and will provide overall guidance on the approaches to be taken during project preparation and implementation.
- (iv) The SMF will be consistent with the GOB policies, laws and regulations as well as with the World Bank Safeguard Policies, particularly social and environmental.

3.4 Methods Applied

The preparation of SMF comprised:

- I. Review of relevant documents but not much of academic literature. The documents to be reviewed for a comprehensive understanding of the phased program, project and the task (SMF) include
 - a. DPP of NATP-1 along with logframe
 - b. Draft Concept Note of NATP-2 prepared by the GOB
 - c. Draft Concept Note of NATP-2 prepared by the World Bank
 - d. Relevant Social Safeguard Documents of the World Bank including the OP 4.10 (Indigenous People) and OP 4.12 (Involuntary Resettlement)
 - e. Relevant Policies of the GOB (BARC Act 2012, National Agriculture Policy, National Agriculture Extension Policy, National Fisheries Policy, National Livestock Policy, National Shrimp Policy, National Water Policy, National Food Policy and National Policy on Women and Children etc.)
- II. Collect compile and present relevant secondary information by administrative division and concerning three sub sector performance mainly to provide a sectoral overview and status of social and economic development
- III. Attending stakeholder consultation meetings at BARC, DAE, DLS, DOF and Hortex to have views of concerned GOB agencies.
- IV. Meeting DAE, DLS, DOF and DOF officials in selected phase-1 and new districts.

- V. Consultation in the community level to have idea of the implementation and social compliance in a phase-1 district (having all components- may be Narsingdi or Comilla) and assessing expectation of primary stakeholders in a new district (Chittagong Hill Tracts).
 - a. Community level consultation would be held in one NATP phase-1 district with three CIGs of DAE (small and marginal farmer, medium farmer and women farmer, two CIGs of DLS (men and women dairy group) and two CIGs of DoF (men and women fish farmer/ open water fisheries management group)
 - b. Visit and meet one FIAC in the UP level and a producer organization- assess one Union Micro Plan and its execution.
 - c. Visit one UP to assess experience of three four sun sector projects and expectation from NATP-2.
 - d. Asses social compliance in each subsector interventions as seen by the CIGs, POs, FIAC, extension workers, CEAL and LEAF.
- VI. Will have a simple checklist to conduct community consultation by facilitated primary stakeholder meeting or FGD
- VII. Data processing and Analysis
- VIII. Preparation of Draft SMF
- IX. Disclosure
- X. Presentation and feedback
- XI. Finalizing Report, Providing Summary in Bangla

4. Legal and Policy Framework

4.1 The GoB Social Regulatory Framework

a. Constitutional provisions:

The constitution of the people's republic of Bangladesh pledges

A society, “ free from exploitation in which the rule of law, fundamental human rights, freedom, equality and justice - political, economic and social, will be secured for all citizens”.
– The preamble page.

“Ensure participation of women in all spheres of national life.” – Article 10.

“Emancipate the toiling masses – the peasants and workers – and backward sections of the people from all forms of exploitation”. – Article 14.

“Shall adopt effective measures to bring about a radical transformation in the rural areas through the promotion of a agricultural revolution, the provision of rural electrification, the development of cottage and other industries, and the improvement of education, communications and public health, in those areas, so as progressively to remove the disparity in the standards of living between the urban and the rural areas”. – Article 16.

All of the above constitutional provisions are important since they pledge not only equality, but also special safeguards for the weaker section of the society.

b. The GoB Policies, Laws, Rules and Strategies:

The Government of Bangladesh has several important policies pertaining to development of agriculture – crops agriculture, fisheries and livestock and the policies incorporate social safeguards in relation to the development of agriculture, besides economic growth. Such policies are many in number. However, only a few most directly relevant ones are listed here along with the main objectives of them:

1. National Agriculture Policy, 2013
2. National Fisheries Policy, 1998
3. National Livestock Policy, 2007
4. National Food Policy, 2006
5. National Women Development Policy, 1997 revised in 2004 and 2011.
6. Sixth Five Year Plan 2011-15
7. BARC Act 2012
8. Land Acquisition Ordinance 1982

The above GOB policies in general emphasize equity and give special attention to the disadvantaged groups. Some of the most relevant policies emphasize the following:

1. The National Agriculture Policy (NAP) 2013

National Agriculture Policy 2013 comprises 18 sections briefly described as under:

1. Introduction and Scope

The NAP 2013 concerns the development of the crop subsector (other subsectors have separate policies- National Livestock Policy and National Fisheries Policy, for example).

2. Objectives: The NAP has nine objectives:

- a. Ensure sustainable and profitable agricultural production system
- b. Through research and training develop high yielding varieties of crops and production technologies and disseminate such technologies by extension system
- c. Increase productivity by developing appropriate extension service, input management and thereby increasing employment and income opportunities
- d. Introduce and sustain commercialization and competitiveness of agriculture
- e. Plan and execute sustainable agricultural system adaptive to climate change
- f. Improve agricultural marketing system and ensure fair price of agricultural produces
- g. Encourage production of high quality produce meeting international demand and to increase export
- h. Create opportunity for processing of agricultural commodities and establish agricultural industry
- i. Diversify agriculture to meet nutritional need of the people and encourage production of nutritious food crops

3. The NAP 2013 made a SWOT Analysis of the agriculture sector highlighting several strengths, weaknesses, opportunities and threats.

Strengths:

- Favorable weather/ climate
- dy available research result and extension system
- Already available trained manpower for agricultural research
- Available appropriate technology on major crops
- Good Input supply network exist nationwide
- Farmers innovative and willing to accept new technology
- High crop diversity
- High irrigation cover
- Presence of appropriate policy support and regulation
- GOB incentive to farmers
- Good Soil Health Management Guidelines available
- Traditional attitude of farmers
- Agriculture Subsidy Card and Bank Account

Weakness:

- Weak marketing
- High post harvest loss
- Low investment capacity of farmer and low access to institutional credit
- Farmer groups often remain inactive
- Lack of appropriate technology to produce high quality crops for export
- Lack of appropriate technology for ecologically stressed areas
- Inadequate private investment for agricultural research and development
- Inadequate infrastructure and lack of trained manpower in globally advancing agricultural research
- Lack diversification
- Lack quality control of inputs
- Lack coordination between agricultural research and education in the public and private sector
- Lack of application of ICT in agriculture
- Lack training of entrepreneurs and farmers
- Lack of proper storage, processing and transport facility

Opportunity:

- Have transferable technology
- Possibility of expanding hybrid technology
- Possibility of introducing appropriate technology in the hill areas
- Possibility of increased export and particularly in the ethnic markets

- Possibility of value-addition
- Possibility of reducing yield gap between research plot and farmer plot
- Institutionalizing commercial agriculture in the private sector

Threat:

- High risk of natural calamity
- Deteriorating soil health/ soil fertility
- Declining cultivable area, diversion of agricultural land to non agricultural uses
- Uncertainty of output price
- Deteriorating biodiversity
- Excessive use of pesticides
- Inadequate allocation for agriculture, particularly for agricultural research.

Government support is committed in the following area

4. Agricultural research
5. Agriculture extension
6. Seed, Seedling
7. Fertilizer
8. Small scale irrigation
9. Farm mechanization
10. Cooperatives in agriculture
11. Agricultural marketing
12. Women in agriculture

- Empowering women (nutrition, skill development, decision making role)
- Participation in production and marketing
- Income generation, reduce wage gap

13. Natural resource management
14. Human resource development
15. Welfare of agricultural labor, reduce child labor, stop use of child labor in hazardous work (spraying pesticide etc)
16. Diversification of employment in off-farm activities
17. The original NAP is published in Bengali which is the main text. An English version will be made available at a later stage.
18. Conclusion: Emphasizes implementation of the NAP 2013.

2. The National Fisheries Policy 1998:

NFP specifies its main objective as:

- Enhancement of the fisheries production.
- Poverty alleviation through creating self-employment and improvement of socio- economic conditions of the fishers
- Fulfil the demand for animal protein,
- Achieve economic growth through earning foreign currency by exporting fish and fisheries products;
- Maintain ecological balance, conserve biodiversity, ensure public health and provide recreational facilities.

Women's empowerment was not specially mentioned in the objective part but in the aquaculture part it did mention under fish culture that women will be "encouraged for fish culture and trained".

3. National Livestock Policy 2007

The general objective of the National Livestock Development Policy:

To provide the enabling environment, opening up opportunities, and reducing risks and vulnerability for harnessing the full potential of livestock sub-sector to accelerate economic growth for reduction of rural poverty in which the private sector will remain the main actor, while the public sector will play facilitating and supportive role.

The specific objectives of the National Livestock Development Policy:

1. To promote sustainable improvements in productivity of milk, meat and egg production including processing and value addition;
2. To promote sustained improvements in income, nutrition, and employment for the landless, small and marginal farmers; and
3. To facilitate increased private sector participation and investments in livestock production, livestock services, market development and export of livestock products and by-products.

The National Livestock Policy 2007 is specific about helping the small and marginal farmers in the livestock sub sector but not so specific about women in livestock production. In the interior part of the text it has however indicated to support women in operating small scale dairy farms and improving their access to marketing of livestock products and micro credit service.

4. The National Food and Nutrition policy 2006:

The goal of the National Food Policy 2006 is to ensure a dependable food security system for all people of the country at all times.

The specific objectives are:

- a. to ensure adequate and stable supply of safe and nutritious food;
- b. to enhance purchasing power of the people for increased food accessibility; and
- c. to ensure adequate nutrition for all (especially women and children).

5. National Women Development Policy, 1997 revised in 2004 and 2011:

NWDP is very comprehensive. It comprises 22 objectives and 49 sections in three parts. Each section contains several sub sections and several identified actions in each. Mentioning all is unnecessary. A few of the important objectives include:

- Equality between men and women
- Security of women from family to state level
- Economic, social and political empowerment of women
- Ensure human rights
- Poverty alleviation of women
- Prevent oppression against women and girls
- Equal access to education, sports, culture etc.
- Special assistance to distressed women like poor widows, divorced, separated, abandoned, single women

- Institutional development

Besides the above provisions of general nature and broader in scope; the NWDP 2011 specifically included two objectives highly relevant to the development of technology. These are:

- Pledging development of women-friendly technology and prevent the use of technology detrimental to women, and
- Promotion of women entrepreneurs.

6. Sixth Five Year Plan

Government of Bangladesh has formulated the Sixth Five Year Plan moving away from the recent practice of preparing PRSPs but with similar objectives and strategies like accelerated growth and poverty reduction as the main objectives. The Sixth Five Year Plan is under implementation during the period 2010-11 to 2014-15. The plan specified several objectives and targets for the agriculture sector of which the important ones are noted under the three sub sectors.

Targets and Objectives for Crop Sub-Sector

- To attain self-sufficiency in food grain production along with increased production of other nutritional crops;
- To increase productivity and real income of farming families in rural areas on a sustainable basis;
- To promote adoption of modern agricultural practices in drought, submergence and saline prone areas;
- To encourage research on adaptation to climate change, proper use of genetically modified technology in agriculture.
- To gradually shift the main HYV, irrigation-fed Boro rice production to the Southern areas and to utilize new salinity, submergence, and other Stress tolerant varieties and also to utilize abundant surface water for irrigation;
- To utilize the irrigated north-western uplands to grow more high value cash crops like wheat, maize, corn etc. and horticulture products;
- To emphasize on yield gap reduction and also to emphasize on maximization of yield in Aus and Aman crops with similar care as the Boro cultivation for ensuring self-sufficiency in food grain;
- To strengthen farming system/cropping system/whole farm approach based technology transfer;
- To promote the use of modern technologies with the help of ICT;
- To strengthen agricultural mechanization for enhancing production;
- To ensure quality seed at farmer's level through the development of community based seed production, storage, and dissemination system;
- To strengthen decentralized knowledge based extension system.

SFYP Targets and Objectives for the Livestock Sub-sector

- To promote sustainable improvements in productivity of milk, meat and egg production including processing and value addition;
- To promote sustained improvements in income, nutrition and employment for the landless, small and marginal farmers; and
- To facilitate increased private sector participation and investments in livestock production, livestock services, development and export of livestock products and by-products.

SFYP Targets and Objectives for the Fisheries Sub-sector

- To give higher emphasis on the management of open water capture fisheries to increase yield (and improve conservation) since the potential for pond culture has nearly been

exhausted (or near saturation in the central and northern part but still has potential in the south, southeast and northeast).

- ii. Although the potential for pond culture has nearly been exhausted, steps should be taken to raise the productivity of pond fishery in the country.
- iii. Initiatives should be taken to enhance the productivity of shrimp culture.
- iv. Community-based fisheries management should be encouraged. There are already some examples of successful community based management of open water fisheries that can be disseminated and replicated in other places. This ensures broad-based participation of community people in the fisheries management as well as higher production.

7. BARC Act, 2012

Bangladesh Gazette 8 March 2012, Act 13 of 2012 passed by the Parliament Amended the BARC Act of 1996 (Act 7 of 1996) and fully replaced it.

1. Title: BARC Act 2012
2. Definitions
3. Established BARC under the law
4. Headquarters in Dhaka, may establish branch office anywhere in the country
5. Functions of the BARC will be administered by the executive council
6. Governing Body will comprise
 - a. Chair- Minister, Ministry of Agriculture
 - b. Co Chair- Minister, MOFL
 - c. Co Chair, Minister, Ministry of Forest and Environment
 - d. MP nominated by Speaker
 - e. MP nominated by Speaker
 - f. Member (Agriculture), Planning Commission
 - g. Secretary, MOA
 - h. Secretary, MOFL
 - i. Secretary, MOFE
 - j. VC, BAU
 - k. Executive Chairman, BARC
 - l. Chairman, BADC
 - m. DG, DAE
 - n. One representative of the MOF (JS level)
 - o. One representative of the M/O Establishment (JS level)
 - p. Heads of NARS Institutes (BRRI, BJRI, BARI, BINA, BSRI)
 - q. DG, DLS
 - r. DG, DOF
 - s. CCF
 - t. Three Scientists (not employee of BARC or any NARS Institute)
 - u. One representative of farmer (nominated by the Government)
 - v. One representative of agribusiness nominated by the Government
 - w. One representative of any NGO engaged in the development of agriculture
 - x. Member Director (Administration and Finance, BARC) - MS
7. Governing Body will work for a duration of three years
8. Discontinuation of Membership- expiry of term, death, resignation, removal,
9. Objective: research based on national priority by the council or through the NARS institutes, coordination, planning and monitoring
10. Quorum of Governing Body is presence of one third of all members. GB to be chaired by chair or in absence by Co-Chair. Decision will be taken by majority vote, one member has one vote.
11. Executive Council:
 - a. Headed by Executive Chairman
 - b. Member Directors
 - c. Heads of NARS Institutes

- d. Head of KGF
- e. Member Director (Admin and Finance, BARC) - MS
- 12. At least one meeting of EC every two months. Quorum one third of all members, decision by majority vote. Chair EC Chair or and member agreed by members present. No quorum needed for adjourned meeting.
- 13. Executive Chairman- appointed by the Government
- 14. Secretarial service to assist GB and EC.
- 15. Secretarial will work under the directive of the EC
- 16. NARS manpower, posting, promotion etc decided by the EC
- 17. The BARC fund comprises
 - a. Grant from Government
 - b. Grant from development partners as approved by the Government
 - c. Income from research work
 - d. Grant from local authority
 - e. Grant from private organization or individual
 - f. Other source
- 18. Budget: Yearly to be prepared by the EC and will indicate the grant amount from the government
- 19. Audit- Self accounting by the EC as per procedure of the GOB. Yearly Audit by the AGB.
- 20. Yearly report by the EC by Nov for the preceding year
- 21. BARC may form special committee for specific purpose
- 22. The BARC may delegate authority to any member or executive
- 23. Government may amend Schedules (A, B- NARS institutes) by official gazette
- 24. Government may frame rules to administer various provisions under the law
- 25. Government may frame bylaws to administer various provisions under the law
- 26. All members and employee of the council will be treated public servant under law concerning applicability of the penal code 1860 section 21.
- 27. Members and employee of the BARC are deemed to act and such activities shall not be challenged in any court by aggrieved person(s).
- 28. Bangladesh Labor Law 2006 shall not apply to the BARC.
- 29. Government will publish an authentic English version of the Act.
- 30. This law repealed BARC Act 1996.

