

# Master File

## Polder 43/2E



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This is an internal document of Blue Gold Program for the Business Development Component. All information and data inserted here to understand current situation of the polder to develop Value Chain interventions.

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## **Index**

<b>SL</b>	<b>Topic</b>	<b>Page</b>
<b>1</b>	<b>Introduction</b>	<b>6-8</b>
1.1	Over View of Polder & Master File	6
1.2	Objective	7
1.3	Methodology	8
<b>2</b>	<b>Location</b>	<b>9-11</b>
2.1	Geographical Location of Polder 43/2E	9
	Administrative Location of Polder 43/2E	10
<b>3</b>	<b>Institutional structure at Polder 43/2E</b>	<b>12-15</b>
3.1	Water Management Organization	12
3.2	Issues and Opportunities	13
3.3	NGO working in this area	14
<b>4</b>	<b>Physical Infrastructure</b>	<b>16-21</b>
4.1	General Statistics of physical structure	17
4.2	Water Infrastructure	18
4.3	Catchment Area	19
4.4	Water Irrigation Facilities	19
4.5	Khal or Canal network	20
4.6	Road Communication	20
4.7	Electricity Coverage	21
4.8	Brick Field	21
<b>5</b>	<b>Market infrastructure</b>	<b>22</b>
<b>6</b>	<b>Resource of the Polder</b>	<b>23-26</b>
6.1	Water resources	24
6.2	Human Resource	25
<b>7</b>	<b>Socio-Economic Status</b>	<b>27-30</b>
7.1	Population & Households distribution at Jainkathi union	27
7.2	Socio-Economic overview of the families of polder 43/2E	28
7.3	Categories of farmers	30
<b>8</b>	<b>Economic Sector</b>	<b>31-41</b>
8.1	Agriculture	31

<b>SL</b>	<b>Topic</b>	<b>Page</b>
8.1.1	Land use & Cropping Intensity	31
8.1.2	Usages of cultivable land of this union	33
8.1.3	Cropping pattern	34
8.1.4	Overview of Agricultural practice at Polder 43/2E	34
8.1.5	Cash Crop of the Polder	36
8.1.6	Cost benefit analysis of some potential Robi crops	37
8.1.7	Profit Analysis of three Robi crops	38
8.1.8	Kharif-2 Product	41
<b>9</b>	<b>Livestock Sub sector</b>	<b>42</b>
<b>10</b>	<b>Fisheries sub sector</b>	<b>43-46</b>
10.1	Pond or Ditch of Polder 43/2E	44
10.2	Status of Aquaculture practice	45
<b>11</b>	<b>Processing Mills</b>	<b>47-48</b>
<b>12</b>	<b>Potential Value Chain Performance</b>	<b>49-67</b>
12.1	Poultry Value chain	50
12.2	Mung Bean Value Chain	56
12.3	Tilapia Value chain	59
12.4	Dairy Value chain	64
<b>13</b>	<b>SWOT analysis of Polder 43/2E</b>	<b>68-71</b>
<b>14</b>	<b>Value Chain Matrix</b>	<b>72-75</b>
<b>15</b>	<b>Rational of Scoring</b>	<b>76-88</b>

## **Acronyms**

BADC                      Bangladesh Agriculture Development Cooperation

BARI	Bangladesh Agriculture Research Institute
BINA	Bangladesh Institute of Nuclear Agriculture
BRRI	Bangladesh Rice Research Institute
BWDB	Bangladesh Water Development Board
DAE	Department of Agriculture Extension
DLS	Department of Livestock Services
DoF	Department of Fisheries
FAO	Food and Agriculture Organization
FFS	Farmer Field School
FGD	Focus Group Discussion
HYV	High Yielding Variety
IRRI	International Rice Research Institute
KII	Key Informant Interview
LCS	Labor Contract Society
MFI	Micro Finance Institute
NGO	Non Government Organization
CSISA	Cereal Systems Initiative for South Asia
WMA	Water Management Association
WMG	Water Management Group

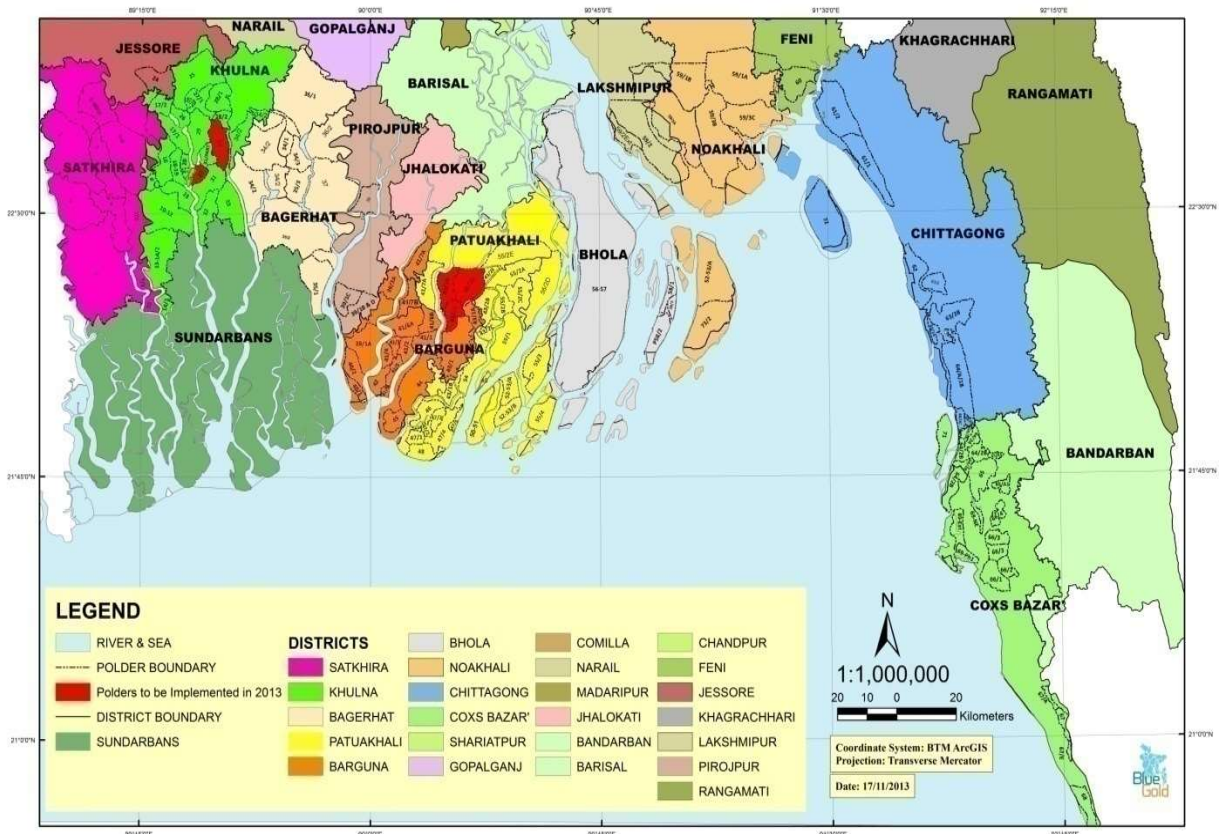
## **1. Introduction:**

## 1.1 Over View of Polder & Master File:

Bangladesh Water Development Board (BWDB) has developed coastal embankment system constructing a total of 139 polders in 14 coastal districts of Bangladesh where “Patuakhali” is one of them. “Blue Gold Program” is a Netherlands funded water infrastructure project aiming to develop water infrastructure facilities development and livelihood development of 26 (Twenty six) Polders at Patuakhali, Barguna, Khulna and sathkhira district. Polder 43/2E is located at Patuakhali district.

The overall objective of the master file is to gather relevant information inside the polder and its surroundings. This information will provide an idea about the livelihood and economy of the polder dwellers, their income generating activities, agricultural production, present market system, demand and supply situation of input and service required for the polder dwellers, Status of required services, infrastructure facilities, environmental status, social context, changing trend of attitude, constrain and opportunities for economic and livelihood development of the polder dwellers.

This will ultimately help to develop the “Polder Development Plan (PDP)” in collaboration with all components for the mentioned Polder. More specifically, this information will help “Business Development Component” to identify and select the potential Value chains for the polder. After analyzing the value chain, component will develop specific intervention for selected value chain development as a mean of livelihood development for the polder dwellers of 43/2E.



MAP OF BANGLADESH COASTAL POLDERS

## 1.2 Objective

The overall objective of the master file is to gather relevant information inside the polder, update it regular basis to understand the existing scenario for future development plan under Blue Gold Program. Specific objective of this file is to:

- Create polder development plan (PDP) in collaboration with all components
- Identify potential logical intervention strategies for business development component under Blue Gold program
- Potential value chain identification, analyze them and value chain development
- Develop intervention for the development of selected value chain

### 1.3 Methodology:

First we have discussed with other component of Blue Gold Program to get an overview of the polder 43/2E. Then, we have made a plan for information collection primary and secondary sources.

We have gathered this information from two sources-

- Primary source : Field visit, discussion with different stakeholders, Key Informant Interview (KII), Focus Group Discussion (FGD)
- Secondary source : Relevant reports, research papers, documents, website

For collecting information from primary source we have divided the respondents into different categories, like-

- Field crop farmer,
- Fish Farmer,
- Livestock farming group,
- Market actors
- WMG members
- Service providers, like- SAAO, UP secretary, BRAC, power tiller operator, paravet,

We have conducted 07 FGD and 09 KII in this whole process. Therefore, for validating the information, we have further discussed with community leaders. Still we have planed to discuss with broad forum for more validation and it will be an continuous process.



## 2. Location:

### 2.1 Geographical Location of Polder 43/2E:

Polder 43/2E lies between Latitude 22° 17' 50" and 22° 21' North and Longitude 90° 22' and 90° 25' 12" East. This polder is shaped like 45° angle where its northern part is somewhat parallel to the Latitude but the South-Easter part is about 45° angle with the Northern part and Western part is further more parallel to the Longitude with irregular shape. It is triangle shaped where north and west part make 90° angle but north part make 45° with East part and East part makes 45° angle with south part. South – East line is oblique with both Longitude and Latitude.

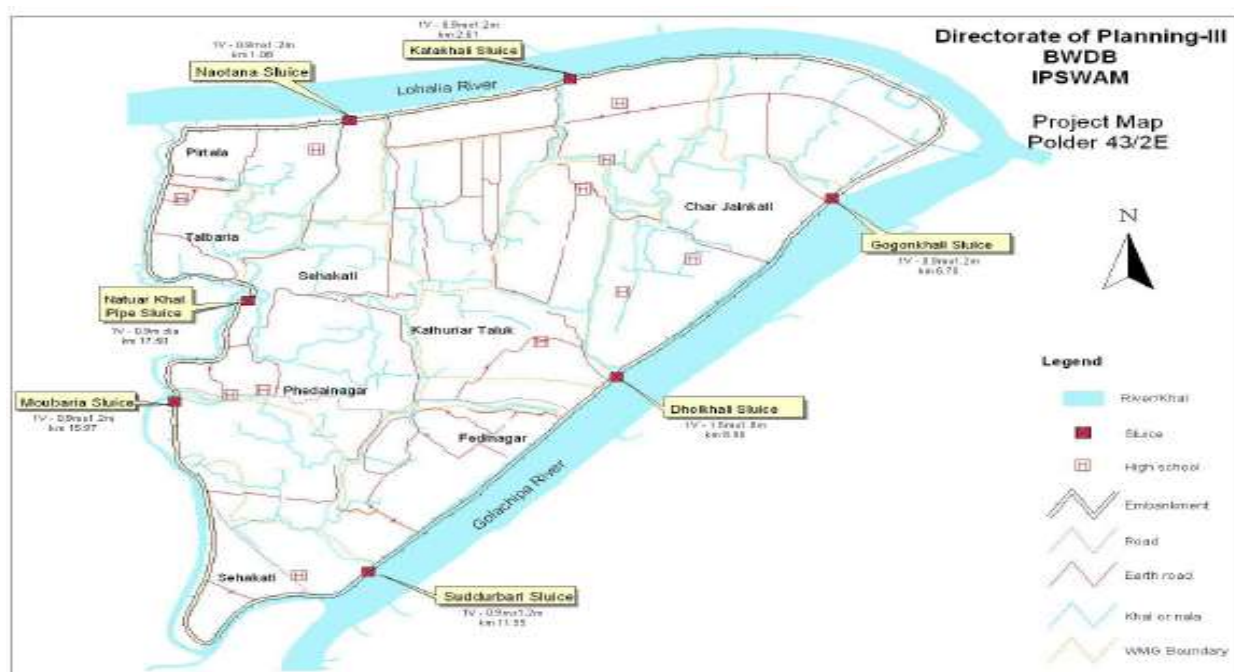


Fig: Map of Polder 43/2E

#### Surrounding area:

- North: Lohalia River
- South-East: Galachipa River
- West: Auliapur Union of Patuakhali Sadar Upazila

## 2.2 Administrative Location of Polder 43/2E:

Polder 43/2E is located in the union of Jainkathi under Patuakhali Sadar upazila at Patuakhali district.

Area of the union is about 2,481 ha. It is about 8 km from the Upazila headquarter through road. The boundary of this union is Lohalia river at the north, Dharala river at the Eastern side, at the southern side Sehakathi Varanir khal, Kalikapur and Pauroshova is at the western side. Among the 09 wards of this union 07 wards are under this polder 43/2E. Other 2 Ward is under polder 43/2D.



Fig: Map of Polder 43/2E under Jainkathi Union

There are twelve villages under five Mouja in this union. The name of village are-

- |                   |                     |
|-------------------|---------------------|
| 1. Chamta         | 7. Dakshin Sehakati |
| 2. Kesubpur       | 8. Uttar Sehakati   |
| 3. Thangai        | 9. Fedainagar       |
| 4. Vagirabad      | 10. Katura Taluk    |
| 5. Char Jainkati  | 11. Pirtola         |
| 6. Purbo Jainkati | 12. Talbaria        |

The Five Mouja are-

1. Kesubpur
2. Char Jainkati
3. Purbo Jainkati
4. Sehakati
5. Fedainagar

SL	Mouja	Village
01		Chamta
02	Kesubpur	Kesubpur
03		Thangai
04		Vagirabad
05	Char Jainkati	Char Jainkati
06	Purbo Jainkati	Purbo Jainkati
07		Pirtola
08		Talbaria
09	Fedainagar	Fedainagar
10		Katura Taluk
11	Sehakati	Dakshin Sehakati
12		Uttar Sehakati

Kesubpur Mouja is actually out of the polder area which is the part of polder 43/2D.

### 3. Institutional structure at Polder 43/2E:

#### 3.1 Water Management Organization:

WMG (water management group) have been established to manage the water infrastructures, developed by the water Bangladesh Water Development Board (BWDB) through community participation to develop inclusive involvement and ownership of the community.

There are twelve WMG (water management group) at polder 43/2E, which are located in the four Mouja of Jainkathi union. Among these 12 WMGs (water management group), 09 is less than ten kilometer away from upazila headquarter and remaining 03 are more than ten kilometer through road way.

#### Organizational Status

SL	Name of WMG	Total HH	HH with WMG	Total Fund	Bank Deposit	Investment	Hand+Exp.
1	Char Jainkati Paschim	337	108	45040	32500	8773	3767
2	Char Jainkati Purba	205	80	34190	7500	25000	1690
3	Dakshin Sehakati Dakshin	266	185	27370	23820	0	3550
4	Dakshin Sehakati Uttar	200	110	22960	13400	6000	3560
5	Fedainagar	208	126	29800	18200	0	11600
6	Katura Taluk	163	96	21360	18000	0	3360
7	Pirtola	188	107	18310	11500	4000	2810
8	Purba Jainkati Madhya	208	113	14940	9800	1500	3640
9	Purba Jainkati Paschim	230	120	84540	70900	4000	9640
10	Purba Jainkati Purba	205	118	17310	14000	0	3310
11	Talbaria	79	61	24850	20000	1000	3850
12	Uttar Sehakati	467	133	15590	10400	0	5190
	<b>Total</b>	<b>2,756</b>	<b>1357</b>	<b>356260</b>	<b>250020</b>	<b>50273</b>	<b>55967</b>

Source: Zonal Report of C-1, December, 2014.

### 3.2 Issues and Opportunities:

These organizations can explore the economic and livelihood development options before the community. The resources available for these organizations are capital gained from savings of the members, at least 50% member of the community, opportunities of water resource management, agri-mechinaries etc.

These organizations can't perform up to the mark or expectation. There are some areas of development and some opportunities for strengthening of these organizations.

The resources that these organizations can utilize primarily are-

- The fund gained from membership chada and savings, range from 7,500 to maximum of 70,900. BDT
- At least 50% households of their community, range from 61 to 185 farm family
- Agricultural machines – only 4 WMGs get it from FAO support (Char Jainkati Paschim, Dakshin Sehakati Dakshin, Purba Jainkati Paschim & Katura Taluk)

To utilize the opportunities, they need to develop some areas, like-

- Proper participation of the members in organization management – involving the members in different activities
- Transparency and accountability should be strengthen
- Scope for regular income generation
- Provide service required for the members and assist in linkage development, like- agricultural advisory service, quality inputs, market information etc

People don't like to spend their time for WMGs without financial benefit. WMG leaders don't get any honorium from Blue Gold program. Therefore some potential members of the WMGs are working for community. But it couldn't run sustainably for long. So, IGA development through the WMGs would be considered the prime objective of the program. Some possible scopes for IGA are-

- Getting revenue from the earth work
- Utilizing their fund for different potential business- input business, marketing of agricultural products
- Utilizing community resources, like- Kash land utilization, community forestation along the road side,

- Linkage development with different private sectors and digging the opportunities for the community

For developing the ownership WMGs should be involved in every possible area of the Blue Gold program, like-

- Selection of the FFS/MFS members
- Develop entrepreneurship from the WMGs
- If possible, we can disseminate the responsibilities to the WMGs of supplying inputs for FFS or MFS and they can make a profit from here

Among the four WMGs who get agri machineries, Dakhin sehakathi dakhain is utilizing is more profitably. It may be a great opportunities for the organizations for raising their fund. Therefore they need a hands-on facilitation about how to utilize their money and resources more profitably.

There are at least four government owned ponds in this polder which the WMGs can get lease and can be a source of income. These ponds are-

1. South Sehalathi Kasaribari pond
2. Middle Sehakathi pond
3. Char jainkathi Jabed Ali Mollah pond
4. Jainkathi kasaribari pond

Water Board have 20 km of embankment, Union Parishad has 85 kilometer road which can be utilized for community forestation. Of course there are some constrains but some of them is possible to dissolve.

### 3.3 NGO working in this area:

ASA, BRAC, SPAF, RDF, SPACE, Muslim Aid work in this polder area. All these NGOs have micro credit program in these areas and thus polder dwellers have access to finance. Therefore there are different projects working in this area, like- IAPP (Integrated Agriculture Productivity Project).

BRAC have agricultural program through which they are trying to enhance diversified agricultural production, like- Sunflower cultivation, Aus cultivation etc.

**Sunflower extension program of BRAC:**

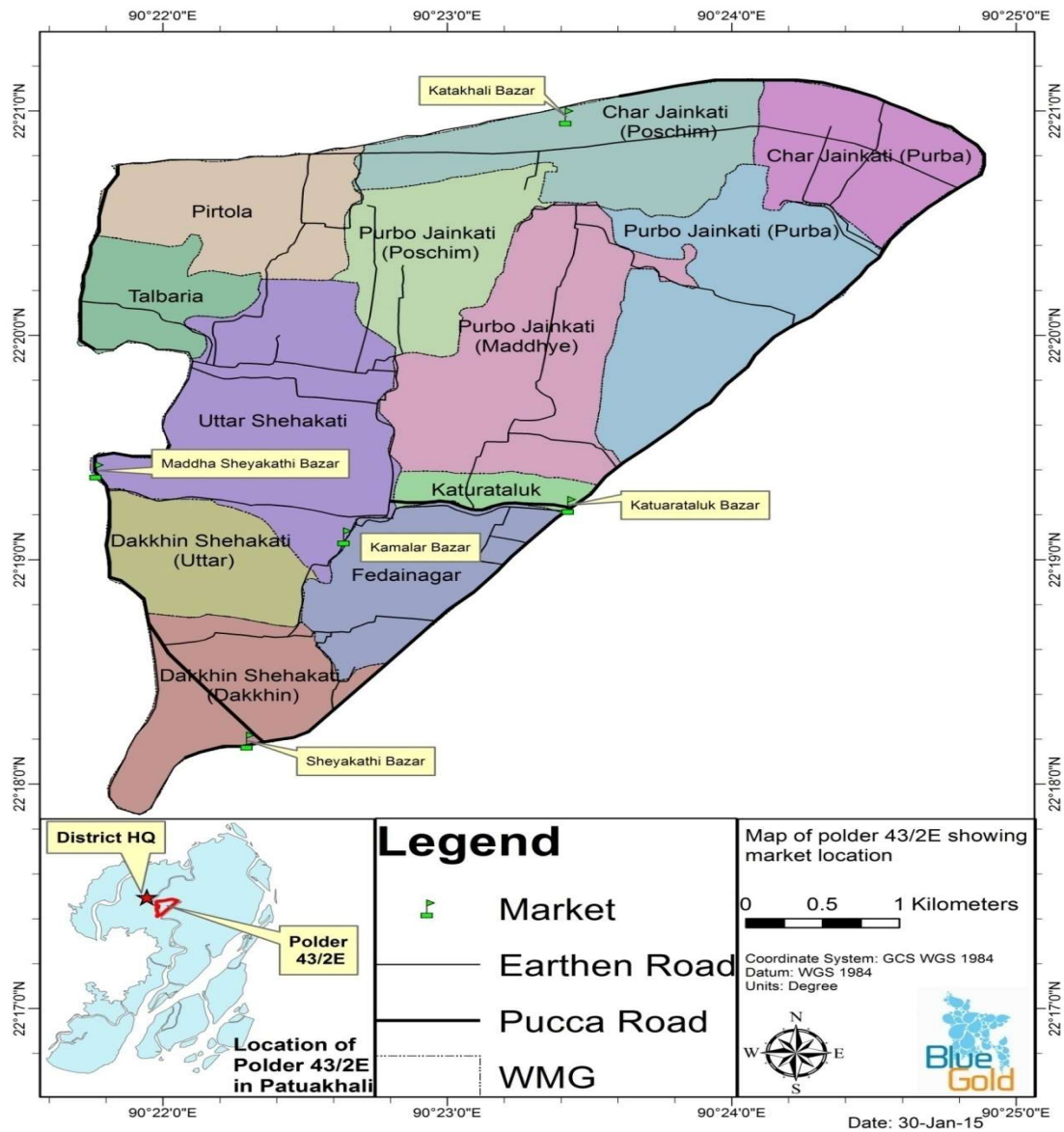
This is a subsidized program of BRAC for extension of sunflower cultivation. They implement this program through group approach and provide support for two years. At South Sehakathi there is also a group. In this group there are 38 (thirty eight) members belonging of 2965 dem of land. The land area under this program would be minimum 20 dcm to maximum 100 dcm of land for sunflower cultivation.