Schedule- A

NARS Institutes who are BARC Members

1. BARI
2. BRR1
3. BJRI
4. BINA
5. BSRI

Schedule- B

NARS Institute- not members of BARC

1. BLRI
2. BFIRI
3. BFoRI
4. BTRI
5. SRDI
6. BSRTI (Sericulture)
7. BCDB (Cotton Board)

8. Land Acquisition Ordinance 1982

Salient features of the Acquisition and requisition of immovable property ordinance, 1982

Permanent acquisition of land or temporary requisition is governed in Bangladesh by the act called acquisition and requisition of immovable property ordinance, 1982 amended in 1994 and published latest by the government in 2010 incorporating the relevant amendments.

Section 3 of this act requires that the Deputy Commissioner issues notice to the concerned owners.

Section 4 provides that any person affected by the proposed acquisition may object in writing within 15 days after publication of the notice as per clause 3.

Section 5 provides that in case of any objection received, the Divisional Commissioner will give decision on the proposed acquisition and his decision will be treated final.

Section 6 provides that after the decision of the Deputy Commissioner (in case of no objection from affected persons) or of the Divisional Commissioner (after settlement of the objection), the Deputy Commissioner will serve notice saying that government has decided to acquire particular land and claims for compensation for all interests may be submitted to him.

Section 7 provides that the Deputy Commissioner will make payment of compensation.

Section 8 provides that the Deputy Commissioner will make estimate of the compensation based on the average market value of the land in the area over a period of past 12 months and to this amount 50% allowance will be added because of compulsory nature of the acquisition. In addition payment will be made for any damage of standing crops.

Section 10 provides that the compensation shall be paid within 60 days from the date of deposit by the requiring person of the estimated amount of compensation under section 7(3) and further that the Deputy Commissioner will not take possession of the land before making the payment. **Section 10/A** provides that the sharecroppers are also entitled to receive compensation for the portion of crop loss.

Section 27 provides that the government will appoint an arbitrator to settle any claims by affected person if the compensation is felt inadequate. The arbitrator will be a judicial magistrate not below the rank of subordinate judge.

Section 28 provides that any affected person not accepting compensation determined by the Deputy Commissioner may make an application to the arbitrator for revision within 45 days of serving notice under clause 7(3).

One limitation of the 1982 ordinance is that the DC pays compensation on the basis of the assessed cash compensation admissible under law (CCL) which is often below market price of land as assessment is based on the recorded transaction value of land in the area in the preceding year and price is often deflated to minimize registration fee and other cost involved. Then even 50% top-up does not compensate for the low CCL. It has another limitation that only the holder of title can be paid compensation while squatters and other non-holder of title cannot be paid. But the development projects intend to pay compensation on full replacement cost basis and pay all affected people including rehabilitation assistance to squatters and other non-holders of title.

It is important to note that in the GOB have strong policies and laws to support development of agriculture and protect the interests and rights of the poor, smallholder farmers, women farmers and

Small Ethnic and Vulnerable Communities community farmers. But problems remain in the implementation of the policies for inadequate institutional capacity where the program will help to improve through various components.

4.2. The World Bank Safeguards Policies

This social assessment briefly examined the applicability of World Bank operational policies on social safeguards related to Indigenous Peoples (OP 4.10) and involuntary resettlement (OP 4.12).

In the case of OP 4.10 on Indigenous Peoples, the WB requirement is to ensure free, prior and informed consultations with the small ethnic communities, eliciting their broad support to the project and ensuring that there are effective grievance redressal mechanisms in place for these communities.

The World Bank's Operational Policy (OP 4.12) on land acquisition and resettlement applies to acquisition or involuntary taking over of land resulted in: (a) relocation of shelter, (b) loss of assets or loss of access to assets, (c) loss of income sources or livelihoods or (d) involuntary restrictions to access (such as to natural resources).

The World Bank's Policy on resettlement suggests and aims that the involuntary resettlement should be avoided, where feasible or minimized by exploring all viable alternative designs. And, where it is not feasible, resettlement activities should be conceived and executed --- enable the persons displaced by the project to share in project benefits. The displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs. Also the displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to the levels prevailing prior to the beginning of project implementation, whichever is higher.

Based on the assessment, social surveys, field level consultations and studying the experience of NATP I, Op 4.12 will not be triggered for NATP II, but OP 4.10 Indigenous People will be triggered.

4.3. Applicability of OPs in the case of NATP-2

There is no land acquisition involved hence no resettlement will be needed. However, there will be a need for reaching agreement between the landowners and water users for the installation of buried pipes. In the case of flexible pipes, there is no land issue. In the case of buried pipe too there is not much land issue. It will simply require digging land to set pipes and after that the pipes will be covered by earth filling. There is great demand for this technology among farmers as it more than doubles irrigation efficiency and reduces the land requirement for setting up extra irrigation equipment. The project will mobilize farmers groups who voluntarily want to use buried pipes (demand is far greater than supply according to assessments carried out by the government) in order to create mutual and individual benefits accruing from the technology. Pipes will only be set once standing crops have been harvested or will be laid in the boundary of plots where there are no crops planted. This takes a small amount of time and leaves no significant adverse impact. The experience of NATP I where the same methodology was applied in the case of buried pipes and subsequent field visits and consultations undertaken for the purpose of preparing this SMF, show that farmers are eager to use

this technology voluntarily. The farmers groups will constitute adjoining landowners who decide voluntarily to allow buried pipes in their lands. The concerned CIGs and the POs will take care of the consultation and dialogue and the concerned executing agency will have a facilitating/mobilizing role and ensure that no conflicts arise or if any are resolved. Where the pipes will be laid is agreed upon via community consultation and consensus. The project will plan and operationalize a grievance mechanism before undertaking any project activities. The project will ensure that proper consultation with full documentation is completed before the pipes can be installed. The documentation must show the mutually agreed upon terms and voluntary nature of the activity. Where no consensus is reached the project will ensure that installation of pipes is not undertaken. It is advisable that, in the case of supplementary irrigation buried pipes will not be allowed (as it is expensive) and also in the case of permanent nature of irrigation sub projects, buried pipes will be avoided as much as possible and other alternatives like flexible pipe will be preferred. As mentioned above this was the identical methodology applied in NATP I with good results, as huge advantages accrued to poor farmer groups through the use of the pipes.

The project may involve limited amount of construction work for establishing mini-laboratory which will be simply a couple of extra rooms and be executed by horizontal or vertical extension of the existing GOB facility requiring no additional land and no involuntary resettlement. Another activity related to marketing facility for fruits and vegetables concern establishing commodity collection centers in selected markets which are accommodated during the NATP-I mostly in hired sheds and in a limited number of cases construction of sheds on available and encumbrance free public lands. The same strategy will be applied during the NATP II. Moreover, the project will ensure that there are no squatter in the public land that will be required for construction of such sheds and extension of min-laboratories. No squatters, residential or commercial may be removed under the project and no adverse impacts on any on-going livelihood activities, formal or informal, being undertaken by people with or without title will be permissible under the project. These have been clearly incorporated in a negative list for the project which will be used to screen all sub-project proposals. Thus, no land acquisition and involuntary resettlement are involved in it, and on the basis of this OP 4.12 is not triggered for the project. The NATP II in the screening process will discard any proposal requiring land acquisition and resettlement as these are included in the negative list for the project. A simple format for consultation is provided in the annex 5.

The NATP-1 did not include hill areas hence did not have presence of ethnic minority people in the phase-1 *upazilas* and therefore Small Ethnic and Vulnerable Communities Peoples Plan was not triggered. But the during the phase-2, the project will include 14 *upazilas* from the Chittagong Hill Tracts where main farming communities are small ethnic communities people and some *upazilas* from the plain land areas having presence of farmer groups belonging to the ethnic minority communities (such as Jhinigati of Sherpur, Durgapur of Netrokona, Birampur of Dinajpur). Thus, OP 4.10 is triggered and a simple format to prepare Small Ethnic and Vulnerable Communities Development Plan is provided in the Annex 4.

5. Likely Social Impacts and Mitigation

5.1 Likely Social Impacts of the NATP-2 Interventions

Possible Social Impacts under Enhancing Technology Innovation Component: Although no adverse social impacts are envisioned under this project component, the issues like prioritization and inclusion of research sub projects on the basis of needs identified by the farmers and the extension agencies should be addressed properly. The researches should be of adaptive nature of which result will be known quickly so that the recommendation can be used to solve farmers' problems. The adaptive research should consider farmers' affordability to use the recommended technology and benefit from it. The technology developed must be eco-responsive, pro-poor and women-friendly. It must also take into account of the conflicts between the sub sectors, the expansion of HYV, hybrid crops, increased use of agro-chemicals negatively impacting fisheries. Efforts should be made to find ways to better integrate the sub sectors like fish with paddy where fish will add natural fertilizer for crops increasing productivity of both and reducing use of chemical fertilizer. Duck and poultry rearing is another potential area and technology packages are already available but may need up-dating with new research based knowledge. The extension agency officers highly emphasized the need for improving research extension linkage.

Possible Social Impacts under Support to Crop, Fisheries and Livestock Development Components: Although no adverse social impacts are envisioned under this project component, the proper identification and targeting of project beneficiaries and developing a participatory and inclusive communication and consultation strategy is imperative; as in the absence of these there is risk of exclusion, especially with respect to women farmers and those with relatively smaller land holdings or belonging to ethnic minority groups etc. It appeared from discussion in the field that the sharecroppers are excluded as they are not "permanent" farmers. The extension officers' perception is that they may leave farming as owners may not agree to lease out land next year, which is however not fully correct. If one owner disagrees to lease land to a particular farmer, the tenant or share cropper will approach another owner and will find some other land and will stay in farming in most cases.

Another adverse effect can be through increased use of chemical fertilizer, pesticides and other agro chemicals affecting aquatic biodiversity, particularly the fisheries resources and thus negatively impacting the livelihoods of the fishers and the fish farmers.

Possible Social Impacts of the Installation of Buried Pipes

There is no land acquisition involved hence no resettlement will be needed. However, there will be a need for reaching agreement between the landowners and water users for the installation of buried pipes. Any attempt to setting pipe by force or without proper consultation may lead to conflicts between the adjoining landowners and the beneficiaries of irrigation if they are not same people. The concerned lands will be affected temporarily when the trenches will be dug and pipes set. After completing installation of pipes the landowners will be able to use the land as usual. The problem can be eliminated or minimized by setting a time when the lands do not have any standing crops. Also the proper alignment can be made to make use of roadside or walkways so that crop land is not affected. The project must ensure proper and fully documented consultation that clearly demonstrate the mutually beneficial and agreed upon terms and conditions among the stakeholders concerned (farmers whose lands are involved and those who stand to benefit or face temporary

losses). The process will be undertaken on a purely voluntary basis with community consensus. The experience of NATP I demonstrates that this is a largely beneficial activity that is welcomed by the communities and farmers. Temporary impacts will be dealt with on mutually agreed upon terms. One way of avoiding impacts is to simply install the pipes where crops are not grown (side of road alignments) or installing them at a time when no standing crops are present. The project will ensure that where there is no consensus on mutually beneficial terms, this activity cannot be undertaken. This issue has been discussed in details in above sections.

Possible Social Impacts of Establishing Mini-Labs

The construction of mini laboratories under Component 2-4 will be undertaken on encumbrance free (squatters, livelihood activities of any sort, regardless of whether these are formal or informal) public lands only; the rehabilitation of ponds is not expected to require additional lands as the activity focuses on deepening the ponds only. No land acquisition and involuntary resettlement is needed as evident from the discussion with the concerned executing agencies. The mini labs will require adding one or two rooms with existing field level offices and this can be implemented by horizontal or vertical extension depending on the availability of the present facilities. Public lands can be used only when they are encumbrance free; squatters may not be removed and no ongoing economic livelihood activity, formal or non-formal may be disrupted under the project.

Possible Social Impacts related to Value Chain Development

Adverse effect of the VCDC is foreseen concerning health safety of humans for the likely increased use of pesticides and chemicals as preservatives of fruits, vegetables and milk and ripening material for fruits. Increased use of pesticides can further aggravate water pollution causing deterioration of open water fisheries resource and thereby negatively affect the livelihoods of the fishers. Seepage of agro chemicals to ponds can affect aquaculture production affecting the livelihoods of the fish farmers. Awareness has increased and produces using harmful chemicals are rejected by the consumers, hence by the consumers also. Demand has been generated to produce and supply chemical free fruits and vegetables and both farmers and traders are responding to it.

Table 22: Potential Social Impacts

<i>Component/ Activity</i>	<i>Social Impacts (Largely Positive)</i>	<i>Land Acquisition</i>	<i>Loss of Livelihood</i>
Enhancing Agricultural Technology Generation Component : <ul style="list-style-type: none"> • Agriculture • Livestock • Fisheries 	√	No	No
Support to Crop, Fisheries and Livestock Development : <i>Small Scale Irrigation (irrigation efficiency enhancement)- buried pipes</i>	√	No	No
<i>Mini-lab</i>	√	No, but temporary use of land for installation of buried pipe on the basis of community consultation and consensus	No
<i>Value Chain Development</i>	√	No	No

5.2 Prevention of Negative Social Impacts

5.2.1 Screening Process

The case of the NATP-2 is straight forward as it does not involve land acquisition and the sub projects concern mainly supporting the small and marginal farmers and women farmers with technologies involving mainly improved management practices. So, there is very little scope to adverse effect any social group. The RAP can be fully avoided and other concerns like lack of inclusiveness, equity and participation as well as elite capture can be mitigated by proper consultation process and participatory planning and M&E.

However, to ensure that the project meets its main objectives and the relevant safeguards, a set of exclusion criteria will be applied particularly addressing the issue of involuntary resettlement and small ethnic and vulnerable peoples. For other issues, mitigation measures will be planned and implemented which are discussed in the next section.