BRAC provide cash support for this program. Farmers get taka at a rate of 5,600 BDT for per Acer of land. BRAC has specific dealer who sell BRAC sunflower seed. Farmers get their seed from him. But there is no alternative source of seed.

This is a labour intensive crop. If farmer utilize his own labour, its profit margin is attractive. In this contest it is more profitable than other available robi crops of this reason, like- sesame, Mung bean etc.

Farmer can sell either seed or oil. There is an oil extract mill in this polder. If they sell oil they will also get some extra profit than seed. But there is no formal market for selling of sunflower oil. Usually, BRAC personal help the farmers for selling their oil or they buy back the oil. For marketing of sunflower seed is also a problem as the market system is not developed yet.

## 4. Physical Infrastructure



Polder43/2E is very close to Patuakhali Pourosova. This is why there is a good number of physical infrastructures in this polder as well as having a great opportunity for further expansion in future.



#### 4.1 General Statistics of physical structure:

There are 09 (nine) primary schools where 07 (seven) are government and remaining 02 (two) are non-government. Besides, there are 03 (three) community school. There are 04 (four) secondary school. But there is no college.

For health service there are three community clinics in this polder, these are-

- Jainkathi Paribar kollyan Kendra
- Purba Jainkathi Paribar kollyan Kendra
- Jainkathi high school Paribar kollyan Kendra

**Table-15: List of Physical Infrastructures in Polder 43/2F**

Infrastructures	Number
High school	04
Govt. Primary school	07
Non-govt. Primary school	02
Madrashaw	00
Mosque	45
NGO office	04
Land office	01
Brick field	04
Union Parisad office	01
Haat-bazars	10 (3 main)

Source: District Govt. web site.

## 4.2 Water Infrastructure

The polder 43/2E has about 1,800 hectare area of land which has been established in the year of 1989-90. Total length of the embankment is 20.00 kilometer. There is seven (07) sluices, two (02) outlet and fifty five (55) inlets. There is total thirty two (32) khals which carry water from the water source to the crop field and is the lifeline for the agricultural production. Total length of these canals is about 38.997 kilometer length. It means there is about 21.66 meter khal for per hectare of land in this polder.

### Overview of water Infrastructure at a glance:

<b>Polder No.</b>	<b>43/2E</b>
<b>Upazila</b>	Patuakhali Sadar
<b>Year of Construction</b>	1989-1990
<b>Benefitted Area</b>	1800 Hector
<b>Total Length of Embankment</b>	20.00 Km
<b>Drainage Sluice</b>	7 Nos.
<b>Outlet</b>	2 Nos.
<b>Inlet</b>	55 Nos.

### 4.3 Catchment Area

For proper management of these water infrastructures “Blue Gold Program” has developed two Water Management Associations (WMA) and also divided the area under two catchment areas. Each WMA will regulate one catchment area.

SL	Name of Catchment	Sluice under the catchment	WMG under the catchment	Remark
01	Katakhali Catchment	Katakhali Sluice	Char Joinkathi (Paschim)	
02			Purbo Joinkathi (Paschim)	
03		Gogonkhali Sluice	Char Jainkathi (Purbo)	
04			Purbo Joinkathi (Purbo)	
05		Naotana Sluice	Pirtola	
06			Talbaria	
07	Moubaria Catchment	Natur Khal Pipe Sluice	Uttar Shehakathi	
08		Moubaria Sluice	Dakhin Shehakathi (Uttar)	
09		Suddurbari Sluice	Dakhain Shehakathi (Dakhin)	
10			Fedainagar	
11		Katurataluk Sluice	Katurataluk	
12			Purbo Jainkathi (Maddhye)	

### 4.4 Water Irrigation Facilities:

Bangladesh Agriculture Development Corporation (BADC) has established small irrigation network through pipeline at South Shehakathi in this polder under IAPP project to ensure irrigation for the community. Still it didn't go for operation. This water network is regulating through a group formed from the community named “South Shehakathi Water Management group”. The pipe line is 70 meter long with 20 mm diameter which has several opening at different places to provide irrigation to 6000 dem of land. It is possible to irrigate the field up to 500 feet through loose pipe from the opening. It is also possible to extend the fixed pipe network.

#### 4.5 Khal or Canal network:

The khals in the polder is actually the lifeline for agricultural production and act like artery. These khals carry water to the crop field and also drained out excess water from the field. Other than agricultural production, water of these khals is used for household use, bathing of man and animal, provide shelter for fish. These khals are still in working condition with evidence of siltation and sedimentation. The major khals of polder 43/2E are-

- |  |  |
|--|--|
| <input type="checkbox"/> Nautana khal      | <input type="checkbox"/> Katurakhali Khal  |
| <input type="checkbox"/> Charabunia khal   | <input type="checkbox"/> Moubaria Khal     |
| <input type="checkbox"/> Bohaitola khal    | <input type="checkbox"/> Pipra Bunia Khal  |
| <input type="checkbox"/> Dolkhali Khal     | <input type="checkbox"/> Notuar Khal       |
| <input type="checkbox"/> Gogonkhali Khal   | <input type="checkbox"/> Koyar Khal        |
| <input type="checkbox"/> Durlove Khal      | <input type="checkbox"/> Kesubpur Khal     |
| <input type="checkbox"/> Katakali Khal     | <input type="checkbox"/> Gulishakhali khal |
| <input type="checkbox"/> Sudhro Baria Khal | <input type="checkbox"/> Eukalia Sota Khal |

At present, the sluice gates are not properly maintained and need some repairmen work to increase the effectiveness of these structures. Moreover, sedimentation near the sluice gate is increasing day by day, which causes drainage congestion in the polder areas.

#### 4.6 Road Communication:

There is about 90 km road network in this polder where 70 km is kacha, 10 km is packa and 5 km is SBB road. Beside this, there is also about 20 km embankment. The density of road is about 1 meter for per 5 decimal of land area in this polder.

#### **4.7 Electricity Coverage:**

Every village of this polder is under electricity coverage. There is both REB (Rural Electrification Board) and PDB (Power Development Board) network in the polder. About 50% household have access to electricity. Electricity coverage is maximum in the western part (Pirtolahar Jainkathi).

#### **4.8 Brick Field**

As this polder is adjacent to Patuakhali Pouroshova and it is surrounded by river Lohalia and Golachipa, it is considered as a better place for brick field. There are four brick fields in this area. The location of these brick fields are-

1. Pirtola - 01
2. Char jainkathi - 02
3. Fadainagar - 01

These brick fields are one of the largest sources of employment for the unskilled labour. It provides work for almost six months. Many polder dwellers work here.

## 5. Market infrastructure:

This union is very close to Patuakhali pourosova and people are mainly connected with Patuakhali district market. Therefore there are three maintainable markets in this polder, namely-

- South Sehakathi Hat
- Sehakathi Bazar
- Koturataluk Bazar

Among the three markets, only South Sehakathi Hat has been leased out and there is a provision of tax.

Beside this, there are other seven places where there are some structure or shops where selling and buying occurred. This is why these places are listed as market in union parishad register and union Parishad collect tax from these shops. The shops of these places usually sell very common household items. Average transaction of these shops is 100-500 taka per day. The number of shops in these market places is not more than ten and very poorly structured. Actually, the customers come only to meet sudden small needs, like- oil, salt, match, fuel, commodities, egg, biscuit etc. Local people usually spend their leiser time in this place and the shops are here to serve their immediate demand, like- tea, cake, some cheap baby items ect. These markets are-

- Purba Sehakathi sluice bazaar
- Komolar hat
- Katakhal Khal Gora
- Aurar pool
- Sehakathi-Kesubpur Badhghat
- Middle sehakathi

Actually farmers of this polder have very limited product for sell. There is no marketable product cluster except Mungbean and paddy. Farmers mainly come to south Sehalathi hat to sell mungbean or paddy when they sell small amount of their product. If sale volume is high then their first choice is "Puran Bazar", situated in Patuakhali pouroshova. Transportation cost of their product to "Puran Bazar" is 10 taka per mond of product. "Puran Bazar" is one of

the largest markets in this region where there are many big buyers or “Arothder”. Sometime farmers come even with small amount of their product to “Puran Bazar” or “New market” as this is the exit point for the Polder through road way. Polder dwellers sell about 90% of their product to “Puran Bazar” or “New Market”.

In local market polder dwellers usually sell vegetable, poultry, homestead fruit, small home-made products, captured fish etc. Traders come with vegetables, crafts, household utensils, agri-inputs, like- seed, pesticide, sapling, seedling, crafts, net etc.

## 6. Resource of the Polder

This polder is blessed with natural resources. The environment and climate is suitable for agricultural production and human life. The soil is very fertile of this polder as every year the water bodies carry huge humus to the crop land in the monsoon. Soil fertility, appropriate temperature, rain fall is the welcome gift for the polder dwellers and people are very dependent upon environment for their agricultural production. This also influence in their cultural practices and custom.

## 6.1 Water resources:

This polder is blessed by Lohalia River and Galachipa River which surround its whole North and south-east part. Fisherman catches fish from these water bodies. About 10% dwellers depended on this water bodies for their livelihood. These water bodies are the lifeline not only for the polder but also for Patuakhali district. It enhance transportation and marketing facilities.

Beside this there is about 40 km of khal which carry water for to the crop field and excess water can be drained out through these khals. It means there is about 9 meter khal for per decimal of land in this polder. But the situation of these khals is not good in many places. Siltation have killed or badly injured many Khals. To keep the agriculture of this polder alive, immediate step should be taken for re-excavation, manage water hyacinth, remove obstacles from the Khals so that water can move freely.

In monsoon there is plenty of water, but crisis started from February to June depending on rainfall pattern. In monsoon time problem is water logging and need to drain out. Water logging is a severe problem mainly for Kharif-2 or Aman season. In Kharif-1 usually water is required in early season where the khals can carry water from the sources to the field but in late Kharif-1 water logging is a problem. If the Khals and water structures remain active and operate perfectly then this problems can be addressed easily. Basically, polder dwellers have very minimum practice or motivation for irrigation. But as production intensity is increasing day by day and it is assumed that irrigation practice may increase in near future.