The screening process will ensure that:

- The sub projects requiring land acquisition and involuntary resettlement will be excluded. This list will include any activity that leads to any kind of economic (livelihood impacts) or physical displacement, whether temporary or permanent, on people with or without title.
- Activities likely to adversely affect wildlife, fish habitat, common property resources, livelihoods of marginalized groups etc. will not be included under any sub project.
- The sub projects involving large scale water management projects particularly requiring canal excavation will be avoided as it may involve land acquisition and involuntary resettlement.
- Sub projects requiring constructing permanent or temporary structures on private land will be excluded (unless rental terms are voluntarily agreed upon) as will using public lands with encumbrances such as squatters living on them or those with ongoing livelihood activities whether formal or informal

The screening process will include a desk appraisal in the *upazilas* level while consolidating the UP level Micro Plans. The desk appraisal will determine if all relevant information provided by the extension teams and they have considered the probable adverse effects (social and environmental) and included mitigation measures. If the desk appraisal indicates that the proposed subproject may have environmental or social concerns that they are not adequately addressed in the application, a field appraisal will be conducted before further processing and clearance of the specific sub project interventions. Table 23 below describes the screening process.

Table 23: Checklist for screening

SL	Issues foreseen in the NATP-2	Action needed if answer is yes	Trigger/ Further Action
1	Land acquisition involved, any individual displaced	Reject the intervention	
2	any kind of economic (livelihood impacts) or physical displacement, whether temporary or permanent, on people with or without title	Reject the intervention	
3	Access to common property resource of any individual, household, social group affected or restricted such as for fish sanctuary, open water fisheries management, floodplain aquaculture sub projects	Carryout field appraisal	Incorporate remedial measures
3	Temporary use of public or private land for implementing any sub project such as for installation of buried pipes for irrigation	Carryout field appraisal and consultation between affected and beneficiary groups facilitated by the extension agencies and ensure that the land is used based on consensus of all parties on a voluntary basis	Based on consultation, document the consultation process and mutually agreed upon decisions as in <u>annex- 5</u> .
4	Adversely affecting ecologically sensitive areas such as mangroves in the newly accreted charland or river or embankment side green belt or forest area	Reject the interventions	
5	Presence of ethnic minority people having distinct identity, distinct territory by ownership or customary rights and distinct language-concentration of minimum 50 ethnic minority households in an UP and 20 in a village living as a community and engaged in agriculture	Carry out field appraisal, include project intervention as per consultation with the ethnic minority communities and with their informed consent	SEVCDP (Annex- 4)
6	Presence of ethnic minority people with no or nearly diminished identity, no territorial attachment and no distinct language and or concentration less than 50 in an UP and 20 in a village	Carryout field appraisal and ensure inclusion, participation, informed decision making	SEVCDP (Annex- 4)

5.2.2 Inclusiveness

The NATP-2 will facilitate socially inclusive design and ensure increased participation of small and marginal farmers, women farmers and Small Ethnic and Vulnerable Communities peoples and will maximize project benefits for them and safeguard them against social vulnerability during implementation of subprojects.

The NATP will follow several principles, guidelines and procedures to identify social and gender actions ensuring inclusiveness.

-Ensure that selection, design, implementation, and monitoring and evaluation of the subproject activities and formation of CIG and PO etc are participatory and that women, SM farmers, Small Ethnic and Vulnerable Communities groups are involved among others in the consultation and decision making process such as in the formulation and prioritization of micro-plans.

-Carefully screen the project to identify needs and expectations of, and potential adverse impacts on, women and any other groups and document them.

- Identify the impact details and the most appropriate mitigation measures through intensive consultation with the affected men and women and their communities.

- NGOs and civil society organizations, professionals, and the like are identifies. Identify appropriate actions to ensure and maximize project benefits to women and vulnerable groups through the consultative process.

- Give priority to include activities like homestead gardening, homestead pond, livestock rearing, post-harvest work, seed preservation etc. where women, smallholders and Small Ethnic and Vulnerable Communities peoples are largely involved.

- Relevant data disaggregated by gender and age where necessary. A gender analysis will also be undertaken.

- Inclusion will be monitored in line with the social and gender analysis and consistent with the activities/issues that have been integrated into project design.

- Social and gender analysis will be carried out during sub project planning and measurable indicators on social inclusion will be set to gather information during implementation as essential inputs for evaluation and impact assessment. Depending on the project contents and objectives, subproject indicators for evaluation should take into account, among other relevant aspects, the following points:

-Specific needs of men and women and incorporation of those into project design.

-Local knowledge and inputs for improvement of project outcomes.

-Project impact on reduction of vulnerability of men and women to climate change.

-Intended and unintended gender effects of the project.

-Lessons learned and good practices which can help mainstreaming gender in any future projects

Selection of Communities and Farm Households

Different communities may have comparative advantage in different agricultural activities – crops, fisheries and livestock. Some may have special interest in various promising technology packages. Considering these, the project will organize farmer groups in the village/sub village level, separate for crops, fisheries and livestock farmers and special groups for women farmers. In the areas having concentration of small ethnic peoples, special groups will be organized for them and this can be mixed male female as women are also largely involved in all types of agricultural activities.

For selection of communities and organizing groups the project will consider:

- Whether the household belongs to the target group, small and marginal farmer not owning above 2.5 acres. Minimum 80% of the CIGs members are small and marginal farmers and maximum 20% are medium to large farmers. Of the total CIG members 30% are women farmers with preference to female headed households operating small farms like homestead garden or small ponds or rearing livestock or poultry or involved in seed preservation etc.
- Directly involved in agriculture – not absentee owner leasing out or sharecropping out all land.
- Directly involved in the concerned sub sector, in the case of crop/ fisheries/ livestock groups.
- Belongs to the specific tribe – in the case of tribal peoples' group.
- Is willing to participate in the concerned farmer group activities.
- The group is not likely to be elite-captured, non-poor are oriented and are fully aware of project objectives, approach and targets so that they help local poor to manage the group without interference but moral support.

The target households will be selected with the consideration that:

- About 80 percent of the CIGs are formed with households owning below 2.5 acres land (small and marginal farmers including sharecropper/ tenant farmers) and maximum 20% may be medium to large farmers owning above 2.5 acres or above.
- About 30 percent of CIGs or CIG members will be women farmers, preferably, from the female headed households.
- In the case of small ethnic communities, the CIGs can be mixed comprising both male and female members in case about 20 members from small ethnic households found in one community. Otherwise, the farmers of small ethnic households will be included in the CIGs of farmers from the Bangalee society of the same village/area.
- In the case of crops and livestock sub sectors, the CIGs during NATP I were separate for men and women; however this phase will introduce some mixed CIGs as well in order to increase the participation of women. In the case of fisheries the CIGs can be gender mixed and also pond size mixed.

5.2.3. Mitigation Measures

The primary target group and beneficiaries for the Technology Adoption and VCD components include: landless households; small and marginal farmers; women farmers and other vulnerable community engaged in agricultural activities including fisheries and livestock. The project beneficiaries include the poor and vulnerable groups such as poor and female headed households and small ethnic households will also be targeted.

Targeting and Community Participation in the Project

Given the range of activities pertaining to introduction of new technology packages and the nature of the intended target communities, the adoption of a robust and participatory targeting strategy is essential to avoid exclusion of certain groups from benefiting from the project interventions. In order to ensure effective targeting for the component, project beneficiaries will be identified and selected through a process involving community self-identification and selection, with support from - and, where necessary, in cooperation with local government authorities (e.g. union chairmen/ UP women members) and the technology service providers- the Departments of Agriculture Extension, Fisheries and Livestock (DAE, DOF, DLS) and the VCDC officers based in the field level.

The activities in both components will build strong synergies and will be guided by the approach used successfully by the NATP-1 which comprises:

- Community mobilization, organization and capacity building of small scale and marginal producers into “common interest” groups will follow the decentralized, demand led extension approach.
- Beneficiaries will be identified through a community consultation and field level surveys.
- In the phase-2 new *upazilas*, the existing farmer groups like the IPM and ICM Clubs will be reorganized and reactivated and where necessary, new groups will be organized by the concerned extension agencies. The existing CIGs and POs already established in the 120 phase-1 *upazilas* will continue and where necessary reorganized.
- Beneficiary groups will in turn be federated into union-level farmer’s associations, called Producer Organizations or POs.

Social Impact Assessment, Baseline Surveys and Mitigation Measures

In order to understand the socio-economic make-up of the communities in selected areas and of the specific target groups according to specific criteria and to identify social risks more accurately, a social impact assessment (SIA) will be undertaken at the outset as part of a baseline survey. The SIA will describe the socio-economic baseline such as income, expenditure, employment, education, skills, living standards, utilities, health status and other socio-economic and cultural aspects (gender issues, religious practices, treatment of Small Ethnic Communities and other Vulnerable communities etc.), local power structures (elites, local government authorities, religious leaders) prevailing in the targeted areas. The findings of the baseline survey will directly inform the targeting process and help design strategies in a more contextualized and effective manner, keeping in mind the local capacities and constraints. This will be further sharpened by undertaking a need assessment among the targeted groups to understand what their expectations and interests are. A market assessment to understand the demand and supply of local goods and services is also important to design successful and sustainable livelihood strategies.

In order to further mitigate for the social risks identified above that may have some negative social impacts, the project will ensure that:

- A built-in system of M&E is established with evaluation indicators for all project interventions.
- Carryout community mobilization, facilitation and capacity building activities by the extension agencies with the participation of the CIGs and POs.

- Design, implementation and monitoring of technological packages will be based on the need identification from beneficiaries of selected villages and UPs.
- Effective identification and selection of targeted community-based groups of marginal and small farmers to benefit
- Supervision of the equitable distribution of benefits to selected farmer groups.
- Effective identification and selection of informal community based groups of landless women farmers to benefit.
- The project will exercise a built in system of M&E at the micro-level of project activities to ensure that the right groups are identified and targeted for project interventions, and to ensure equity and inclusiveness in the distribution of project benefits.
- The project authority will carry out annual yearly review and prepare annual reports for all components.
- An independent third party monitoring will also be carried out at the end of the first and second years and an evaluation at the EOP in which the annual report will be an input.

Impact Matrix

Generally, the impact of the research component will be increased agricultural production and higher income for the farmers in the crops, livestock and fisheries sub sectors. It is expected to transforming the currently high-risk, low yielding and low-rewarding crop, livestock and aquaculture production system to comparatively low-risk, high-yielding and better rewarding system.

Expected impacts of the technology adoption component include increased availability of good quality seed of crops, fish fry, fingerlings, AI services and day old poultry chicks- all contributing to higher level of productivity and farm income. This will also contribute to reduced post harvest loss for improved storage facilities. The technology adoption component will include improving irrigation efficiency by providing buried and flexible pipes and promoting supplementary irrigation particularly for the *Aus* and *Aman* crops. All these will contribute to increased productivity and farmers' income and welfare.

The value chain development component intends to provide better price to farmers by improved marketing, sorting, grading, packing, collection points and supply of better quality inputs etc. This will increase profitability of farmers and at the same time improve availability of better quality produce for the farmers at reasonable price. It will increase particularly the producers' share of the retail price.

While various chapters have so far described the relevant social issues and probable mitigation measures, this section provides a glance look of them in Table 24.

Table 24: Social Issues, Impacts and Mitigation by component

Component	Subjects/ Issues	Issues/ Impacts	Mitigation
Enhancing Agricultural Technology Generation Component	Study impact of climate change on crop production. Adaptation of crop varieties and management practices for Climate Change vulnerable area	No negative impact foreseen	
	Improving IPM for better and eco-friendly crop protection	No negative impact foreseen	
	Farming system and farmers' livelihoods security	No negative impact foreseen	
	Farm mechanization	Affordability of farmers	Intermediate technology to be preferred
	Development of varieties	As per priority set by the NARS. NARS has limited scope to effectively involve farmer organization representatives	Adaptation of available varieties should get priority. A bottom up system of nominating farmer representative to PSC and BARC apex body will be developed and their opinion positively considered in decision making.
	Soil health nutrition management	Farmers, extension agencies not properly consulted	Need to identify research topics in consultation with the extension agencies and farmers
Supporting Crop, Fisheries and Livestock Development Components	Livestock productivity and protection against diseases. Fisheries brood development (marine & fresh water)	Farmers, extension agencies not properly consulted	Need to identify research topics in consultation with the extension agencies and farmers
	Issues	Impacts	Mitigation
	Who receives supply: SM farmers usually lack access	Marginalized groups excluded	1. Inclusion and exclusion criteria clearly defined and compliance effectively and externally monitored 2. Farmers group have strong representation of the marginalized groups
	For Whose benefits?	Marginalized groups excluded	1. Inclusion and exclusion criteria clearly defined and compliance effectively and externally monitored. 2. Farmers group have strong representation of the marginalized groups
GoB hatcheries (fish and poultry) may not operate on a regular basis for inflexible bureaucratic procedures	Irregular supply and farmers may become disinterested	1. Provide revolving fund to the Fish Seed Multiplication Farms of the DoF. 2. Keep provision for the production and supply of quality fish fry by competent NGOs	

Component	Subjects/ Issues	Issues/ Impacts	Mitigation
	Many of the backyard poultry and duck farmers may be excluded or benefit marginally	Backyard poultry/duck farmers, mostly women, are deprived of the benefits	Help improving backyard poultry rearing using semi scavenging method etc as already introduced by Danida in greater Barisal (FFS). Provide vaccination service involving farmer groups making and implementing production and vaccination plan.
	AI expansion over the last half century did not contribute much to breed upgrading mainly for feed, fodders, farm management and healthcare problems	Will bring little change	<ol style="list-style-type: none"> 1. Proper breed selection depending on health status of cow and feeding/management capacity of the farmer 2. Improve cow before introducing hybrid AI service 3. Help expanding feed and fodder production, management capacity of farmers, healthcare service, vaccination and de-worming etc.
Supporting Crop, Fisheries and Livestock Development	SM farmers, women farmers, small ethnic and vulnerable people not adequately reached	Marginalized groups excluded	<ol style="list-style-type: none"> 1. Inclusion and exclusion criteria clearly defined and compliance effectively and externally monitored 2. Farmers group have strong representation of the marginalized groups
	Who to operate and maintain CIG/ PO activities after closing the project: past experience not encouraging	May become unsustainable	<ol style="list-style-type: none"> 1. Find alternative arrangement. 2. Contractual arrangement of farmer groups with BADC seed store facilitated by the project. 3. Contractual arrangement with NGO/ private facilities for supply line of fish fry
	Increased use of pesticide, chemical fertilizer	Depletion of fisheries resources	Promote IPM, green manure, vermi compost.
	SM farmers, women farmers, Small Ethnic and Vulnerable Communities people not adequately reached	Marginalized groups excluded	<ol style="list-style-type: none"> 1. Inclusion and exclusion criteria clearly defined and compliance effectively and externally monitored 2. Farmers group have strong representation of the marginalized groups
	Elite capture of CIG/ PO	Marginalized groups excluded	<ol style="list-style-type: none"> 1. Inclusion and exclusion criteria clearly defined and compliance effectively and externally monitored 2. Farmers group have strong representation of the marginalized groups.

Component	Subjects/ Issues	Issues/ Impacts	Mitigation
Supporting Crop, Fisheries and Livestock Development (Installation of buried pipes) VCDC	Temporary use of land for installation of buried pipes	Loss of crops during construction in limited number of cases	<ol style="list-style-type: none"> 1. Need effective community consultation between land adjoining owners/ affected persons and water users/ beneficiary farmers. Often they may be same group of people and kin groups. 2. List affected and benefited households, estimate damage, and make arrangement for mutual compensation. 3. The extension agencies will facilitate but the main responsibility will remain with the CIGs/ POs.
	Health safety	Use of chemicals, too much of insecticides, ripening materials, formalin etc.	<ol style="list-style-type: none"> 1. Promote IPM/ ICM 2. Promote indigenous methods of preservation of fruits, vegetables, onion, chilli, betel leaves, ginger etc. 3. Promote indigenous methods of ripening fruits and tomato
	Pollution of air, soil, water by excessive use of chemical fertilizer and pesticides	Aquatic biodiversity and fisheries resources depletion	<ol style="list-style-type: none"> 4. Promote IPM/ ICM

5.3 Land acquisition and resettlement

The project will not require land acquisition hence there is no issue of resettlement. Limited physical construction is included such as mini laboratories which will be attached to the existing GOB facilities with a couple of extra rooms by horizontal or vertical extension of the same building. Only all encumbrance free public land will be used for this type of construction. In another activity some construction is involved, which is a small shed for marketing of fruits and vegetables etc. produced by the CIG farmers. Under the NATP-1 20 such commodity collection centers have been established, of which 18 sheds are hired and 2 are constructed on khas land. In NATP-2 also the sheds will be either rented or newly constructed on encumbrance free khas land taking into consideration that the land to be used are not under possession of private party for business or other purpose.

Also, the project will not include excavation or re-excavation of canals, although there is high need for it and many GIGs and POs may request the extension agencies to support in this regard. This should be avoided considering that the project duration is only three years and fund is very limited. If some other agencies like the LGED and the BADC are involved in the excavation or re-excavation

of canals in the same area, the DAE may assist the concerned CIGs and the POs to contact such agencies for inclusion of the area under such projects.

In the support to crops, livestock and fisheries development component, the surface water irrigation is a felt need and it is particularly important in the case of supplementary irrigation for the *Aus* and *Aman* paddy and minor crops including fruits and vegetables cultivation. For *Aus* and *Aman*, supplementary irrigation using surface water is economic and environmentally sound. In the southern districts, it is highly feasible even for *Boro*. In the northwest, maize and potato are important crops requiring low level of irrigation but have high yield per unit area of land.

One activity in the crop sector development is to improve efficiency of irrigation by reducing leakage of water in the surface drains and for that purpose the installation of buried pipes and flexible pipes are suggested. For this purpose no land acquisition will be needed. For buried pipe, there will be a need for consultation between farmers of the adjoining land and the water users, who are likely to be the same farm households most often but can be different households in some cases. In such case, the owner and user groups must agree to certain alignment of the pipeline, the location of the pump and the pits. The consultation process will be documented by the project.

In the case of flexible pipes, there is no land issue. In the case of buried pipe too there is not much land issue. It will simply require digging land to set pipes and after that the pipes will be covered by earth filling. There is great demand for this technology among farmers as it more than doubles irrigation efficiency and reduces the land requirement for setting up extra irrigation equipment. The project will mobilize farmers groups who voluntarily want to use buried pipes (demand is far greater than supply according to assessments carried out by the government) in order to create mutual and individual benefits accruing from the technology. Pipes will only be set once standing crops have been harvested or will be laid in the boundary of plots where there are no crops planted. This takes a small amount of time and leaves no significant adverse impact. The experience of NATP I where the same methodology was applied in the case of buried pipes and subsequent field visits and consultations undertaken for the purpose of preparing this SMF, show that farmers are eager to use this technology voluntarily. The farmers groups will constitute adjoining landowners who decide voluntarily to allow buried pipes in their lands. The concerned CIGs and the POs will take care of the consultation and dialogue and the concerned executing agency will have a facilitating/mobilizing role and ensure that no conflicts arise or if any are resolved. Where the pipes will be laid is agreed upon via community consultation and consensus. The project will plan and operationalize a grievance mechanism before undertaking any project activities. The project will ensure that proper consultation with full documentation is completed before the pipes can be installed. The documentation must show the mutually agreed upon terms and voluntary nature of the activity. Where no consensus is reached the project will ensure that installation of pipes is not undertaken. It is advisable that, in the case of supplementary irrigation buried pipes will not be allowed (as it is expensive) and also in the case of permanent nature of irrigation sub projects, buried pipes will be avoided as much as possible and other alternatives like flexible pipe will be preferred. As mentioned above this was the identical methodology applied in NATP I with good results, as huge advantages accrued to poor farmer groups through the use of the pipes. The results of the community consultation will be a decisive element in selection of the design, size and location of the sub projects.

The documentation of community consultation concerning installation of the buried pipes for example, will comprise:

- i) A detailed account of community consultation, including issues raised
- ii) A participants list for each consultation that clearly identifies farmers who will be directly and indirectly affected
- iii) The terms under which consensus is reached showing the voluntary nature of the activity
- iv) Decisions taken consultatively on placement of the pipes and the timing for doing so along with the reasons for this
- v) The documentation should show representative number of participants (based on area specific analysis) from small ethnic communities and other vulnerable groups, women and share-croppers
- vi) Implementation arrangements for Grievance Redressal Procedures
- vii) A summary agreement with signatures of the CIG, PO members and the officials of the extension agency facilitating the consultation

In brief, the NATP 2 interventions land acquisition and involuntary resettlement will be fully avoided, hence the OP 4.12 is not triggered. However, the screening process and community consultation will ensure that it is fully avoided in the case of mini laboratories and commodity collection centers (the procedures have been described in previous sections) and mutually agreed in the case of installation of buried pipes.

5.4 Small Ethnic and Vulnerable Communities Peoples Planning Framework

Government of Bangladesh does not officially use the term “indigenous people” but calls such people as “small ethnic community” and they are legally entitled to safeguard their interests as special assistance to “backward section of the people”. As part of SMF, a **Small Ethnic and Vulnerable Communities Peoples Planning Framework (SEVCPF)** is presented here for the NATP-2 as a whole. The IPPF aims at enhancing participation of the small ethnic community people throughout the project cycle. The general objective of the IPPF is the inclusion of IP in the project in order to achieve the highest possible positive impact of the interventions to improve their quality of life. The specific objectives of the SEVCPF are to ensure that: (a) works project interventions are culturally appropriate (b) works and services provided do not inadvertently induce inequality by limiting project benefits to the elite elements of the community, (c) the project engages with communities through a consultation process appropriate to the local cultural context and local decision making process; and (d) establish appropriate information communication and training strategies with the different IPs and communities in all stages of the project.

This framework is based on World Bank's Operational Policy 4.10. Based on the principal objectives of the IPPF, the NATP-2 will:

- (i) Ensure that project carries out free, prior, and informed consultation with the Small Ethnic and Vulnerable Communities community wherever they are affected or has opportunity to be benefited;
- (ii) Ensure that project benefits are accessible to the small ethnic community people living in the project area and are engaged in or are willing to be engaged in any agricultural activities in crops, livestock, fisheries and supply chain development;
- (iii) Avoid any kind of adverse impact on the Small Ethnic and Vulnerable Communities to the extent possible and if unavoidable ensure that adverse impacts are minimized and mitigated; enhance positive benefits where possible
- (iv) Ensure Small Ethnic and Vulnerable Communities' peoples participation in the entire process of preparation; implementation and monitoring of the sub project activities;
- (v) Minimize further social and economic imbalances within communities; and
- (vi) Develop appropriate training / income generation activities in accordance to their needs and priorities.

As part of the **SEVCPF** for the project, the NATP-2 will assess in the beginning of the project in each selected *upazila* by consultation with the extension agency officials, the local government representatives, local NGOs and civil society organization whether there is any concentration of small ethnic and vulnerable people in any UP or village. In case even a small concentration of 20 or more small ethnic household involved in any agricultural occupations (crops, livestock, fisheries) and 50 or more in an UP, the particular UP and village will be included on a priority basis in the NATP-2. This will also document by a Social Assessment for the concerned *upazila* and the compiled to the district, what the small ethnic communities are, a brief history of them, their language, culture, education, past and present occupation pattern, any special attachment to distinct habitat or ancestral territory and to common property resources like *beel hill/ jolmohal*, and if there is any possibility of affecting such resources or access to such resources by the IPs and if so what remedial measures can be incorporated in the NATP-2.

SEVCDP Based on the Small Ethnic and Vulnerable Communities' Policy Framework and on the assessment the need for a Small Ethnic and Vulnerable Communities' Development Plan (SEVCDP) will be established. For the UPs identified to have concentration of ethnic minority people, the SEVCDP will be prepared by the extension agencies in cooperation of the concerned CIGs and POs. This will be done one per involved UP to ensure that the IPs are consulted and their participation is ensured rather than excluded.

The SEVCDP for the involved UPs will comprise:

- i) Making a village wise list of ethnic minority households with the name of household head, ownership of land, tenancy, main and secondary occupations and likely involvement in the NATP-2 activities under crop, fisheries, livestock, VCDC;
- ii) An assessment of probable positive and negative impacts of any sub project proposed in the UP level micro plan;
- iii) Suggest mitigating measures; and
- iv) Arrangements for M&E and grievance redressal

A more detailed SEVCF that includes an outline of a SEVCDP is provided in the annex-4.

5.5. Gender Assessment Framework

Like other primary stakeholders including the smallholder farmers, tenant farmers and small ethnic and vulnerable group farmers, women will be a special beneficiary group. The NATP I initially targeted to include 20% female members in the CIGs which has far exceeded it and about the end of NATP-1, about 30% of the CIG members are women. More importantly, the attendance in women CIGs (in the case of DAE) and women members in mixed CIGs (in the case of fisheries and livestock CIGs) is observed to be higher and their participation more spontaneous. This happens mainly because of women staying home which is also the farm as most women are engaged in home based farming. Therefore when extension officials visit the groups, women tend to be present in higher proportion while men cannot always attend for working outside of the house. The project is therefore highly encouraging inclusion of women in CIGs currently in the ratio of 30: 70 which will be continued during the NATP II. Apart from inclusion and participation, it is important to emphasize that the women participants are benefited by the project interventions and are not adversely affected by any of its activities. While providing support from the AIF, activities particularly beneficial to women and having participation of women farmers will receive preferential treatment.

Mainstreaming gender aiming equity and empowerment is a focus area in the project. The sub projects under the Technology Adoption in all three sub sectors and the VCD will address women's needs with priority and will create opportunities for participation in the CIGs and POs. A Gender Assessment Framework (GAF) is provided below as part of SMF which will help analyze gender issues during the preparation stage of sub project and design interventions. At the sub project level, gender analysis will be part of the social impact assessment as part of Baseline and other Surveys and the analysis will be based on findings from gender specific queries during primary data collection process and available secondary data. The quantitative and qualitative analysis will bring out disaggregated data and issues related to gender disparity, needs, constraints, and priorities; as well as understanding whether there is a potential for gender based inequitable risks, benefits and opportunities. Based on the specific interventions will be designed and if required gender action plan will be prepared. The overall monitoring framework of the project will include gender desegregated information and relevant indicators.

Gender analysis will be an integral part of the social impact assessment in the NATP-2 components and subprojects. The project design will be gender responsive based on the gender analysis. The findings and recommendations from the gender analysis during project planning and feedback from beneficiaries during implementation will be discussed thoroughly to determine the need for further action. Listed below are the key action points:

General Checklist

- ✓ Conduct gender analysis as part of overall Social Impact Assessment during the Baseline Survey or initial community consultation.
- ✓ Assess the potential gender-differentiated impact of the project and options to maximize benefits and minimize adverse effects.

- ✓ Identify government agencies and non-governmental organizations (NGOs), community-based organizations (CBOs), and women's groups that can be used during project implementation. Assess their capacity.
- ✓ Incorporate gender findings in the project design.
- ✓ List out major gender actions.
- ✓ Develop gender-disaggregated indicators and monitoring plan.

Specific Checklists to be covered during various stages of project cycle include:

Desk review

- ✓ Review available information (e.g., statistics, gender analysis, documents of previous projects) in the project area and the socioeconomic profile of the target population.

Household surveys (Baseline Survey)

- ✓ Draw up gender-disaggregated socioeconomic and cultural profiles and identify the constraints, and needs of the target population.
- ✓ Collect quantitative information.

Participatory methodologies (e.g., participatory rapid appraisal, focus group discussions, random interviews, walking tours)

- ✓ Collect qualitative information which cannot be collected through surveys.
- ✓ Define ways in which men and women beneficiaries and other stakeholders, especially poor women can participate in the project.
- ✓ Map out the target areas. Which are the most disadvantaged areas in terms of access to services and poverty level?
- ✓ Identify major stakeholder groups and their stake.

Staffing

- ✓ Ensure adequate gender balance in field teams.
- ✓ Select field team members with gender awareness, local knowledge, cultural understanding, and willingness to listen.

DATA TO BE COLLECTED

Socioeconomic profile

Demographic

- ✓ Composition by gender, ethnicity/caste, age, etc.
- ✓ Percentage of households headed by females
- ✓ Household size

Economic

- ✓ Income level and sources, by gender

Education

- ✓ Literacy and school enrolment ratios, by gender

Status of women

- ✓ Broad gender division of labour in productive (e.g., agriculture, income-generating activities) and reproductive (e.g., household chores, child care) responsibilities, and time allocation for each responsibility

Project impact

- ✓ Do men and women perceive positive and negative impacts of the project differently?
- ✓ Are the benefits likely to be distributed equitably?
- ✓ How can negative effects be mitigated?
- ✓ Are there any disadvantaged or vulnerable groups?
- ✓ Who are they? Where do they live? What are their socioeconomic characteristics?
- ✓ How will the project affect these groups?

5.6. Disclosure

The Draft SMF will be made available for public consultation by the implementing agencies, with key portions translated in *Bangla*. It will be displayed at places accessible to affected people, primary stakeholders and members of the civil society. It will also be available at all offices of the involved executing agencies and the MOA and NATP and the World Bank websites. Comments will be invited from all. Once all comments have been addressed and document modified by the MOA and after the World Bank finally approves the document the implementing agencies will once again make the final version publicly available with key portions translated in *Bangla*, electronically on their respective websites and place hard-copies in easily accessible offices of such agencies.

6. Institutional Arrangement and M & E Framework

6.1. Institutional Arrangement

6.1.1 The GOB System

The GoB ministries involved in the project for overall direction, periodic monitoring and oversight are the Ministry of Agriculture for the crop sub sector including and the VCD, the BARC for research, and the Ministry of Fisheries and Livestock for the fisheries livestock sub sectors.

The project involves several implementing agencies under the two abovementioned ministries. The research component involves BARC as the apex body and various other ARIs namely (a) Bangladesh Agriculture Research Institute, (b) Bangladesh Rice Research Institute, (c) Bangladesh Institute of Nuclear Agriculture, (d) Bangladesh Livestock Research Institute and (e) Bangladesh Fisheries Research Institute as participating public sector agricultural research institutes.

The implementing agencies involved under the supporting crops, fisheries and livestock development are (a) Department of Agriculture Extension, (b) Department of Fisheries and (c) Department of Livestock Services. The Value Chain Development activities will be implemented by the DAE with technical support from the Hortex Foundation under the Ministry of Agriculture.