Salinity of river water varies depending on the flow of river water and distance from sea shore. The areas are within the polder, which was constructed mainly for flood protection and prevention of saline water intrusion. Usually salinity increase in March to May. But there is enough sweet water around the polder which they can utilize to increase their production. Actually farmers don't like to take risk and invest as it is easily possible to ensure food security for about 8 months of the year through easy cultivation using the blessing of soil fertility, available water, optimum temperature and minimum cost.



## 6.2 Human Resource

As per Union Parishad report the literacy rate is 45.98% which is below the national average level. As the polder is very close to the Patuakhali Pourosova there is different income generating opportunities. This is why young school going group shift themselves from school premises to money station. There is only one government primary school for about 400 families which is not sufficient. This is another cause for low literacy rate. This situation is developing very quickly.

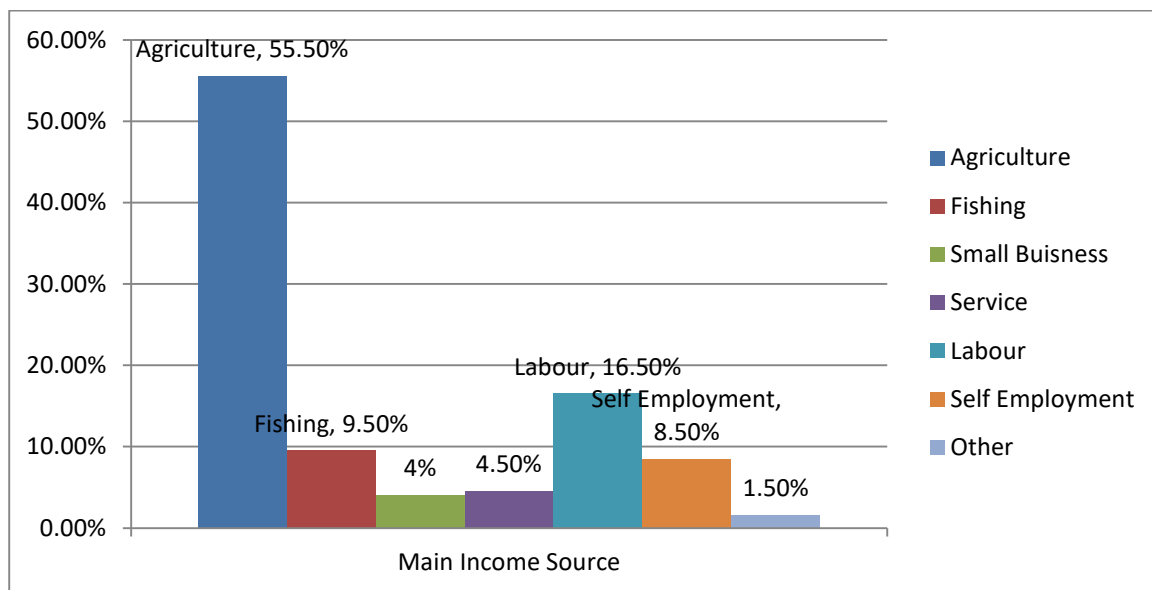
Unlike other area of Patuakhali district, agriculture is the main source of income of polder 43/2E. The main profession or occupation of this polder is farming. Other than farming different occupation groups are found in this polder, like- Fishing, trading, service holder in government or non government organization, agricultural labour, machine operators, machine tools mechanics, paravet, power tiller operator, etc.

Through the discussion with the community people, UP secretary and analyzing secondary data the occupation of the polder dwellers found, is shown below-

SL	Main Income Source	% of HH	Average % of HH
01	Agriculture	53-58%	55.5%
02	Fishing	08-11%	09.5%
03	Small Business	03-05%	04.0%
04	Service	04-05%	04.5%
05	Labour	15-18%	16.5%
06	Self Employment	07-10%	08.5%
07	Other	01-02%	01.5%
	Total	100%	100.0%

Source: FGD

Pie chart presentation of different income groups at Polder 43/2E:



**Self employed** people are involved with Honda driving, Auto driving, Riksha puller, Riksha van puller, Brick field labour,

People of this polder 43/2E are involved with **small business**, like- agri-product retailer, grocery shop keeper, input seller, Bapari, Pikar, Nurserer

Available service holder are involve with, government and non government service, paravet, power tiller operator, teacher etc.

## 7. Socio-Economic Status

### 7.1 Population & Households distribution at Jaiinkathi union:

SL	Mouja	Male	Female	Total	Household
01	Sheha kathi	2,018	2,054	4,072	987
02	Kesobpur	2,368	2,437	4,805	1203
03	East Joinkathi	1,476	1,540	3,016	745
04	Fadainagar	1,171	1,250	2,421	601
05	Char Joinkathi	3,045	1,587	4,632	1,087
	Total	10,078	8,868	18,946	4,623

Source: 20/03/2011, population and household sessus- 2011.

About 4,623 households live in this union. But the households under polder 43/2E is about 2,756 as the polde only four moujas out of five of this union. Moreover, some parts of the other for Moujas are also out of this polder. It means only 59.6% households of this union are under this polder area.

The total land area of this union is about 2,481.376 hectare of which only 1,800 ha. Land is under polder 43/2E. It means 75% land of this union is under this polder.

Although 75% land of this union is under this polder but only 59.6% households of this union live in this area. The outer part of this union is comparatively denser. The density within the polder is comparatively low as cultivable land area is higher and livelihood is harder within the polder area.

## 7.2 Socio-Economic overview of the families of polder 43/2E:

According to UP statistics total population of Jainkathi union is 18, 946 with 4623 households and total voter is 10,997. It indicates that the average family size is almost 4 (four). More than 58% are above 18 year of age. Actually, a large number of people, age group from 15-40 are not available in the polder. Child and aged people are mainly live in the polder area. About 50% of the age group 15-40 live outside the polder in district town or other big cities. 90% of this migrating people are involved with various income generating activities. Those who are in this region usually drive auto, motor cycle, work in shop, factory or work in brick field and are not interested in agriculture. In big cities they work in Garments and other factories, workshop, service center etc.

More than 50% families have more than one earning persons. Mainly younger family members are earn from outside and earn cash for the family. Old family members mainly manage the agricultural activities. Utilizing the homestead females generate income, like- poultry rearing, vegetable cultivation etc. Of course, in agriculture every family members have contribution when and where required.

Most of the families have food security (rice) for more than eight months. They also produce vegetable which can meet maximum of their family demand. They also produce different things as per their family demand, like- poultry, pulse, oil, chili in a small area. Usually the families mainly have to purchase- salt, oil, sugar, onion and fuel. Other area of expenses are- clothing, medication and education.

The resources that the polder dwellers have and how they contribute in their livelihood have been shown below;

<b>Resource</b>	<b>Utilization</b>	<b>Contribution or impact</b>
Field or Land	Produce Paddy	Ensure rice for 8 month for about 80% families
	Produce Mung/sesame/other	Can buy rice for rest 4 month Contribute for clothing Contribute in education
Homestead	Vegetable	Provide family nutrition Sometime sell and meet immediate family needs- oil, salt, fish, medicine etc.
	Fruit and timber tree	Contribute in family nutrition Sometime sell and meet immediate family needs- oil, salt, fish, medicine etc.
	Poultry and small ruminant	Contribute in family nutrition Sometime sell and meet immediate family needs- oil, salt, fish, medicine etc.
Pond	Aquaculture	Contribute in family nutrition
Labour	Sell labour	Supply cash for the family and use where required
Alternative	Earning of second person of the family	Supply cash for the family and use where required

### 7.3 Categories of farmers:

According to the area of land holding, the polder dwellers can be divided into four categories,

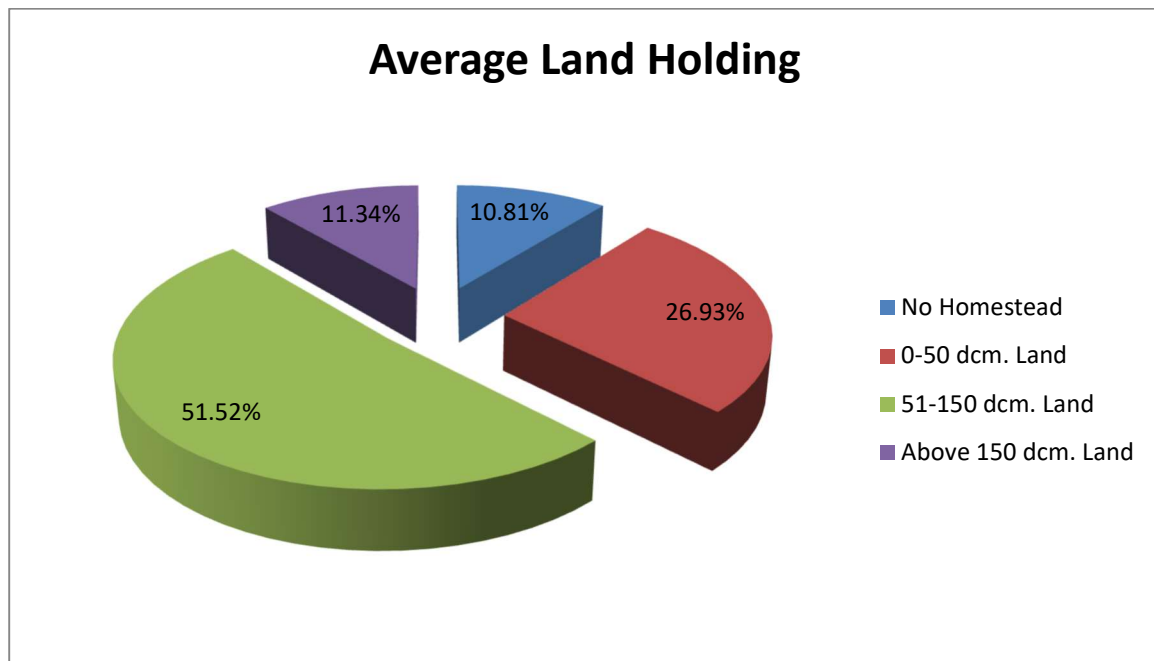
- No Homestead
- 0-50 dcm. Of land
- 51-150 dcm. Of land
- Above 150 dcm. Of land

Average land holding of this polder dwellers are:

SL	Land area	No. of HH	% of HH	
	No Homestead	281	10.21%	
	0-50 dcm of land	742	26.93%	
	51-150 dcm	1421	51.52%	
	150> dcm of land	312	11.34%	
	<b>Total</b>	<b>2,756</b>	<b>100%</b>	

Source: UP secretary, jainkathi.

#### Land Holding presented in Pie Chart:



## 8. Economic Sector

### 8.1 Agriculture

Total cultivable land of this union is 6,12,900 dcm or 2,481.376 hacter. Among this land 1,35,500 dcm or 548.58 ha is fallow land and other 4,77,400 dcm or 1,932.79 ha is under cultivation.

Polder 43/2E is comprises of 1,800 ha (4,44,600 dcm) of land of which the total cultivable land is 1,300 ha (72.22%). The number of farmer's family is 2756. Homesteads (with pond or ditch) occupied 340 ha and other remaining 260 ha utilized for road, khal, infrastructures etc. About 20% farm families are share cropper.