Apart from the above, several other ministries and divisions of the government are involved in the project planning and implementation process including the (a) Ministry of Finance, (b) Economic Relations Division, (c) Planning Commission, and (d) Implementation Monitoring and Evaluation Division of the Ministry of Planning.

6.1.2 Implementation and Coordination Mechanism

To manage this multi sub-sector and multi-agency project the GoB has a Project Steering Committee for the NATP headed by the Secretary, Ministry of Agriculture and co chaired by the Secretary, Ministry of Fisheries and Livestock. Other members of the PSC include representatives of the Ministry of Finance (Finance Division and ERD), Ministry of Planning (Planning Commission and IMED), and representatives of all implementing agencies. The PSC will meet at least twice a year to review progress and approve half yearly plans, propose allocations for the ADP/RADP and provide needed guidance for project implementation. Joint Chief, MOA will act as Member Secretary to the PSC and the MOA will provide secretarial service to the committee. The Chair and Co-Chairs will lead the PSC in rotation.

Besides the PSC, there will be a Project Management Committee (PMC) to be headed by the Additional Secretary, MOA. The PMC will comprise the PD, PMCU of the NATP-2 and the component heads from the concerned executing agencies. The PMC is responsible for guiding project management and implementation on a regular basis. It takes special responsibility for facilitating inter-agency cooperation/coordination. The PMC would meet at least once every two months during first two years of the project and once a quarter thereafter.

The MOA will arrange issuance of notification relating to the formation of the PSC and the PMC along with the Terms of Reference and List of Members/ representatives.

The field level implementation and coordination will follow the same arrangement as is done in the NATP-I. The district level District Extension Coordination Committee (DECC). DECCs will be headed by the District level Officers which will be represented by the *upazila* research, extension, private sector and district level officers of all implementing agencies. The DECC will also have representatives of the partner NGOs. The DECC will be also represented by farmer organizations. The office of the District Agriculture Officer, DAE will provide secretarial service to the committee. The DECC meetings will be attended by the *upazila* heads of DAE, DLS, DoF, Hortex and research (where applicable). The DECC meetings will be held quarterly to review progress and plan for the next crop season, year in a participatory manner and to be transparent.

6.2 Monitoring and Evaluation Framework

Because of multi sub sector and multi agency involvement in the project, the management responsibilities vested in several ministries, implementing agencies and LGBs, it requires a very comprehensive monitoring framework. Further, the project's target of reaching the ultimate beneficiaries is rather complex to be monitored effectively. The project will therefore have a monitoring framework comprising both internal and external monitoring systems.

It should be emphasized here that the GoB has a monitoring system where the concerned ministries monitor and review progress of individual projects on monthly and quarterly basis. The GoB has a set of very detailed monitoring formats developed by the IMED who periodically review progress and report to the Executive Committee of the National Economic Council.

The monitoring system and formats are however quite complex and need further simplification so that the project management can report without facing much difficulty and without spending much time in reporting and thus affecting actual achievement of the project.

In donor assisted projects, the PDs are required to prepare another set of reports for the donor, apart from one for the IMED. Ideally, the IMED reporting format should have been able to serve the purpose of both GoB and donor but this is unlikely to happen soon and is outside of the scope of this project. However, the project can try to make M&E format simple enough so that most information can be obtained from the IMED report and limited extra ones provided by the project.

6.2.1 Internal Monitoring

The project will submit reports in IMED formats to the respective ministries and the concerned ministries will forward the reports to the Planning Commission and IMED.

While the IMED reports tend to focus activities and financial progress against allocations under each budget line, and also provides an overview of physical progress in percentage terms – it says little or nothing about achievements of output targets and meeting objectives. There is difficulty of understanding the complex formats and they are often filled up to meet up requirements and deadlines under extreme pressure from above.

Therefore, for the use of the PSC, the PD (PMCU) will prepare consolidated reports for all components and submit it to the MOA with copies to MoFL, Planning Commission, ERD and World Bank. The MOA after scrutiny and approval by the PSC will submit it to the World Bank with copies

to Planning Commission, ERD and MoFL. The project will provide a very simple format prepared by competent M&E experts.

6.2.2 External Monitoring and Evaluation

While the internal monitoring is likely to provide the needed financial progress data, external monitoring will focus more on the implementation process, problems, constraints and achievement of output and outcome against the respective targets.

External monitoring and evaluation will be conducted by independent experts or organizations under contract with the World Bank. This fund will not be channeled through any implementing agency to avoid any scope of being influenced.

The external monitoring and evaluation will specifically assess

- Whether the broader objectives of the project and of each component are met, what difficulties are there and suggest corrective measures
- Whether the project impacts on key social, economic and environmental indicators show positive trend, what difficulties are there and suggest corrective measures
- Whether the project strategy of inclusiveness, participation, transparency, public accountability and equity etc. are followed specifically in technology adoption and water management components.

6.2.3 Monitoring Strategy

Monitoring in the NATP-2 should be done in a participatory manner and should be a bottom up process. The participants in monitoring and evaluation particularly in the case of reporting the grassroots level activities, output and outcome the respondents should include farmers, farm women and other primary stakeholders. Self monitoring by the community with the facilitation of the extension agencies will be a main input to both internal and external monitoring. To enable the extension agency field level officers, the project will provide training, guidance and simple formats.

6.2.4 Monitoring Indicators

The monitoring indicators will include a set of process indicators noted below and another set of impact indicators detailed in Table 25.

Process Indicators:

- Community and Beneficiary Selection – criteria set, *upazila* and UP identified
- Stakeholder consultation and disclosure completed
- Mainstreaming of vulnerable communities – strategies developed to improve their livelihoods incorporated in the project design
- Increasing the role of women in the target communities - strategies developed to improve their livelihoods incorporated in the project design
- Strengthening local institutions – LGB, CIGs, POs, - mechanism for their capacity enhancement incorporated in the project design
- Cost and Benefit Sharing and Sustainability - mechanism incorporated in the project design
- Develop local ownership of the programme - mechanism incorporated in the project design

Detailed Indicators:

Table 25: Impact Monitoring Indicators for Social Issues

Sub Sector	Change Area	Indicators	Frequency to Monitor
Goal Level			
Economic & Social Change	Income increase	Farmers' real income increase by 10% in five years (increase in money terms will be higher and take into consideration of yearly official inflation rate.	Midline and Endline Evaluations
	Literacy	Primary school dropout decrease from about 30% to about 20%	endline evaluation
	Women's empowerment	<p>30% of DAE CIGs, 26% DLS CIGs and 18% DOF CIGs comprise women already. The project will aim to encourage approximately 30% on average of the farmer group executives to be women (in the CIG and PO).</p> <p>The project will encourage through training and awareness raising to close the Male-Female gap in hourly wage rate</p> <p>Women's participation in IGA (including homestead agriculture, cow rearing, poultry rearing, fish pond management etc.) increase from about 38% to 50%</p> <p>Women's involvement in marketing of produce increase from say 10% to 15% among CIG members</p>	<p>Yearly external review and project's annual report.</p> <p>EOP evaluation</p>
	Change area	Indicators	Frequency to monitor
Outcome Level			
Crops	Yield per ha	Rice, Maize, wheat, oilseeds, pulses, spices yield increase by 10% by the end of the project period for the CIG farmers and 7% for non CIG farmers	external review at end of project

			evaluation
	Cropping Intensity	Cropping Intensity increase by 2% point by the end of the project in the target Upazilas	As above
Pond Fishery	Yield per ha	Fish yield for the CIG farmers increase by 10% at the end of the project period and for non-CIG farmers by 7%	As above
	Area increase	Aquaculture area in the target Upazilas increase by 10% at the end of the project period	As above
Livestock and poultry	Milk yield	Yield per local cow/day increase from 1.0 lit to 1.5 liter for CIG and 1.25 lit for non-CIG farmers Milk yield of cross-breed cow increase by 5% yearly for CIG farmers and 2% yearly for non-CIG farmers	Yearly review via annual report
	Health of cattle, and goat	Visible health of cattle and goat improved, % of ill health and underweight cattle and goat reduced from about 80% to 50-60% in the NATP Upazilas	
	Egg production	Egg per backyard poultry increase from 40 to 50/yr	
	Chick survival	Backyard poultry chick survival up to age 3 months increase from 20-30% to 50%	As above
	Poultry farm	Number of poultry farmers in the target <i>upazila</i> increase by 4% yearly	
			Productivity of broiler and layer farms increase by 4% yearly for CIG farmer and 2% for non-CIG farmers
VCD	Vegetables, fruits, flower	Producer's share of retail price (farm gate price) increase from about 50% to about 60%	External review and annual report
Cross-cutting	Women's participation	20% of the beneficiary group members are women, 33% of the CIG/ PO leaders are women	Yearly external review and Project's Annual Report
	small ethnic and vulnerable people	TP in the target <i>upazilas</i> are included where such communities have visible presence, 20+ HH in any village or 50+ HH in any UP	
	SM Farmers	At least 80% of the male group members are SM farmers including about 10% tenant farmers/ sharecroppers	

	Small pond operators	80% of the ponds under aquaculture support are below one acre including 60% not above one bigha.	
	Backyard poultry, livestock	80% of the livestock CIGs are backyard poultry or livestock farms (below 20 adult birds, below 5 cows or 10 goats).	
Output Level			
Activities	Change Area	Indicators	Monitoring
Promoting Agricultural Innovation	Supporting NARS ARIs	Number of NATP supported research sub projects identified based on field needs as proposed by the extension agencies. Numbers implemented in time and result reached the farmers and accepted by the farmers (% of district level extension office heads aware of major research findings)	Yearly external review and Project's Annual Report
		Number of NATP assisted sub projects reached technology to the farmers and number of technologies accepted by the farmers	As above
	AIF	Number of NATP assisted sub projects reached technology to the farmers and number of technologies accepted by the farmers	As above
Supporting Crop, Fisheries and Livestock Development	Crop Seed/ Fish Fry, Fingerling	Quantity of seed, fry and fingerling supply to farmers of assured quality increase to 20% of farmers from 5-10%	As above
Activities	Change Area	Indicators	Monitoring
	Use of Balanced Fertilizer	Non urea fertilizer as % of used commercial fertilizer. % reduction of urea per ha	As above
	Animal feed	Number of farmers and area under fodder cultivation	As above
	Feed quality for poultry, fish etc.	Number of farmers producing and procuring feed of desired quality and quantity produced and procured by type	As above
	AI service for cows	AI service to the target farmers increase by 25% (cows covered by AI)	As above
	Number of Adopters of recommended technology	CIG farmers by sub sector, Male, Female separately, and non-CIG adopters by sub sector, male and female	As above
	Irrigation efficiency	Area irrigated (ha) per STW/ LLP increase by 25% from 2 ha to 2.5 ha for <i>boro</i>	As above

	Supplementary irrigation	Area covered increase by 25% in and <i>Aman</i> seasons.	As above
	Buried pipes installation	Number of CIG, Number of locations and length of pipe (meter), consultation documents and agreements reviewed to ensure compliance with the SMF	As above
	Supply of flexible pipes	Number of CIG, Number of locations and length of pipe (meter)	As above
	AIF	Number of sub projects implemented, amount of fund allocated and utilized Number of CIG/PO involved, Number of farmers benefited and assessed benefit per farmer/year	As above

6.2.5 Participatory Monitoring and Evaluation (PME).

The project will mobilize and strengthen representative community groups (CIG) that will play an active role throughout implementation and contribute to the sustainability of the project. The project's monitoring system will seek to go beyond the simple extraction of information from these groups, to a participatory process where stakeholders at the community level will be involved in measuring results, evaluating achievements, and learning from the project experience (as joint originators and evaluators of information). This will also help build local capacity to identify and analyze problems, to propose solutions, to take actions, and it will also give voice to small and poor farmers. The PME system is expected to tap into the local knowledge of farmers and their proximity to project activities. It will help beneficiaries to keep track of implementation progress while building a sense of ownership among them. The PME system is also expected to transfer technical knowledge to farmers that participate in monitoring and evaluation.

Under the PME, community members will collaborate with project staff to review and monitor schedules, collect data, and ensure that quality goods and services are delivered in a timely manner. These arrangements will facilitate quick corrective actions because communities are the first to see problems and often know the best remedy.

Use of social accountability structures and tools: The participatory nature of the project is meant to create positive social capital at the local level to allow for change and development. The project will use community scorecards at regular intervals to assess the performance of the implementing agency with respect to the implementation of the NATP II activities. To check the quality of financial management systems, and to guard against any corrupt activities, audit will be used during the project. To execute this auditing the PCU will hire a competent firm.

6.3. Grievance Redress Mechanism

To address the grievances, the project will have three tier grievance redress mechanism (GRM). In case some conflict arise between stakeholders (not very likely) or in case some stakeholder deprived of participation or in case some stakeholder adversely affected by any project activity

(unlikely except in installation of buried pipe), the aggrieved person will be able to complain and get remedy. As **first tier** of GRM, an officer will be designated as project facilitator at the Upazila level who will be the first level contact for an aggrieved person. On a fixed date of every month, the facilitator will visit the village/ CIGs where individuals / community will approach the project facilitator. This will be in addition to complaint books kept at the CIG, FIAC and UP Information Centre and which will be entertained by the facilitator the same day in the field level. That apart, the project sties will have information board with the (i) name of the Sub Project; (ii) name of the project facilitator; district level officer responsible for social management, (iii) names of concerned Upazila Officers, and (iv) official and cell phone numbers of concerned officers. The concerned Upazila level project facilitator will prepare a monthly report on these cases, and submit to the district coordinator. The Upazila offices of the concerned agencies will respond to the complaints and resolve cases on monthly basis and only those requiring higher level attention will be forwarded to the district level.

As **second tier** of GRM, an Integrated Grievance Redress Mechanism (IGRM) will be established at the district level that will register user complaints using various mediums written, mobile or web based complaints and address them in a time bound system. The project will commit itself for proactive disclosure and sharing of information with the key stakeholders, including the communities/ beneficiaries. Most grievances are expected to be resolved at this level including appeal.

At the third tier the project will have a central grievance redress committee which will have mainly oversight and monitoring role. The project will have a communication strategy focusing on efficient and effective usage of print and electronic media, bill boards, posters, wall writing, and adoption of any other method suiting local context, logistics, human and financial resources. As part of IGRM, a Grievance Redress Cell (GRC) will be set up at project headquarters under each component.

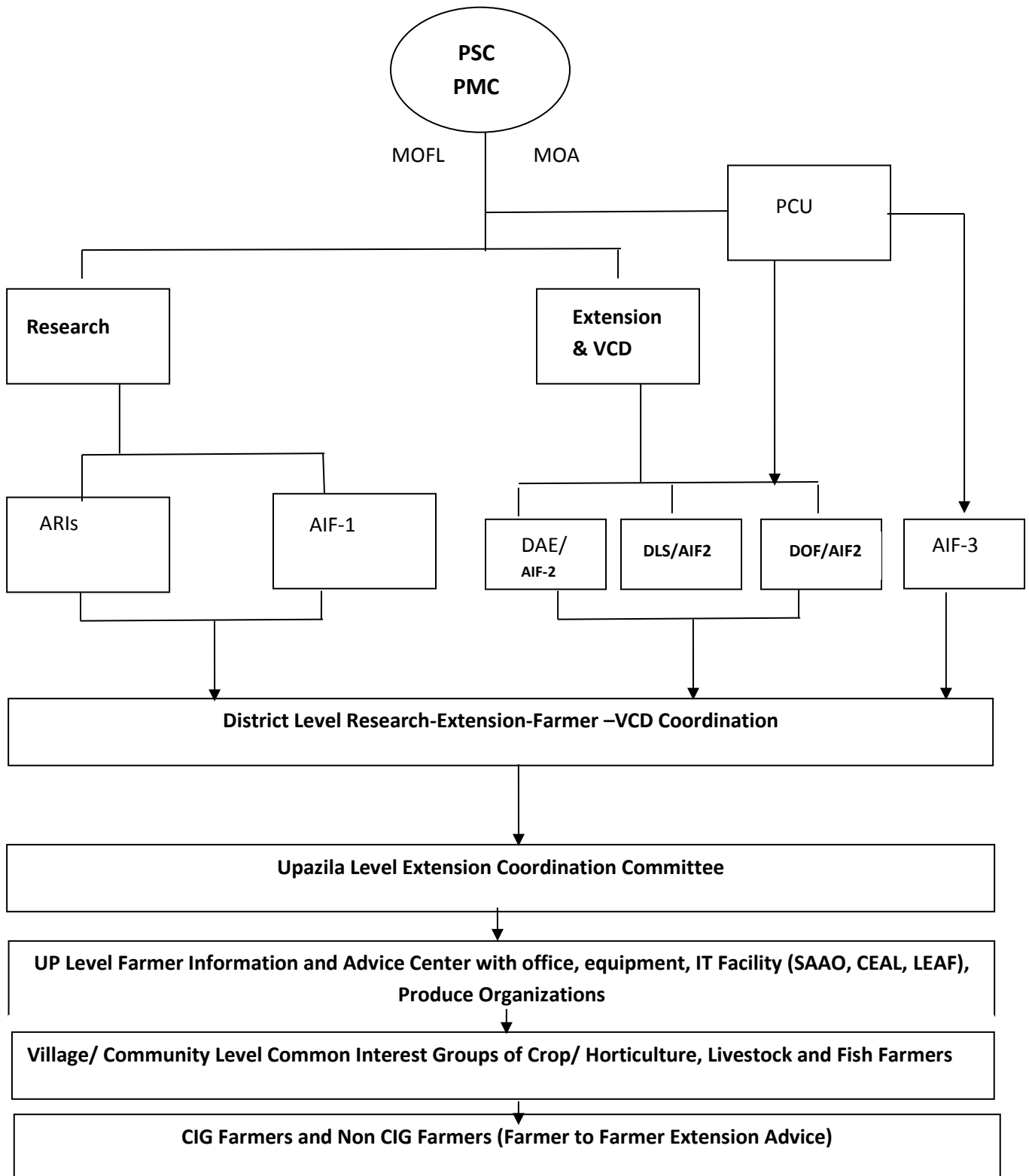
List of 120 NATP-1 upazilas, 120 NATP-2 upazilas and 30 Additional Funding upazilas

SL	District	NATP phase 1 upazilas	Additional Funding UZ
1	Dhaka	1.Savar2.Dhamrai	
2	narsingdi	3.Shibpur,4.Palash,5.Narsingdi-sadar6.Belabo,7.Monohardi	
3	Gazipur	8.Sherpur,9.Kapashia,10.Kaliakair, 11.Gazipur Sadar	
4	Tangail	12.Ghatail,13.Shakhipur,14.Tangail Sadar,15.Madhupur,16.Kalihati,17.Gopalpur, 18.Bhuapur,19.Delduar	
5	Mymensingh	20.Haluaghat,21.Muktagacha,22.Trishal, 23.Gaffargaon,24.Fullbaria, 25.Mymensing sadar, 26.Phulpur, 27.Gouripur	
6	Sherpur	28.Nakla,29.Nalitabari,30.Sribardi	
7	Kishoreganj	31.Kishoreganj sadar, 32.Kuliarchar, 33.Katiadi, 34.Bhairab	
8	Dhaka	1.Savar,2.Dhamrai (35-40 missing)	
9	Cox's Bazar	41.Cox's Bazar sadar,42.Ramu,43.Teknaf	
10	Comilla	44.Chandina, 45.Daudkandi, 46.Chaiddogram, 47.Comilla Sadrsho sadar, 48.Laksham, 49.Nangolkot	
11	B.Barua	50.Akhaura, 51.B.Barua sadar, 52.Kasba, 53.Nabinagar	
12	Chadpur	54.Sahrasti, 55.Chandpur-sadar, 56.Haziganj, 57.Matlab(uttar)	
13	Sylhet	58.Dakhin surma, 59.Sylhet sadar, 60.Jointiapur, 61.Fenchuganj , 62. Beanibazar, 63.Golapganj	
14	Moulaibazar	64.Kulaura, 65.Kamlaganj, 66.Moulovibazar sadar, 67.Rajnagar, 68.Sreemangal, 69.Barlekha	
15	Natore	70.Boraigraim , 71.Lalpur, 72.Natore sadar, 73.Shingra	
16	Bogra	74.Bogra sadar, 75.Dhunot, 76.Kahaloo 77.Sherpur, 78.Shibganj, 79.Sonatola	
17	Rangpur	80.Pirgacha, 81.Rangpur sadar, 82.Pirganj, 83.Mithapukur, 84.Kaunia, 85.Badarganj	
18	Dinajpur	86.Chirirbandar, 87.Kaharole, 88.Khansama, 89.Dinajpur Sadar 90.,Parbatipur, 91.Birganj	
19	Khulna	92.Dacope, 93.Batiaghata, 94.Dumuria, 95.Paikgachha, 96.Rupsha	
20	Satkhira	97.Kalaroa, 98.Satkhira sadar, 99.Tala	
21	Kushtia	100.Bheramara, 101.Kumarkhali, 102.Mirpur, 103.Kushtia sadar	
22	Jessore	104.Abhaynagar, 105.Bagherpara, 106.Chaugachha, 107.Jhikargachha, 108.Keshabpur, 109.Jessore Sadar, 110.Manirampur, 111.Sharsha	
23	Jhenaidah	112.Jhenaidah Sadarj, 113.Kotchandpur, 114.Kaligan	
24	Faridpur	115.Alfadanga, 116.Faridpur sadar, 117.Madhukhali	
25	Rajbari	118.Baliakandi, 119.Pangsha, 120.Rajbari sadar	
1	Gopalganj		1. Gopalgaon Sadar; 2.Muksudpur; 3.Kashiani; 4.Kotalipara; 5.Tungipara
2	Madaripur		6.Sadar; 7.Rajoir; 8.Kalkini; 9.Shibchar
3	Shariatpur		10.Sadar; 11.Jajira; 12.Bhederganj; 13.Naria; 14.Damuda; 15.Goshairhat
4	Magura		16.Sadar; 17.Sreepur; 18.Mohammadpur; 19.Salikha
5	Sirajganj		20.Rayang; 21.Kamarkhanda; 22.Belkuchi; 23.Chauhali
6	Bhola		24.Sadar;25.Char Fasson;26.Doulatkhan; 27.Borhanuddin; 28.Tojumuddin; 29.Monpura; 30.Lalmahan

Source: PCU, NATP.

Note: NATP 2 will add another 120 Upazlas in addition to the above 150 which will be finalized later.

NATP Organogram and Implementation Arrangement



Headcount poverty by district and upper and lower poverty lines 2010

zl-code	zila-name	poverty-rate- by lower poverty line (%)	poverty-rate-by upper poverty line (%)
1	BAGERHAT	24.0	42.8
3	BANDARBAN	21.6	40.1
4	BARGUNA	9.8	19.0
6	BARISAL	39.9	54.8
9	BHOLA	20.4	33.2
10	BOGRA	6.7	16.6
12	BRAHMANBARIA	15.0	30.0
13	CHANDPUR	30.3	51.0
15	CHITTAGONG	4.0	11.5
18	CHUADANGA	10.8	27.7
19	COMILLA	21.1	37.9
22	COX'S BAZAR	16.2	32.7
26	DHAKA	4.9	15.7
27	DINAJPUR	21.3	37.9
29	FARIDPUR	19.8	36.3
30	FENI	14.6	25.9
32	GAIBANDHA	30.3	48.0
33	GAZIPUR	8.2	19.4
35	GOPALGANJ	26.8	42.7
36	HABIGANJ	20.1	25.3
38	JOYPURHAT	12.9	26.7
39	JAMALPUR	34.2	51.1
41	JESSORE	18.4	39.0
42	JHALOKATI	26.7	40.5
44	JHENAIDAH	10.0	24.7
46	KHAGRACHHARI	10.1	25.5
47	KHULNA	21.2	38.8
48	KISHORGONJ	16.4	30.3
49	KURIGRAM	44.3	63.7
50	KUSHTIA	0.8	3.6
51	LAKSHMIPUR	18.1	31.2
52	LALMONIRHAT	16.7	34.5
54	MADARIPUR	17.4	34.9
55	MAGURA	25.9	45.4
56	MANIKGANJ	8.0	18.5
57	MEHERPUR	5.1	15.2
58	MAULVIBAZAR	21.1	25.7
59	MUNSHIGANJ	15.6	28.7
61	MYMENSINGH	32.3	50.5
64	NAOGAON	7.0	16.9
65	NARAIL	7.7	20.0
67	NARAYANGANJ	10.4	26.1
68	NARSINGDI	12.1	23.7
69	NATORE	21.3	35.1
70	NAWABGANJ	12.1	25.3
72	NETRAKONA	19.5	35.3
73	NILPHAMARI	18.8	34.8
75	NOAKHALI	3.4	9.6
76	PABNA	16.7	31.5
77	PANCHAGARH	12.3	26.7
78	PATUAKHALI	14.7	25.8
79	PIROJPUR	30.9	44.1
81	RAJSHAHI	16.5	31.4
82	RAJBARI	25.7	41.9
84	RANGAMATI	6.8	20.3
85	RANGPUR	30.1	46.2
86	SHARIATPUR	34.4	52.6
87	SATKHIRA	29.7	46.3
88	SIRAJGANJ	22.7	38.7
89	SHERPUR	29.8	48.4
90	SUNAMGANJ	20.6	26.0
91	SYLHET	19.5	24.1
93	TANGAIL	18.0	29.7
94	THAKURGAON	13.8	27.0
	National	17.6	31.5

Small Ethnic Communities and Vulnerable People's Framework

This framework is prepared to lay down the procedures for preparing Small Ethnic and Vulnerable Communities' Development Plan (SEVCP) for sub-projects that trigger OP4.10.

In order to prepare a SEVCDP under the NATP-2 sub projects the following steps will be taken:

- Social screening to establish the presence of small ethnic communities in the project area or have collective attachment to the project area
- based on a detailed social assessments establish baseline data on the small ethnic people (subsistence, employment, community networks) in the project area;
- identify the impacts (both positive and negative) and prepare an SEVCDP;
- disclose the draft SEVCDP

The **suggested format** for the SEVCP is as follows

- Description of sub projects and implications for the Small Ethnic and Vulnerable Communities'community
- Gender disaggregated data on number of small ethnic and vulnerable households by impact category
- Social, cultural and economic profile of affected households
- Land tenure information
- Documentation of consultations with the community to ascertain their views about the project design and mitigation measures. The consultation process will be culturally appropriate and acceptable to local people. Findings of need assessment of the community
- Community development plan based on the results of need assessment
- Modalities to ensure regular and meaningful consultation with the community
- Institutional arrangement and linkage with other national or state level programmes
- Institutional mechanism for monitoring and evaluation of SEVCDP implementation and grievance redress
- Implementation Schedule
- Cost estimate for implementation and budget provision

Key Elements of SEVCP

The key elements in a SEVCP include:

- All development plans for Small Ethnic and Vulnerable Communities people should be based on full consideration of the options and approaches that best meet the interests of the communities.
- Scope and impact be assessed and appropriate mitigation measures are identified

- Project should take into account the social and cultural context of affected peoples, and their skills and knowledge relating to local resource management
- During project preparation, formation and strengthening of Small Ethnic and Vulnerable Communities' peoples organization; communication to facilitate their participation in project identification, planning, execution and evaluation should be promoted
- In case preparing and implementing SEVCDP in-house is not possible, experienced community organizations/ consultants can be involved as intermediaries.

An Outline for Community Consultation on the Installation of Buried Pipes (If applicable for inclusion of buried pipe as an irrigation method)

Although land acquisition and involuntary resettlement will not be needed, needed community consultation will be carried out for the sub projects under the Technology Adoption component if applicable to work out a, mutual compensation mechanism needed for temporary use of land such as for installation of buried pipes.

The contents of the consultation and the documentation of it will be following:

Introduction – Sub Project Background

- i) Name of the sub project
- ii) Purpose of the use of the land in the sub project
- iii) Duration of the use
- iv) A list of affected and benefited household head area affected and benefited for each household
- v) Timing of execution
- vi) Agreement between affected, benefited groups facilitated by the SAAO and agreed by the CIG/ PO
- vii) Describe the result of these efforts
- viii) Submit findings while sub project included in the UP micro plan.

Items iv to vii will be organized in a comprehensive list to be prepared by the CIG/PO facilitated by the concerned extension agency officer.

Census and Socio-economic Surveys

- ix) Give formats and tables for census surveys
- x) Provide outlines for socio-economic survey
- xi) Summarize process for consultations on the results of the census surveys
- xii) Describe need and mechanism to conduct updates, if necessary

Grievance Redress

- xiii) Describe grievance redress measures and fix responsibility
- xiv) Describe the provisions to appeal to higher authority and arbitration/ salish

Guidelines for Preparation of Micro Plans and Sub Project Proposal

Preparation of Union Micro-Plan will be initiated at CIG level and each CIG will prepare its own micro plan for one year. The extension agency officials at FIAC will facilitate the preparation of the micro plan at the CIG level and their prioritization at the UP level. The process will involve a number of activities to be performed at sequential stages as elaborated below:

Stage 1: Conducting Problem Census

Activity	Participants	Resource person	Duration	Venue
<ul style="list-style-type: none"> • Identification of Needs/problems • Prioritizing of Problems 	Members of each CIG	Extension agency personnel and community level extension agents (SAAO, CEAL, LEAF)	1 day for each CIG	CIG village

Stage 2: Interventions/Activities for Solving identified Problems

Problems prioritized	Interventions/Activities proposed by the CIG Farmers	Facilitation	Duration	Venue
Problem 1 :	1.	Extension agency personnel and community level extension agents (SAAO, CEAL, LEAF)	1 day	CIG village
Problem 2 :	2.			
Problem 3 :	3.			
Problem 4 :	4.			