#### 8.1.1 Land use & Cropping Intensity:

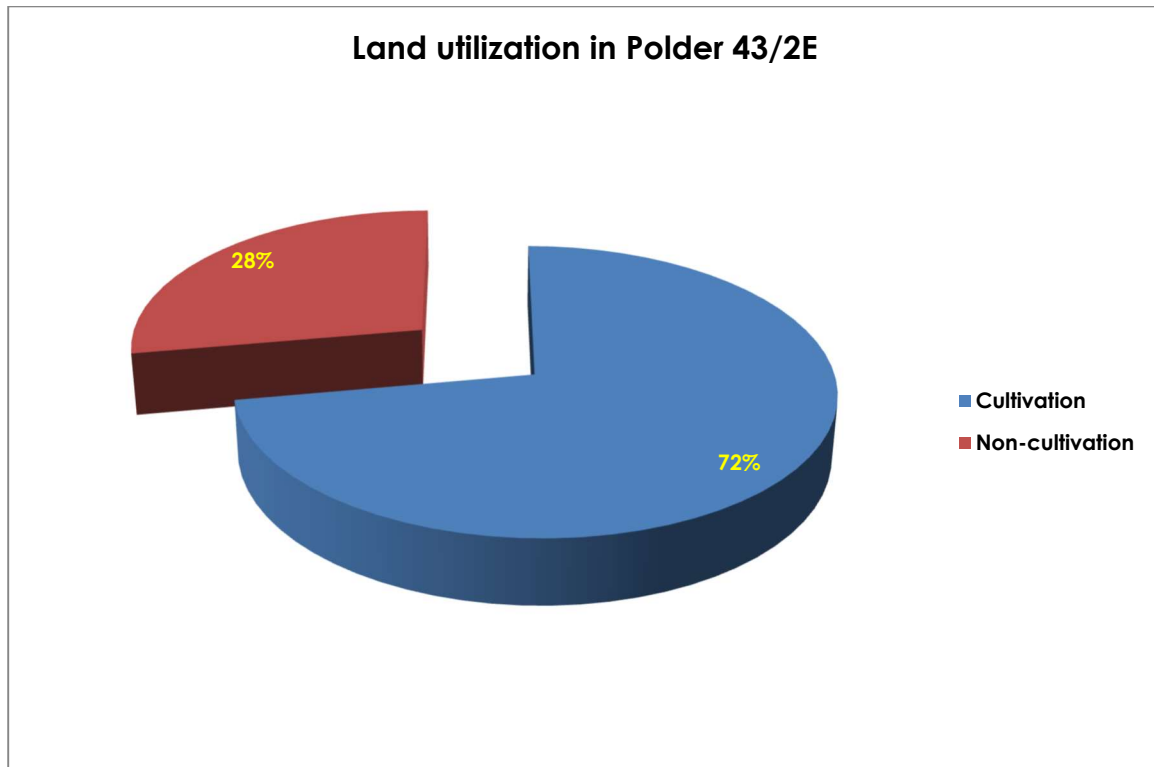


Fig: Land Utilization in Polder 43/2E

Only 7-10% area is under irrigation. Farmers are not interested for irrigation due to different reasons although there is availability of water for certain period of the year. The major land types of this union are medium high land (75%) and high land (25%).

Most of the land areas remain under moderately monsoon flooding and suitable for wetland crop cultivation. The limited high land is not inundated by monsoon flooding but other areas are inundated by the monsoon flooding for 4 to 5 months at various depths up to 90 cm.

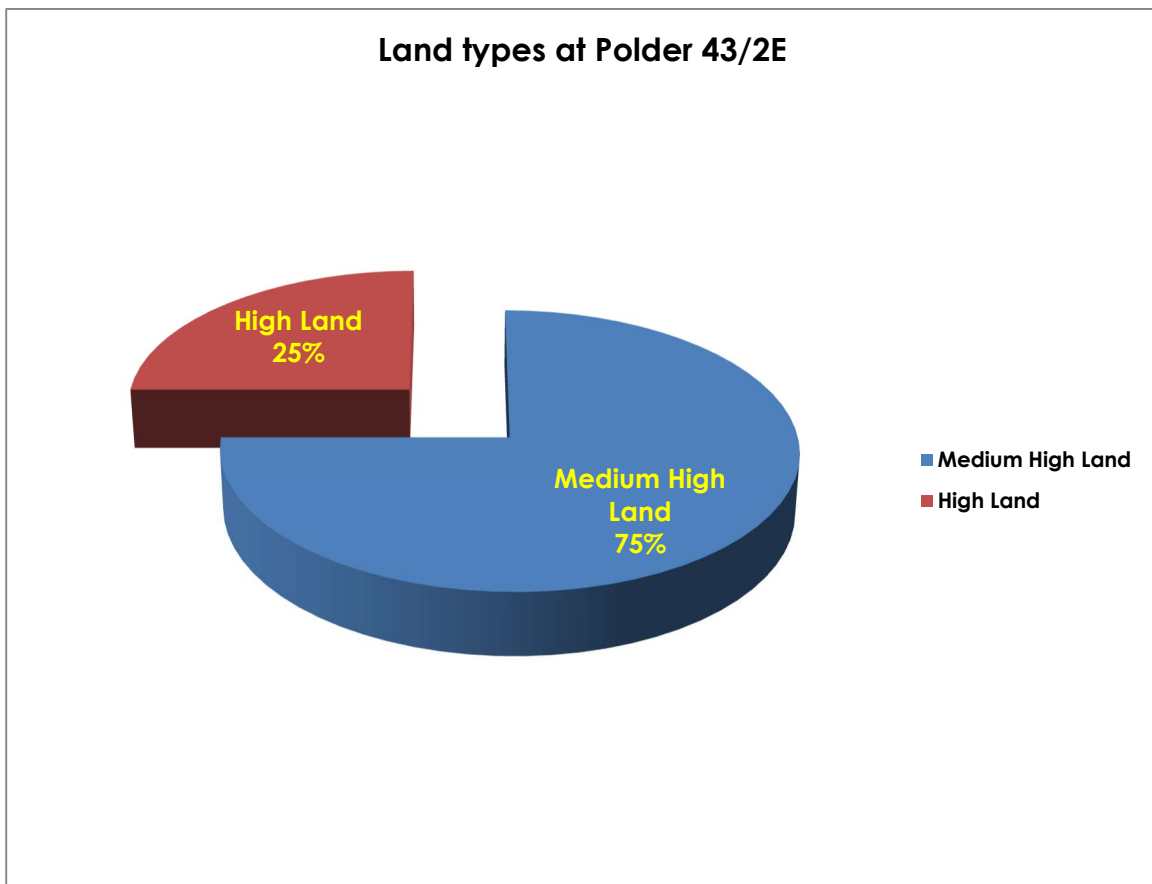


Fig: Land Type of Polder 43/2E

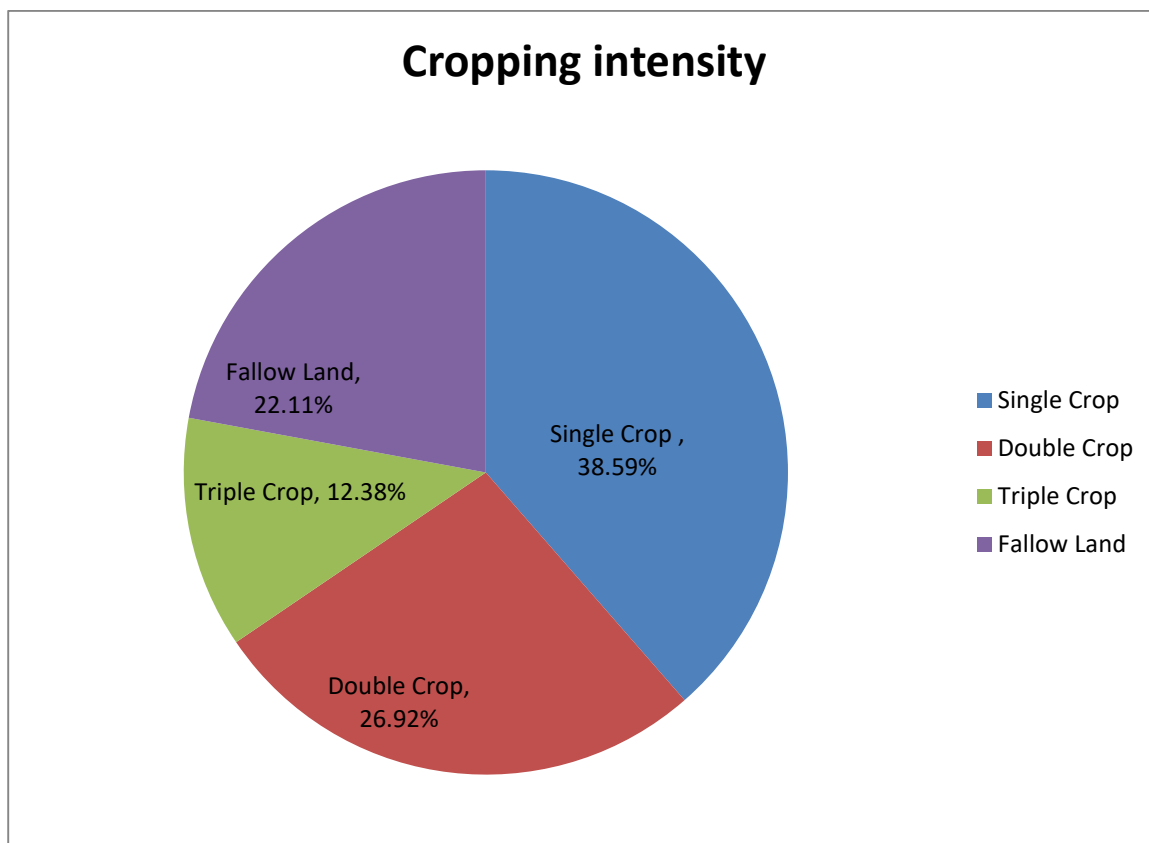


### 8.1.2 Usages of cultivable land of this union:

SL	Cropping Pattern	Area	Area covered (%)
01	Single Crop	2,36,500 dem.	38.59%
02	Double Crop	1,65,000 dcm	26.92%
03	Triple Crop	75,900dcm	12.38%
04	Fallow land	1,35,500 dcm	22.11%
	Total Cultivable land	6,12,900 dcm	100%

Source: Union information (KII- Secretary of Joinkathi UP)

#### Cropping Intensity Presented in Pie Chart:



### 8.1.3 Cropping pattern

The land of this polder is dominated by agricultural crop cultivation, which is cultivated mainly under rainfed condition. The agricultural practices are mainly depending on favorable natural environment. The present cropping intensity of this polder is 212%. The major cropping pattern have been given below:

- Kharif-1/Aus : 16 March to 15 July
- Kharif-2/Aman : 16 July to 15 October
- Rabi/Boro : 16 October to 15 March

**Table: Cropping pattern of Polder 43/2:**

NCA (Ha)	Cropping Pattern			Area (Ha)	% of NCA	Cropping Intensity
	Kharif- 1/Aus	Kharif- 2/Aman	Rabi/Boro			
1300	Fallow	T.Aman	Mungbean/Chili/Sesame/Sunflower	485	37.3%	212
	T. Aus	T. Aman	Fallow	295	22.7%	
	T. Aus	T. Aman	Mungbean/Chili/Sesame/Sunflower	160	12.3%	
	Fallow	T. Aman	Fallow	190	14.7%	
	Annual Crop (Betel leaf/Banana)			115	8.8%	
	Vegetable			55	4.2%	
	<b>Total</b>			<b>1300</b>	<b>100%</b>	

Source: FGD with polder farmer

### 8.1.4 Overview of Agricultural practice at Polder 43/2E:

- ❑ The cropping patterns of the project area are paddy based, so paddy is the major and most important crop in the area. In Kharif-2 season almost 100% field crop is T. Aman. Almost 100% of this Aman is local variety. Farmers usually don't use other fertilizer, like- fertilizer, irrigation and even pesticides. But in present days farmers have to use some pesticide to heavy pest infestation.
- ❑ At present 60% cultivable land is under Mung cultivation in Robi season as field crop
- ❑ Cow pea (Keshari) is the second largest robi crop in this reason.