Stage 3: Consolidation of an Union Micro-Plan (activities shown are just examples)

Based on the above problem identification and problem solving exercise by the CIGs with the facilitation of the extension agency personnel, each CIG will propose one or more sub project(s) to be implemented in a year or so. An

indicative outline of the sub project proposal for the technology dissemination and VCD components is provided below:

1. Sub Sector:
(Separate sub projects for each sub sector: Crops, Livestock, Fisheries, VCD component)

2. Proposed by/ Name of CIG:

Village and UP name:

Upazila and district

2. Name of proposed intervention/ Sub project:

3. Duration of the proposed intervention: From To

4. Needed support from the NATP-2 in Tk.

5. The statement of the problem desired to be addressed:

6. Location of the intervention:
Village UP

7. Major Activities
a. Demonstration

Crop Type	Number of demo	Area (dec) per demo	Number of animal/ bird	Benchmark yield	Expected yield	Sponsor name	Sponsor farm category	Sponsor contribution (what)	Sponsor Cost (Tk)	ARTS contribution (what)	ARTS cost (Tk)

b. Irrigation and farm mechanization support

Type of equipment	Unit	Number	Cost per unit	NATP support per unit	Benchmark area covered per unit	Expected area covered	Number of beneficiary farmers Total	Tenant and landless farmer	SM farmers	Large Med farmers	Fem HH head

LLP											
STW											
Buried pipe											
Flexible pipe											

c. Supplementary Irrigation

Crop Type	Area (ha)	Benchmark yield MT per ha	Expected yield MT per ha	NATP-2 support per unit (LLP/STW)	Number of beneficiary farmers Total	Tenant and landless farmer	SM farmers	Large Med farmers	Fem HH head
Aus paddy									
Aman paddy									
Wheat									
Maize									
Potato									
Summer vegetables									
Winter vegetables									

d. Support to produce and preserve seeds

Crop Type/ Animal/ Fish	Number of farmers	Area under seed production support (ha)	Qty of seed (Unit to measure) kg, number of	Quantity produced	Tenant and landless farmer	SM farmers	Large Med farmers	Fem HH head	Preservation method	Quantity preserved

			chicks, fry etc.							

e. Procurement and distribution of quality seed and other inputs

Type of input	Number of CIGs involved	Number of farmers to be benefited	Tenant and landless farmer	SM farmers	Large Med farmers	Fem HH head	Unit	Quantity procured	Quantity distributed	Price lower in %

f. Marketing support provided

Type of facility provided	Unit to measure	Number of facilities provided	Number of involved CIGs	Number of farmers benefited	Landless/ SM / Tenant farmers	Fem HH head	Commodity marketed (Unit)	Quantity	Price without support	Price gain in %

g. Training of farmers

Type of Training	Number of Trainee			Duration of Training (days)			Person days of training			Female Trainee	
	CIG leaders	Other CIG farmers	Non-CIG farmers	CIG leaders	Other CIG farmers	Non-CIG farmers	CIG leaders	Other CIG farmers	Non-CIG farmers	Number	Person-days

h. Exposure Visits of farmers

Type of Activity	Number of Beneficiary			Duration of Visits (days)			Person days of exposure visits			Female Beneficiaries	
	CIG leaders	Other CIG farmers	Non-CIG farmers	CIG leaders	Other CIG farmers	Non-CIG farmers	CIG leaders	Other CIG farmers	Non-CIG farmers	Number	Person-days

i. Other Support

Type	Quantity			Number of Beneficiaries			Female Beneficiaries	
	Unit to measure	Quantity	Cost (Tk)	CIG leaders	Other CIG farmers	Non-CIG farmers	Number	Person-days

j. Total Support

Type				Contribution		
	Unit to measure	Quantity	Cost (Tk)	NATP-2	Beneficiary	Others

- 8. Overall likely benefits of the intervention:
 - a. Type of farmer and number of farm households
 - Farms operated mainly by men
 - Farms operated by women farmers
 - Number of female headed households to be benefited
 - Number of landless sharecroppers/ tenant farmers to be benefited (below 05 dec)
 - Number of marginal farm households to be benefited (05 to 249 dec)
 - Number of medium and large farmers to be benefited (250 dec and above)

Number of small pond operators to be benefited (not above one bigha or 33 dec)

Number of medium pond operators to be benefited (0.34 to 1.00 acre pond)

Number of large pond owners to be benefited (above 1.00 acre pond)

Number of backyard poultry/ duck farmers to be benefited (below 20 adult birds)

Number of non-backyard poultry/ duck farmers (20+ adult birds) benefited

Number of backyard goat and sheep farmers to be benefited (below 10 animals)

Number of non-backyard goat and sheep farmers to be benefited (10+ animals)

Number of backyard cattle fattening farmers benefited (up to 4 animals)

Number of non-backyard cattle fattening farmers to be benefited (5+ animals)

Number of backyard dairy farmers to be benefited (up to 4 cows)

Number of non-backyard dairy farmers to be benefited (5+ cows)

b. Description of expected benefits (benchmark and expected increased of area; number of birds, animals and expected increase of yield with benchmark).

9. Does the sub project proposed involve any installation of buried pipe? Yes/ No

a. If yes has consultation been held to agree on the alignment, timing of installation to minimize loss of standing crops etc and mutual compensation and agreement reached between beneficiary and affected farmers? Yes/ No

b. If yes, proceed and suggest inclusion of the sub project in the Union Micro Plan and if no, REJECT THE PROPOSAL OR modify the proposal to reach consensus before suggesting for inclusion in the Union Micro Plan.

10. Does the proposed sub project concern any small ethnic and vulnerable communities/ households or affect their livelihoods? Yes/ No

a. If No proceed and suggest for inclusion in the Union Micro Plan.

b. If Yes, consult the involved small ethnic and vulnerable community people and follow-up on the SEVCDP

11. Any other social concern that can adversely affect marginalized groups (landless, women farmers, small ethnic and vulnerable communities , farmers etc). Yes/ No

If yeas what remedial measures are suggested

12. Is there any environmental concern such as negative effects on fisheries resources, decrease of soil fertility, pollution of water, air, soil etc. by increased use of agro chemicals including formalin and ripening materials?
Yes/ No

a. If yes what are these, what negative effects foreseen

b. What remedial measures suggested and incorporated in the sub project

List Sub Projects by sub sector and prioritize them in the UP level by the representatives of the CIGs and POs in the UP level and thus prepare UP level micro plan on yearly basis.

Report of Field Visit

Dates and Places of Visit:

30-09-14: Belabo *upazila*, Narsingdi

14-10-14: Kapasia *upazila*, Gazipur

15-10-14: Belabo *upazila*, Narsingdi

16-10-14: Shibpur *upazila*, Narsingdi

Purpose of visit:

- Assess the status of compliance of Social Safeguard Measures initiated under the NATP-1,
- Identify pertinent issues constraining implementation and achievements, and
- Problems encountered and suggestions made by the farmers and field level officials for NATP-2.

Observations:

In all three *upazilas* visited, the DAE organized 10 CIGs in each Union Parishad and each CIG comprises 20 members. Of the DAE CIGs 30% are formed exclusively with female members and 70% exclusively with male members. Most CIG members belong to the small and marginal farmer groups and others in the medium farmer group. Large farms are rare in area and also they are not visible in the CIGs.

In the eight Union Parishads of Belabo DAE has 80 CIGs, SCDC has 20 CIGs (16 Fruits/ vegetables and 4 cow rearing), DLS has 24 CIGs and DOF has 16 CIGs. Thirty percent of the DAE and SCDC CIGs are formed exclusively of female members and remaining 30% exclusively of male members. The DLS and DOF CIGs are mixed groups. Female farmers are included in lower proportion in the DOF and DLS CIGs, DOF having only 23 female CIG members and DLS only 35 female CIG members in 16 and 24 CIGs having 320 and 480 total members. The shortfall is because of lack of proper communication of directives in the field level to include about 20% female members and weaker field presence of the DLS and DOF.

In the ten Union Parishads including a municipality in Shibpur *upazila*, DAE organized a total of 110 CIGs of which 30 are formed exclusively with female members and the remaining 80 exclusively of male members. DOF organized a total of 20 CIGs each comprising 20 members and 70 of the total 400 members are women. DLS organized 27 CIGs, three in each UP with a total of 540 members including 102 female members.

Of the 110 DAE CIGs in Shibpur *upazila*, 61 have bank account, 60 applied for registration and 47 of them got registration certificate. Other 13 are in the process of getting registration. Average monthly savings is Tk. 50 per CIG member which is quite low, still the 61 CIGs have mobilized total savings of Tk. 565,500.

Shibpur *upazila* has 5 FIAC. Technology disseminated in the Shibpur *upazila* by DLS: 13 demonstrations on cow rearing, 12 demonstrations on cattle fattening and two demonstrations on goat rearing. After the introduction of the NATP in the *upazila*, number of Artificial Insemination of cow and feeding Urea Molasses Straw mix increased that contributed to increased milk and meat production.

Year wise Technology Demonstration by the DAE in Kapasia Upazila under the NATP-1

SL	Name of Technology	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Total
1	RYGM Aman	3	10	-	5	-	-		18
2	RYGM Boro	-	10	10	13	16	-		49
3	T Aman Seed Production & Preservation	-	-	-	-	12	12	20	42
4	Boro Seed Production & Preservation	-	-	-	-	22	-		22
5	Homestead Vegetables	20	49	-	9	-	-	13	91
6	AWD	5	4	2	-	-	-		11
7	Fruit Tree Management	-	8	15	16	24	-		63
8	Compost	10	10	10	-	-	-	15	45
9	EBEK	-	5	-	-	-	-		5
10	Sajina	2	3	-	-	-	-		5
11	Summer Vegetables	3	4	5	-	-	-		12
12	Kul	10	-	-	-	-	-		10
13	Quick Compost	-	-	10	-	-	-		10
14	Fruit Garden Establishment	-	-	15	4	-	-		19
15	Wheat	-	-	-	5	-	-		5
16	Betel leaves	-	-	-	5	11	-		16
17	Sugarcane	-	-	-	5	10	-		15
18	Spices	-	-	-	5	5	-		10
Total		53	103	67	67	100	12		450

Year wise Farmer Training provided by the DAE in Kapasia Upazila under the NATP-1

SL	Name of Technology	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Total
1	Rice YGM	8	19	18	5	2		5	57
2	Rice seed prod preservation	13						2	15
3	Vegetable production	10	8	3	7			5	33
4	Boro seed prod preservation					10			10
5	Homestead vegetables		4	15					19
6	Alternative wetting Drying	1	5	2					8
7	Fruit tree management	3			7	5		3	18
8	Compost	10	14	10				1	35
9	EBEK		4						4
10	Pulse				2				2
11	Summer bean	3							3
12	Fruit cultivation	10	13						23
13	Wheat				1				1
14	Betel leaves					3			3
15	Sugar cane				4	5			9
16	Spices					2			2
17	CIG leaders		11	9	2	2		1	25
	TOTAL	58	78	57	28	29		17	268

DLS Activities in Belabo *upazila* under NATP-1

SL	Activities	2008-09	2009-10	2010-11	2011-12	2012-13	2014-15	Total
1	Demonstration							
	Urea molasses stray				20	30		50
	Cow rearing				9	12		21
	Poultry management				3	3		6
	Fodder cultivation			14	16	7		37
2	Vaccination							
	Number of camps		48	20	46	10		124
	Number of cattle		9295	2886	6565	4872		23618
	Number of goats		4689	2933	3449			11071
3	De-worming							
	Number of camps		3	16	26	10		55
	Number of cattle		900	4,000	5,800	2,500		13,200
4	Training							
	GIG members (Batch)	11	25	9	3	8		58
	CIG members (number)	330	750	270	90	240		1680
	CIG leaders (batch)			2	3	1		6
	CIG leaders (number)			60	90	30		180
5	Field day		8					8
	Technology Fair			1				1
	Exposure Visit		2			1		3

DOF Activities in Kapasia *upazila* under NATP-1

SL	Activities	2008-09	2009-10	2010-11	2011-12	2012-13	2014-15	Total
1	Demonstration	1	10	11		22		44
2	Fish Nursery					6		6
3	Supply of Fishing Net					11		11
4	Formation of CIG					22		22
5	Registration of CIGs					22		22
6	Number of CIG Members					440 (Total)		440 (Total)
7	Women members of CIG					79		79
8	Training							
	CIG members (number) 2 days skill training	330 (76 F)						330 (76 F)
	CIG leaders (3 days Technology)	66 (6 F)						66 (6 F)
	CIG members (number) 1 days refresher	330 (76 F)						330 (76 F)
	CIG leaders orientation (number)	154 (F 23)						154 (F 23)
9	Field day	1	10	11		22		44
10	Technology Fair		1	1	1	1		4
11	Exposure Visit		2			1		3

Meetings with Farmer Groups:

1. North Baroicha Vegetables Farmer CIG, *upazila* Belabo, Narsingdi

On 30th September 2014, the Consultant visited a CIG group comprising 20 male farmers at village Baroicha (North), all producing vegetables and paddy and all rearing cattle. This group is linked to Supply Chain Development Component. The group members are mostly small and marginal farmer each owning around 1.00 acre cultivable land. Each farm household has several occupations. Typically the household head or elderly members are engaged in agriculture (mostly vegetables and fruits cultivation), elderly women are typically housewife but are also engaged in agriculture (homestead gardening, poultry, cattle and goat rearing, post-harvest work and seed preservation etc.) while younger men are engaged in businesses, services and in a few cases in overseas work.

Formation of the CIG was facilitated by the DAE and Hortex officers. The objectives behind the CIG formation were (a) build up capital by savings mobilization, (b) establish better linkage with the DAE and

Hortex services, (c) training and demonstration in improved agricultural technologies, (d) produce vegetables without application of pesticides, and (e) solve various problems of farmers.

In this group all CIG members received training, three farmers were supported with demo farms in cultivation of beans, the Hortex Foundation provided plastic bowl, mat and trolley. The result of these are popularizing cultivation of vegetable without the application of pesticide, accessing community collection and marketing centre for selling vegetables and fruits which provides 5 to 10 percent higher price compared to local market. More importantly, as institutional buyers come regularly, selling of produce is almost certain except in the peak season when over production reduces output price.

The CIG has mobilized good amount of savings exceeding Tk. 100,000. With the money have mortgaged- in 90 decimals land and its income will be deposited to CIG account and then reinvested. The CIG gives short-term loan to members at 10% yearly interest and the interest income will be used for various activities of the CIG.

While the CIG is reasonably active, the Producer Organization at the UP level and above remains largely inactive reportedly because of inadequate supervision from above, not having enough directives and low interaction between the PO and the CIG except in occasional yearly meetings.

2. Bhaterchar South Para Women Farmer CIG, *upazila* Kapasia, Gazipur

On 14th October, 2014 the consultant visited a women farmer group at village South Bhater Char in Kapasia *upazila*, Gazipur. The group comprises 20 women and most of the members were present in the meeting. For shortage of time particulars of nine participants were noted. Of the 20 members, seven are marginal farmers, three are medium farmers and all others are small farmers. This makes 85% Small and marginal farmers and 15% medium farmers and none large farmers.

Besides household chores, women are largely engaged in homestead based fruits and vegetables cultivation and livestock rearing but not in fisheries are fish ponds are rare in this village. Main crop is vegetables of various types- water gourd, bitter gourd, cucumber, beans, cabbage, cauliflower, okra and brinjal . Women are engaged in land preparation, watering, weeding and harvesting if the land is located in and around the homestead area. Women are also largely involved in post harvest activities like cleaning, grading, sorting and seed preservation.