- ❑ Earlier, five years back Cow pea (Keshari) was the main robi crop in this area which is recently replaced by Mung Bean. Profit margin and total income from per unit land is much higher for Mung Bean than keshari. Therefore, some farmers still cultivate Keshari because it require zero tillage and thus investment much lower than Mung.
- ❑ Other Robi crops in this area are- Cow pea (Keshari), sesame, sweet potato, chili etc.
- ❑ All kind of gourds, cucumber, papaya, bean, brinjal, radish, carrot and leafy vegetables. Surplus sold to market (haat). Homestead vegetables are very limited during monsoon due to heavy rain falls and water logging. Some HHs is facing irrigation problems to produce winter vegetables like cauliflower and radish
- ❑ In homestead the farmers cultivate various vegetables mainly for household consumption. They mainly cultivate Country bean, Red amaranth (lal shak), Bottle gourd, Sweet gourd, Turnip (salgom) etc as winter vegetable and Okra (dharosh), barbate, Indian spinach (pui sak), Amaranth (data) as summer vegetable
- ❑ Most common fruit in this area are coconut, banana and papaya.
- ❑ Farmer usually use very low input for their agricultural production
- ❑ For field crop, like- Paddy, Mungbean, Sesame, Cowpea etc farmer usually use their own seed which is about 60-70% of total requirement. Only few farmers use HYV which would not exceed 5%.
- ❑ Farmers usually purchase vegetable seed and most of them use HYV. They also purchase sapling and seedling from market.

### 8.1.5 Cash Crop of the Polder:

Actually, Robi crops are the cash crop for the polder dwellers. In Robi season farmer produce different crops in their field considering different scope and difficulties. In Kharif-2 season 100% land is under T. Aman cultivation. This crop meets the year round demand of the farmer. Therefore some farmers have to buy for a certain period of the year. About 80% families don't produce enough paddy which can meet their year round demand who are subsistence farmer. Only 20% families have enough paddy to meet their demand and are surplus farmer. Among the surplus farmer 40-60% can even sell after fulfilling their demand. The subsistence farmers have to buy rice for 3 to 6 months.

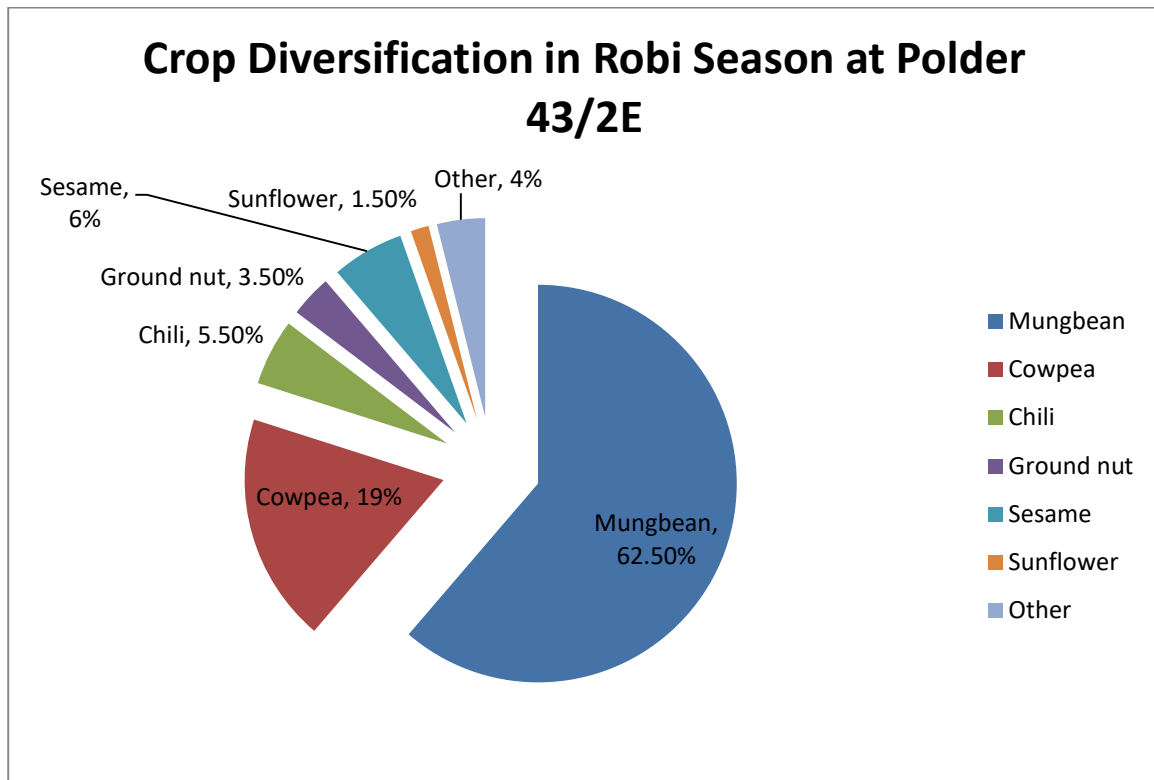
Farmers produce different crops in their field in Robi season. The overview found from the discussion with the farmers, SAAO has been given below:

#### Robi Crop at Polder 43/2E:

SL	Crop	% of Land Covered	Average % of land covered
01	Mungbean	60-65%	62.5%
02	Cowpea (Keshari)	18-20%	19.0%
03	Chili	05-06%	05.5%
04	Groundnut	03-04%	03.5%
05	Sesame	05-07%	06.0%
06	Sunflower	01-02%	01.5%
07	Other	03-05%	04.0%
<b>Total</b>			<b>100.0%</b>

Source: DAE & FGD

Pie chart presentation of crop diversification in Robi season:



From the robi production 95% farmers sell. They sell their produces, like mungbean, cowpea (keshari), sesame etc which range from 60-98% of their total production. Money earn from the selling is used in different purpose. Farmers mainly use this money to meet all their dues accumulated throughout the year and try to purchase some essential household items. Some invest the money for further income generation, like purchase cattle, goat etc.

#### 8.1.6 Cost-benefit analysis of some potential Robi crops:

Here we have tried to analyze the cost benefit of different potential crops of polder 43/2E. We tried to understand the profit variation, investment and the story behind different choice of the farmers. Miungbean, sesame and sunflower are three common and potential Robi crops of polder 43/2E but T.Aman is common to all farmers in Kharif-2 season.

**Sunflower:**

Expenditure			Income			
Category	Amount	cost	Category	Amount	Rate	Return
Tillage	100 dcm	3,000	Oil seed	20 mond	1,300	26,000
Seed	1.5kg x 1350	2,025				
Fertilizer		1,000				
Irrigation	2 time	1,000	Oil	20 x 16 Liter	100	32,000
Labour	20 x 350	7,000	Oil cake	28 kg x 20	15	6,000
Medicine	350 x 2	700	Crashing cost	20 mond	320	(-)6,600
<b>Total</b>		<b>14,725</b>				<b>31,400</b>

Net profit from selling of oil seed is = 26,000 – 14,725 = 11,275 BDT

Net profit from selling of oil = 31,400 – 14,725 = 16,675 BDT

**Mungbean:**

Expenditure				Income			
Category	Amount	Rate	cost	Category	Amount	Rate	Return
Tillage	100 dcm	30	3,000	Mung pod	6 mond	2500	15,000
Seed	12 k	80	480	Marketing cost	6 mond	10	(-) 60
Fertilizer				Tax	15000	5%	(-)750
Irrigation							
Labour	1 mond*	2500	2500				
Medicine	3 vial	350	1050				
<b>Total</b>			<b>7030</b>				<b>14,190</b>

\*labour is used for picking the pods. Labour are contractual and get one sixth of the harvest on an average. If, production in 100 dcm would come to 6 mond (48 kg), then the labour will get 1 mond as their wage.

Net profit from selling of Mung = 14,190 – 7,030 = 7,160 BDT

## Sesame:

Expenditure				Income			
Category	Amount	Rate	Cost	Category	Amount	Rate	Return
Tillage	100 dcm	30	3,000	Oil seed	300 kg	50	15000
Seed	6 kg	60	360	Marketing cost			(-) 150
Fertilizer			540	Tax (5%)			(-) 750
Irrigation			-				
Labour	8 man dats	350	2800				
Medicine							
<b>Total</b>			<b>6,700</b>				<b>14,100</b>

**Net profit from selling of Mung = 14,100 – 6,700 = 7,400 BDT**

### 8.1.7 Profit Analysis of three Robi crops:

The above calculation has been made for 100 decimal of land. The costing and revenue has been calculated on the basis of present farmer practice of the polder.

SL	Crop	Investment	Net Profit	Investment Vs profit ratio
01	Sunflower	14,725	11,275	1 : 0.766
02	Mungbean	7,160	7,160	1 : 1.018
03	Sesame	7,400	7400	1 : 1.100

Investment Vs profit ratio is maximum for sunflower and lowest for sesame. But there is very minimum difference between Mungbean and sesame. Therefore cultivation practice at polder 43/2E is found 62.5% mungbean, 6.0% sesame and 1.5% for sunflower.

Although profit margin is maximum for sunflower but farmers are not interested. The reasons behind this are-

- Sesame cultivation expansion program is a subsidized BRAC program
- It require high initial investment, which is almost double than mungbean and sesame.
- Seed is costly, 1350 taka per kg and not also available in open market. Only BRAC import sunflower seed from abroad.
- Sunflower has no formal market. BRAC buy back the oil seed from their farmers. But at present farmers are consuming the sunflower oil themselves and by this time a very limited market has been established.
- Crop duration is very long, 135-140 days. Due to long duration there is possibility for water logging at late cultivation and also possibility for facing heavy wind at early stage at end of April.
- It is highly labour intensive crop

***There is also some potentiality for sunflower:***

- Profit margin is high and it would be more profitable if famer extract oil from seed. In this case the Investment Vs profit ratio would come to 1 : 1.132.
- In case of improve practice the production can be increase up to 30-35 mond per 100 decimal.
- Demand for sunflower oil is increasing day by day.
- Developing sunflower cluster and involving private sector may enhance this cultivation

***Reasons for preferring Mungbean than Sesame:***

Crop duration of mungbean is maximum 90 days but for sesame it is 120 days. This is why there is possibility for sesame to meet with rain in late April or May. Famers usually fail to harvest sesame due to rainfall. Rain and dust is the main problem for sesame. It deteriorates the seed quality and market price fall remarkably for wet seed which is almost half of normal rate. Sometime due to starting the monsoon rain it becomes difficult to dry the sesame seed. Less care is required for Mungbean than sesame.