Reported benefits of CIG membership is accessing savings and credit and leaning agriculture by seeing demonstration and attending training. The group members saved Tk. 2,200 each over the last three years. Twelve of the 20 members got loan from the CIG and others expecting to get loan in future. All 20 have been members of various NGO groups but they are reportedly reduced taking loan from the NGOs as NGO interest rate is quite high. The hope stop taking loan from the NGOs once they are able to repay old loans fully.

3. Panchpaika Fish Farmers Cooperative Society (mixed group), *upazila* Shibpur, Narsingdi

Each CIG comprises 20 members with new recruit of five members to comply with the requirement of minimum 20 members for getting cooperative registration. Two fisheries CIG in Panchpaika have a total of 40 members of which 5 are women (0+5), only one is a medium farmer, none large farmer, seven marginal farmers and 32 are small farmers.

Although the CIG members own small land holdings, they are established in aquaculture and several other farming and businesses like poultry farming and fish feed and fish trading. They have good financial capital and are quite busy in farming and business but still attends CIG meetings and regularly communicate with the *upazila* Fishery Office.

From each CIG 15 members received training. New 5 are yet to receive any training. Three members in two CIGs had demonstration plot producing koi and shingh fish. One CIG received a fishing net.

Women in the Fisheries CIG are engaged in pond caring and feeding but not much in harvesting and marketing which are managed by men.

The CIGs appeared active but the PO at the UP level remains largely inactive. Some respondents said that the officers committed to give various forms of assistance but only limited number of demonstration and aquaculture training was provided. Water and soil testing facility and feed quality management support was never provided. Officers also promised to provide feed mixing machine which never materialize and also financial support to CIG as capital grant never materialized. These are acting as disincentive to stay on CIG and spontaneous participation in CIG activities.

4. Khoratmara Vegetable Farmers CIG, *upazila* Shibpur, Narsingdi

The CIG comprises 20 members. It was established in 2009 and registered in 2014. The SAAO of DAE assisted formation of the CIG while local initiative came from Arman Bhuiyan and Romizuddin Dulal who are community leaders. Only a couple of CIG members belong to medium farmer category and all others belong to small and marginal farm category. The objectives to form the CIG were (a) organize farmers into cooperatives, (b) development of agriculture, (c) accessing government services, (d) receive assistance of government departments, (e) get good quality seed, fertilizer and other inputs, (f) use of balanced fertilizer, and (g) marketing of agricultural produce.

The CIG received support to demo farm on homestead gardening, alternating wetting, mustard cultivation and drying and pesticide-free brinjal cultivation. It is important to note that marginal farmers also got demonstration plot support.

The result of demonstration and other support from NATP-1 contributed to increased use of bio fertilizer, balanced use of fertilizer and reduced use of pesticides particularly in vegetables cultivation. Also the vegetables farmers now have better access to market for the presence of Hortex and market linkage established by them. Traders linked by Hortex give about 10% higher price as farmers supply fresh and pesticide free vegetables. However, quantity purchased by such traders remains low.

Concerning use of balanced fertilizer, a number of CIG farmers said that they apply non-urea fertilizer in recommended doses but add some extra urea to prolong crop season a couple of weeks to a month or two. Although harvest goes down after sixth month, farmers prolong brinjal cultivation season to eight months if not affected by excessive rain or flood. This requires application of extra doses of urea fertilizer. Lower yield is compensated by increased price in the end-season.

Status of Social Compliance:

It is important to note that the NATP-1 has reasonably fulfilled the criteria of social inclusion. Most of the CIG members in all groups belong to small and marginal farmer category and this is far above the DPP target of 80 percent. In fact, Medium farmers comprise less than 10% of the CIG members and large

farmers are rare in the CIGs, none in the groups visited. The reason is mainly splitting of landholding that made large holdings almost non-existent. Also women farmers comprise about 30% of the CIG members in the DAE groups which has been mandatory in the DAE CIGs. In the DOF and DLS CIGs however, women are far below 20%, presently only about 10 percent. The reason is not that women are not involved in livestock and fisheries. Instead, lack of direction and inadequate monitoring and supervision has been responsible for the shortfall.

Elite capture of CIG has not been an issue although apprehended during the project formulation. Careful selection of group members fulfilling criteria like landholding, occupation and gender contributed to exclusion of large landholders and non-farmers. However, it was noted that the CIG members, particularly the CIG leaders have strong social and political linkage with the power-elite. It is recommended that during the next phase a comprehensive list of households should be made in the villages having concentration of target activities (crops, horticulture, fisheries, livestock etc) before formation of new CIGs in new areas. Old CIGs may continue but reorganized should some members desire discontinuation. Since the project does not involve any land acquisition, there has been no issue of resettlement.

Participation in the monthly CIG meetings was reported quite high, 15-18 out of 20 members. But it was more of attending meetings as requested by the group president or by the executing agency officers rather than spontaneously. Attendance in the women groups was generally better and the introduction of savings and credit contributed to increasing attendance in the women groups but not in the men groups. One reason for low attendance was that the extension agencies had little new knowledge to share and was not always able to reply queries like control of specific diseases or recommend specific actions relevant to specific problems. Another problem stated was lack of financial or otherwise material incentives to attend meeting or training. This issue is discussed later under problems noted and suggestions.

The first phase Upazilas did not have concentration of small ethnic and vulnerable communities and therefore OP 4.10 Indigenous People was not triggered. The next phase will include some areas like Chittagong Hill Tracts and some areas having concentration of plain land tribes. So, the SEVCP will be triggered and taken into consideration in the SMF and in the DPP of the project.

The problems noted:

NATP was progressing well in the initial three years but with reduced financial allocation over the last two years the progress slowed down due to several problems noted below:

1. Inadequate allocation for demonstration etc
2. Very limited activities- few demonstrations and other activities
3. Attendance in the meeting high in quantitative terms but lacks motivation – members attend as they are asked to attend rather than spontaneously and on own initiative
4. Delayed start of the process of registration and the CIG registration is still in the process.
5. CEAL and LEAF remuneration too low and payment irregular- not receiving allowance over the last nine months.
6. LEAF selection improper (influenced), a few are overqualified – one is a Lawyer and one is a journalist in Shibpur, they were BA pass when recruited.
7. LEAF disinterested to work as honorarium too low and there is little possibility of earning by service delivery. CEAL has this opportunity but still not working regularly- irregular payment is one of the reasons.

8. One reason for poor attendance particularly in male CIGs was said that the SAAO have little to as new knowledge and many farmers are disinterested to listening same lecture every month.
9. In Kapasia and Belabo, jackfruit trees are dying as timber develops cancer. DAE can't suggest any remedial measure and approached research for the solution but has not got any remedy.
10. In Kapasia and Belabo, a number of farmers showed dead plants of paddy which are affected by insects but could not get remedy.
11. In Belabo, one farmer reported that his BAU kul (fruit variety developed by the Bangladesh Agriculture University) was growing well over the last three years but this year fruits are drying and deforming although flowering was good. The DAE could not give any solution, he remarked and he showed disinterest to attend CIG meeting.
12. FIAC was found quite active and it has improved access of farmers to extension agencies, particularly to the DAE as they are present at FIAC everyday. Presence of CEAL and LEAF is irregular as they are not receiving allowance regularly hence it is difficult to convince them coming regularly. FIAC has contributed to improve interactions between the UP and the DAE in particular but problem remains concerning the DLS and DOF presence in the FIAC.
13. DLS demonstrated fodder cultivation in all three Upazilas and result was good but farmers discontinued fodder cultivation themselves once project funding was closed. ULO, Belabo remarked that without continued support it is unlikely to sustain but it seems that farmers are not yet convinced of the profitability of fodder cultivation compared to other competing crops.
14. The officers committed to give various forms of assistance to fisheries CIG in Shibpur but only limited number of demonstration and aquaculture training was provided. Water and soil testing facility and feed quality management support was never provided. Officers also promised to provide feed mixing machine which never materialize and also financial support to CIG as capital grant never materialized. These are acting as disincentive to stay on CIG and spontaneous participation in CIG activities.

Suggestions:

1. Increase group size (DAE participants)
2. Increase number of groups, not group size (DLS Belabo)
3. Increase number of training and number of demonstration, field day, exposure visits, Upazila Fair etc.
4. Increase allowance of CEAL and LEAF and also ensure payment of allowance regularly
5. Ensure supply of vaccine etc. to CEAL and ensure functioning of water testing kit with supply of reagents or even litmus paper for testing of PH to LEAF
6. Some demanded financial incentive for attending monthly CIG meeting which may not be acceptable to the project hence not recommended. But some other form of incentive to improve functionality of the GIG could be justified such as yearly grants to CIG as capital grant to carry out innovative activities on competitive basis or as rewards.
7. Discussion on season specific, crop specific, new and appropriate technology based and local need based topics must get priority while planning agenda for CIG meeting every crop season.
8. One possibility is that fodder can be grown on wetland where growing vegetables is not profitable and such marginal land can be used for demonstrating fodder cultivation.
9. When delivery of certain support is uncertain, the officers should not make promise which later demotivates the CIG members in spontaneous participation. They should rather say, when fund will be available we may provide supports like a, b and c.

List of Officers Met during the Field Visits

Officials met- Belabo

S L	Name	Designation	Institution	Phone Number	Email
1	Wahiduzzaman Khondker	SAAO	DAE, Belabo	715 179 238	
2	Faruk Hossain	SCDO	Hortex, Belabo	723 256 814	
3	A. Hamid	ULO	DLS, Belbo	715 590 001	
4	Nazrul Islam	UFO	DOF, Belabo	914 876 533	
5	Nusrat Zaman	EO	DAE, Belabo	717 426 929	
6	Salahuddin Bhuiyan	SAAO	DAE, Narayanpur	711 958033	
7	Rafiqul Islam	SAAO	DAE, Amlabo	750 432 113	
8	Sahidullah	Office Assitant	DLS, Belabo	710 668 705	

Officials met- Kapasia

SL	Name	Designation	Institution	Phone Number	Email
1	Ashish Kumar Kor	UAO	DAE	716 616 817	
2	ASM Muaidul Hasan	AEO	DAE	771 778 885	
3	Golam Kibria	SUFO	DOF	711 576 487	
4	Mahmuda Akhter	EO	NATP, DOF	751 707 885	
5	Abu Hossain Al Masud	SCDO	Hortex	717 155 767	

Officials met - Shibpur

SL	Name	Designation	Institution	Phone Number	Email
1	Hanif Sikder	UAO	DAE	716 437 140	
2	Md. Nazmul Kabir	AEO	DAE	711 201 464	
3	Sahjahan Mridha	AAEO	DAE	718 133 868	
4	Zakir Hossain Molla	SAAO	DAE	715 122 014	
5	Nargis Sultana	UFO	DOF	914 980 321	
6	Profulla Ch Roy	EO	NATP, DOF	727 785 217	
7	Tapas Kanti Dotta	ULO	DLS, Shibpur	712 109 145	

List of CIG Members Met during Field Visits

In each meeting noted below about 15 to 20 CIG members were met. For shortage of time particulars of only a few members were noted to have an idea of the composition of the group, representation of various categories of farmers.

CIG members met- Bhatarchar, Kapasia (Vegetables- Female)

S L	Name of CIG Member	Age	Sex	Education	Land	Occupation CIG member	Occupation Spouse	Occupation Other members (excl. student)
1	Selina Akhter	30	F	SSC	5 acres	Housewife, Agriculture	Agriculture	
2	Rina Begum	38	F	Grade 5	6 acres	Housewife, Agriculture	Poultry farm	
3	Bina Begum	55	F	Grade 5	1.5 acres	Housewife, Agriculture	Service	Business
4	Sufia Begum	50	F	Grade 5	3 acres	Housewife, Agriculture	Agriculture	Service
5	Panna Akhter	30	F	Grade 8	2 acres	Housewife, Agriculture	Overseas work	
6	Safia Begum	35	F	Grade 8	2 acres	Housewife, Agriculture	Teacher	
7	Selina Begum	32	F	Grade 9	1 acre	Housewife, Agriculture	Business	
8	Sahana Akhter	38	F	Grade 8	0.25 acre	Housewife, Agriculture	Business, Agr	
9	Anarkoli	25	F	Grade 8	0.35 acre	Housewife, Agriculture	Agriculture	

Note: 18 CIG members met but particulars noted of 9 for shortage of time.

CIG members met- Panchpaika, Shibpur (Fisheries- mixed group)

S L	Name of CIG Member	Age	Sex	Education	Land	Occupation CIG member	Occupation Spouse	Occupation Other members (excl. student)
1	Abul Kalam	50	M	SSC	2 acres	Fish farmer & trader	Housewife, Agriculture	
2	Afroza	40	F	SSC	2 acres	Housewife, fish farmer	Fish farmer & trader	
3	Nahar Fakir	40	F	Grade 10	2 acres	Housewife, fish farmer	Fish farmer & trader	
4	Litu Fakir	38	M	SSC	3 acres	Fish farmer & trader	Housewife, Agriculture	Business
5	Alamgir	25	M	BA	4.5 acres	Fish farmer & poultry	Housewife, Agriculture	Agriculture

CIG members met- Khoratmara, Shibpur (Vegetables – Male)

S L	Name of CIG Member	Age	Sex	Education	Land	Occupation CIG member	Occupation Spouse	Occupation Other members (excl. student)
1	Abu Mia	60	M	Grade 5	4 acres	Agriculture	Housewife, Agriculture	Business
2	Arman Bhuiyan	50	M	Grade 5	2 acres	Agriculture	Housewife, Agriculture	Business
3	Dulal Mian	43	M	SSC	3.5 acres	Business & Agriculture	Housewife, Agriculture	
4	Romizuddin	65	M	SSC	1.5 acres	Agriculture	Housewife, Agriculture	
5	Afazuddin	45	M	SSC	1.5 acres	Vegetables Trader	Housewife, Agriculture	

CIG members met- Baroicha Uttar Para, Shibpur (Vegetables – Male)

S L	Name of CIG Member	Age	Sex	Education	Land	Occupation CIG member	Occupation Spouse	Occupation Other members (excl. student)
1	Abul Kalam-Chairman	31	M	Grade 9	q.2 acres	Agriculture	Housewife, Agriculture	Business
2	Shapan, Secretary	32	M	Grade 10	0.80 acre	Agriculture	Housewife, Agriculture	Service
3	Moider Ali, Treasurer	40	M	Grade 4	1.2 acres	Agriculture	Overseas work	Journalist



Social and Environment Team with CIG Farmer Leaders at Farmer's House at Belabo *upazila*, Narsingdi, 30 Sep 2014

Technologies widely accepted and interventions appreciated by the farmers

		
<p>Distribution of quality seed</p>	<p>Seed preservation by Farmer</p>	<p>Making compost</p>
		
<p>Light Trap for insect control</p>	<p>Sex Pheromone Trap, need input linkage</p>	<p>Perching, popular, widely accepted</p>
		
<p>Biological Bait</p>	<p>Bio Slurry Plant, need popularizing</p>	<p>Vegetable garden, expanding rapidly</p>
		
<p>Ideal Seed Bed, getting popular</p>	<p>NATP Aman paddy demonstration, Shibpur</p>	<p>NATP Fish pond demonstration, Shibpur</p>

Courtesy: DAE, Kapashia *upazila*, Gazipur and DAE and DOF, Shibpur *upazila*, Narsingdi, 14-16 Oct, 2014