### 8.1.8 Kharif-2 Product:

#### **Reason for preferring T. Aman:**

Almost 95% farmers produce local variety T. Aman in kharif-2 season. Rice is considered the main food for the polder dwellers. They thought that if they have enough rice for the whole season for their family, then they are food-secured. Local T. Aman can grow in water logged condition and can tolerate slight salinity. Disease infestation, management and investment is very low for local variety of T. Aman.

But there is possible to increase the production and can possible to make double up through using HYV which require high investment and intensive care.

#### **Paddy (T. Aman)**

Expenditure				Income			
Category	Amount	Rate	Cost	Category	Amount	Rate	Return
Tillage	100	30	3,000	Paddy	20 mond	650	13,000
Seed	12 kg	30	360	Marketing cost	14,950	5%	(-) 750
Fertilizer	-	-	000	Transport cost	40 mond	10	(-)400
Irrigation			000				
Labour	05 man day	350	1,750				
Medicine	2 vial	150	300				
<b>Total</b>			<b>5,410</b>				<b>11,850</b>

**Net profit from selling of paddy = 11,850 – 5,410 = 6,440 BDT**

## 9 Livestock Sub sector:

### Livestock/Dairy

- ❑ Almost every family rears cattle even for a certain period of the year. Here, farmers mainly rear cattle for beef fattening purpose.
- ❑ Agriculture or farming is the main occupation of about 60% households of this area. 100% farmers of this group cultivate paddy in Aman season and 60-70% are Mung farmers. After harvesting of paddy or Mung they got a good amount of money. After meeting their previous loan and present demand some farmer can save some money. About 60% HH rear cattle. Among them 20-25% rear cattle for a short duration as fattening purpose.
- ❑ A good number of these farmers purchase cattle with the money saved.
- ❑ There is huge crisis for natural grass. As cultivation intensity is increasing day by day, natural grass availability is decreasing. This crisis last almost 8 months of the year. Only May to August cattle gets some natural grass. This grass is actually country grass and also not nutritive. In the crisis period straw become the alternative of natural grass which is available to almost every household in this area.
  
- ❑ **Variety:** Considering to other area of the country, the health condition of the cattle is poor in this area.
  
- ❑ **Input used:** Usually farmers are very reluctant about concentrated feed for their cattle. Usually they provide rich bran which is almost available to them. Excess use of rice bran has health hazard. Farmers are reluctant about deworming and vaccination. Vaccination service is not available in this area and farmers have to depend on the local service providers. If service providers come to them or any organization organize vaccination program only then farmers get vaccine. It is also not cost effective to go to Livestock office with their cattle for vaccine purpose. Moreover, service providers are not interested to come to cattle owners' house to vaccinate only 2 or 3 animals. The reason is that one bottle vaccine contains 16-50 doses and it couldn't reuse after opening the vial. In this case the cost for 16-50 animals and 2-3 animals would be similar. Only 5-8% farmer has access to artificial insemination. The reasons behind this are- consciousness, availability of the service, quality of the service, poor health of the cattle and lack of commercial motivation.

- ❑ Almost 60-65% cattle rearing family have dairy cattle. But average milk production is very poor. Average production is about 1-1.5 liter per day. Near about 30-35% households of polder 43/2E rear dairy cattle. Breeding is the main attraction of this group. But very few farmers get artificial insemination service.
- ❑ Straw, getting from paddy cultivation is the main food for the cattle in the crisis time.
- ❑ Farmer considers it as a profitable and attractive investment.
- ❑ Scarcity of free grazing land and high price of concentrate feed is mainly responsible for decreasing of the cattle and buffalo population. Besides, labour (both paid and unpaid family labour) shortage, disease infestation and disaster risk influence this situation.
- ❑ But most interesting thing is that people are more interested in short time cattle rearing for beef fattening. In term of technical aspect, this is not fattening. Farmer just purchases young cattle just after winter and rear for 6months to one year when natural grass is available and the environment is favourable for physical growth. Without providing any extra feed or with minimum feed they can make profit 5000-6000 taka against 10,000-12,000 taka investment within 6 months.
- ❑ This is notable that a traditional cattle rearing is decreasing but commercial rearing is increasing. Most important obstacle in this regard is shortage of capital. Farmer still consider cattle rearing (fattening) as a prime source of seasonal business.
- ❑ Farmers are considering goat rearing as asset. It is manageable even by small and poor HH. To rear one or two goat required almost no extra cost. Moreover, the reproductive nature of local goat (Black Bangal Goat) inspires the farmers. One can get 4-6 kids from one goat in a year. The market price of castrated male goat of one year age is 2,000-2,500 taka. As goat rearing is poor friendly with no extra cost, the number is increasing.

### **Goat & Sheep:**

Only a few families have goat. Goat rearing is decreasing in this polder. Major issues are-possibilities of social conflict, disease infestation, unavailability of natural grass, people are reluctance. For poor family it is considered as an asset and support in the crisis. Its high proliferating capacity and market demand has made it popular to the farmer.

## 10 Fisheries Sub Sector:

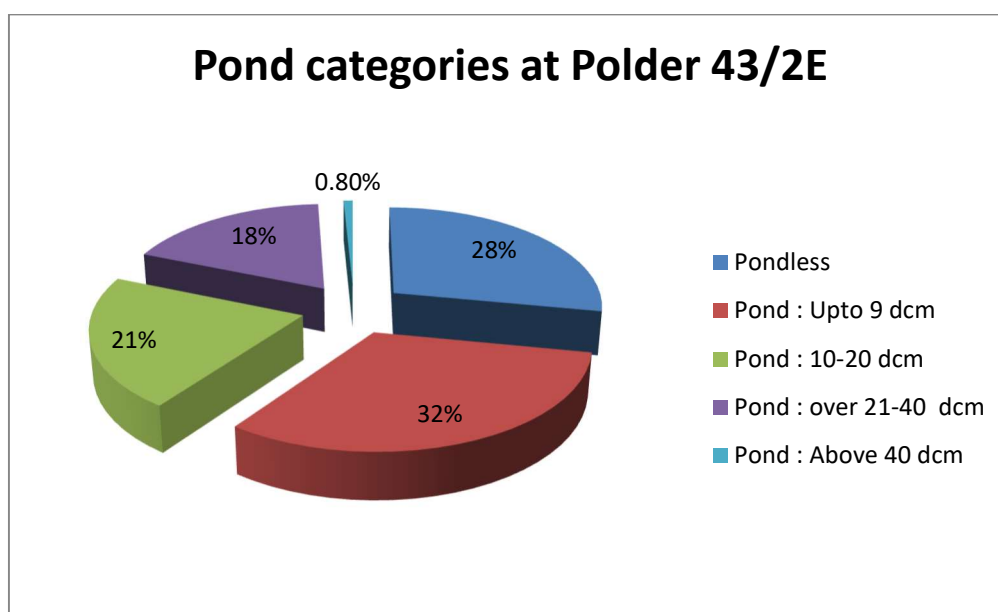
Fish is found from two sources- one is cultured fish and other is captured fish. Jainkathi union has a total wet land area of 794 hectare, of which 108 hectare are under aquaculture. Aquaculture comprises of homestead ponds fish culture in 97 hectare, commercial fish culture in 1 hectare and Gher occupies 2 hectare. The open water fisheries consist of river, canal and floodplain with a water area of 694 hectare.

### 10.1 Pond or Ditch of Polder 43/2E:

SL	Pond Size	No. of HH	% of HH
01	Pondless	496	28.0%
02	Up to 9 dcm	1158	32.0%
03	10-20 dcm	584	21.2%
04	21-40	496	18.0%
05	Above 40 dcm	22	0.80%
	<b>Total</b>	<b>2756</b>	<b>100%</b>

Source: FGD

Distribution of different sized ponds in Polder 43/2E:



The total land area of this union is 2,481 hectare and polder 43/2E comprise of 1800 hectare which is about 72.5% land area of the union. There are about 1,447 (one thousand four hundred and forty seven) pond under Jainkathi union. Comparing the total land area of the polder with the union, is is estimated that, there are about 1049 pond in polder 43/2E. The distribution of ponds throughout the union and estimated number in the polder has been given below:

SL	Village	No. of Ponds
01	Chamta	66
02	Kesubpur	140
03	Thangai	84
04	Vagirabad	27
05	Char Jainkati	230
06	Purbo Jainkati	200
07	Pirtola	79
08	Talbaria	43
09	Fedainagar	126
10	Katura Taluk	53
11	Dakshin Sehakati	193
12	Uttar Sehakati	206
	<b>Total</b>	<b>1,447</b>

Source: UP Secretary

## 10.2 Status of Aquaculture practice:

About 72% HH have pond in this polder. In this polder about 30-35% ponds are seasonal ponds. Remaining 65-70% ponds can retain water at least 4 feet water, round the year. About 60% ponds are joint owned ponds. Among the ponds up to 9 dcm, about 50% are seasonal pond where 90% of the large ponds (above 20 dcm) are perennial pond. In the seasonal pond water remain for maximum of 7-8 months. In every pond there is fish and usually they harvest 2-5 times in a year. Very substantial cultural practice is found here. During April to June, when rain starts, people release fingerlings, in most cases without following any cultural system. Polder dwellers also use the pond water for different household usages, like- washing, bathing etc. Seldom they provide food, available at home.

Usually farmer culture Common Carps, Mirror carps, Grass carps, Tilapia, Pangas, Thai puti etc in their ponds. They consume 80% and sell remaining 20% from their ponds. It doesn't mean that their production is enough to fulfil their demand. When they harvest finally the volume is much more than their demand. Only the seasonal ponds come under final harvesting. So, it is difficult to assume the production volume.

Only Department of Fisheries is providing services on fish culture in these areas. There is no aquaculture related project in this polder. Government service is very poor due to lack of manpower. In case of any problem farmers apply their inherited knowledge or depends on input sellers.

Usually farmer don't use commercial fish feed, instead they use available feed residues at home, like- khud (broken rice), rice bran, rice husk and mustard oil cake. Some large farmer use commercial feed for a certain period which might not exceed 10% of the total fish farmer. Commercial fish input market is very weak in whole district due to less demand and very few commercial fish farming practice. The only input demand is fingerling. Farmer prefers to collect fingerling from the fry traders rather than hatchery.

There is some nursery in this polder and the number would be 10-15. They fill about 30-40% of the local demand. They also sell their fingerling outside of the polder and for this trading they have specific traders. These traders get commission from the selling. A good amount of fry and fingerling imported from Jessore, Khulna, Magura, Faridpur.

## 11 Processing Mills:

Although this polder has good electricity coverage but commercial use is very limited. Roads are not wider enough for moving the vehicles. There is five saw mills in the polder area at-

- Katuratalluk - 01
- Uttar Sehakathi - 02
- Dakhin Sehakathi - 01
- Paschim Jainkathi - 01

There is one oil extract mill at south Sehakathi. Beside there are four (04) Rice mills at-

- Jainkathi UP office - 01
- Thangai - 01 (Owner - majed talukder)
- South Sehakathi - 02 (Owner- Montajuddin & Jahangir)

Polder dwellers usually process paddy, oil, pulse and spices for their household consumption. Beside, in crisis or need, people process paddy or pulse to sell in the local bazaar from their stock. Usually local people crash pulses from town as the quality of local crashing machine is not good.

Oil extract from Sesame: Oil extract cost is 8 taka per kg. In this way the cost come to 320 taka for extracting of 40kg sesame seed and farmer get 16-17 liter oil and 20-22 kg oil cake. Selling rate of sesame seed is 32.5 taka per kg whereas selling price of sesame oil is 100 taka per kg. Selling rate of sesame oil cake is 30 taka per kg. If farmer sell oil they get 600 taka more for per mond (40kg) of sesame. Refining and shell life is a problem for local oil. Local oil can be stored for 6 months.

Sesame (For 40 kg oil seed)							
Unprocessed				Processed			
Item	Quant.	rate	Cost	Item	Quant.	rate	Cost
Sesame seed	40 kg	32.5	1,300	Oil	16 lit.	100	1,600
				Oil cake	22 kg	30	660
				Extract cost	40	8	(-) 320
				Carrying cost			(-) 40
<b>Total</b>			<b>1,300</b>				<b>19,00</b>

In case of paddy, processing cost is 0.5 taka per kg paddy. Usually farmer get 25-27 kg rice from 40 kg paddy which depends on the moisture content of the paddy and quality of the machine. They get 8 kg rice bran as by product from processing of 40 kg paddy. Usual selling price of 40 kg (1 mond) paddy is 650 taka, rice 30 taka per kg, rice bran is 12 taka per kg. In this way farmer can earn 166 taka more from selling rice compare to paddy. But rice is difficult to store for longer period.

Paddy (For 40 kg oil seed)							
Unprocessed				Processed			
Item	Quant.	rate	Cost	Item	Quant.	rate	Cost
Paddy	40 kg	16.25	650	Rice	26 gk	30	780
				Rice Bran	8 kg	12	660
				Extract cost	40	0.5	(-) 20
				Carrying cost			(-) 40
<b>Total</b>			<b>650</b>				<b>816</b>

There are two bakeries in this polder. One is at katuratalluk and another one is at Sehakathi school bazaar. They make bread and biscuit and market it to different area mostly at Patuakhali district along with this polder. One ice cream factory is going to be established in this polder.



## 12 Potential Value Chain Performance

Polder 43/2E is under Jainkathi union of sader upazila of Patuakhali district. Total land area of this polder is about 1800 hectare. There are 2756 households and total population of this polder is 11,294. Agriculture is the main economic lifeline for the polder dwellers. About 55-60% family of this polder totally depended on agriculture. But more than 80% polder dwellers are involved with agriculture. So agriculture has a great impact on the income, life style and livelihood of the dwellers. There is almost no commercial farmer and most of them are subsistence type of producers. These farm families are not depends on single intervention. They are some agricultural product, some poultry, some livestock, some homestead vegetable, some timber, some fruit tree, aquaculture in the pond etc. These multiple intervention also minimizes the risk. The potential product found for further value chain development for this polder 43/2E are-

1. Native poultry
2. Mung Bean
3. Tilapia
4. Dairy

Below we have provided an snap short of the value chain condition of these potential products.

## 12.1 Poultry Value chain:

### Over view of Native poultry at Polder 43/2E:

- ❑ Native chicken or Indigenous local breeds are generally raised in family poultry production systems. In the study area, more than 90% polder dwellers having homestead keep scavenging native chicken. Mainly women are responsible for chicken management practices. On an average a family consumes 8-10 birds and sells 3-5 birds per year where the estimated weight of a bird would be 1.25 kg. About 2,200 households keep poultry.
- ❑ Thus average yearly production would be 30,250 kg to 41,250 kg from 24,200 – 33,000 birds. So, average yearly production is 35,750 kg from 28,600 birds. Among the 28,600 birds only 4,400 birds lay egg. Yearly egg production from a bird is 40 on an average and thus total egg production at polder 43/2E is about 1,76,000. 60-70% egg is consumed by the polder dwellers. It means yearly 52,800-70,400 (average 61,600) eggs come to the market from the polder. On an average, 1,185 eggs come to the market per week from the polder.

### Objective:

- ❑ Explore the opportunities for market development in the poultry market system (for native chicken and eggs specifically) at polder 43/2E. This would be a primary over view of the value chain which will facilitate further in depth analysis.
- ❑ Explore the potentialities for poultry value chain development at polder 43/2E
- ❑ Identify the constrains for poultry value chain
- ❑ To Provide an over view of different stake holders and how they are interlinked.
- ❑ Drawing a market map with an essence of the number of actors and volume of product

# Native Poultry Value Chain Map:

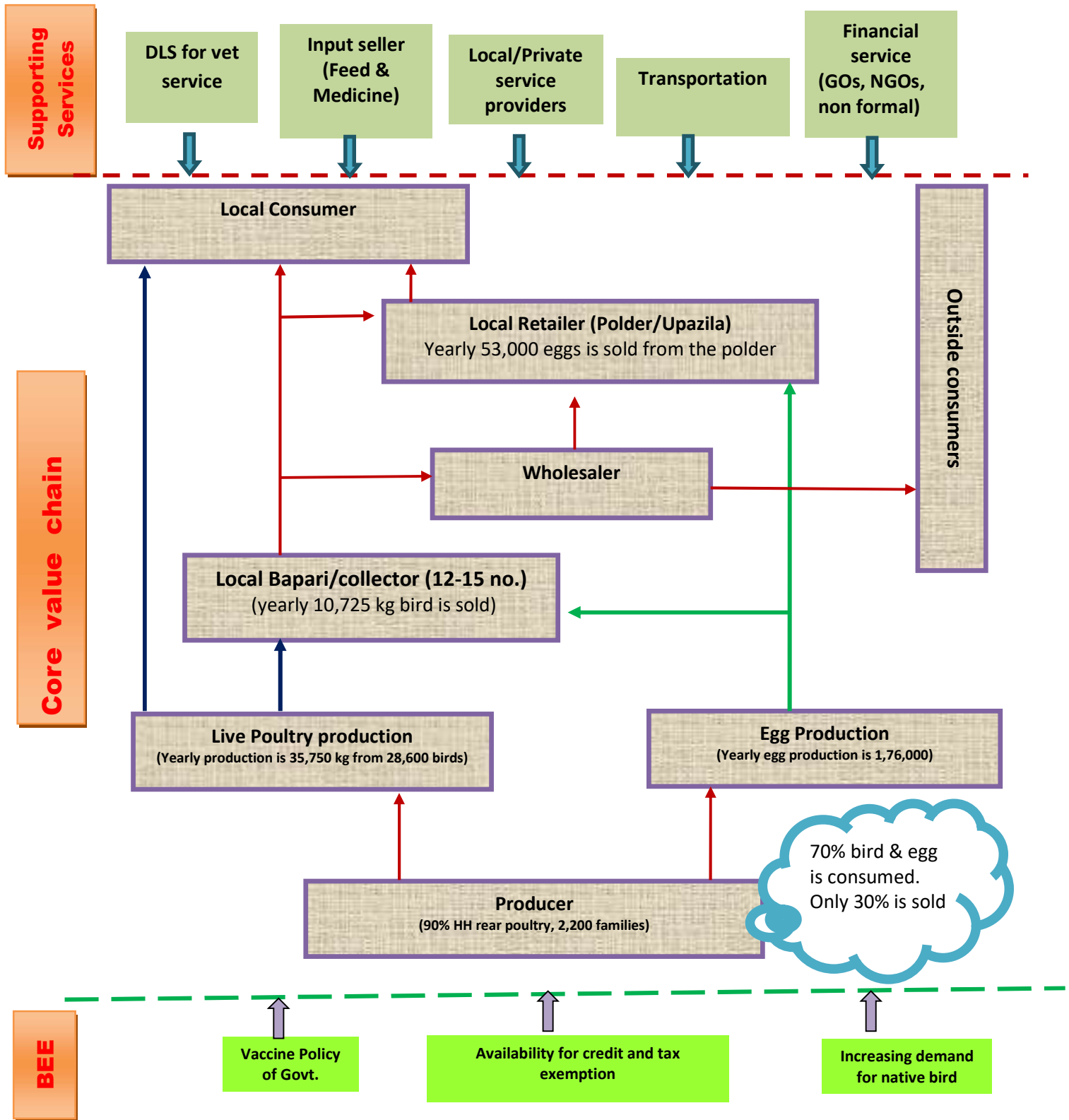


Fig: Value Chain Map of native Poultry & Egg of Polder 43/2E

## Methodology:

This documents was developed with the information collected from the discussion with different stakeholders at polder 43/2E from 01.02.15 to 28.02.15. In this time we have made more than 15 FGD and KII with different stakeholders. Of course the main objective was to develop the master file for polder 43/2E. Among the stakeholders there were producers, input traders, market traders, service providers and social leaders.

## Limitation:

As one person had to conduct the KII and FGD it was difficult to write down all the discussion points in the paper. I had to keep some information in mind which was then placed in the documents. Primary purpose of KII and FGD was master file development not value chain analysis. Sometime the informants would like to give objective oriented answer. Informal interview is more reliable than formal one.

## Core Market actors and their function:

List of core actors of native poultry value Chain at polder 43/2E

SL	Type of Actor	Total No.
01	Producer	2,200
02	Bapari/collector	12-15
03	Poultry retailer	0
04	Egg Retailer	20-25
05	Processor (Bakery)	02
06	Input traders (Feed, medicine)	07

## **Poultry Production:**

Almost every family of the polder rears poultry. About 100% of them rear native poultry. This indigenous breed is more disease resistant and well adopted in the local environment. This breed is low productivity. But the main potentiality is a huge market demand. The price of native poultry is almost double than the commercial one due to organic point of view. Farmer doesn't use ready feed or medicine. The laying birds lay egg which has also high market price although the size and weight is lower than the commercial one due to same reason. It meat their family nutrition and considered as asset which help to meet the sudden crisis. This is fully a women intervention. There is an opportunities to increase the number of birds per family within their present resource available. Disease outbreak and sudden death is considered the main problem for the growth of this sector. Technical knowledge gap, unavailability of vaccine and vaccinators is the root cause of this situation.

## **Chicken collection and marketing**

Women are involved in marketing at farm gate where as males sell in local market or town. Bapari, Foria or middlemen are involved with poultry trading. They rely on walking or bicycle to collect birds from the village. They supply to the upazila or district market. At local level usually local farmers come with their birds. Sometime the farmers sell their bird to the "Patuakhali new market", "Puran Bazar" or "Badura Bazar". For transportation they usually use bi-cycle or auto. The trades come to farm house once in a week. As the traders are local, sometime farmer directly come to sell their birds. The collectors sell the birds to the retailers or whole sellers. A portion of the birds finally go outside the district, like- Dhaka, Barisal etc. which would be 40% of the total collection.

## **Support actors' function:**

### **Advisory service:**

- ❑ Most of the fatal and serious poultry diseases of the area have available vaccine. Farmers only give vaccine when any service providers come to them and push them for vaccination. A reliable supply of vaccine, with a cold chain for storage and distribution is critical here. Some individuals in the village work as vaccinators but their services are constrained by inadequate training and communication and vaccine supply from DLS.
- ❑ DLS is the public service provider which has manpower shortage. There are some paravets who provides paid service but for poultry they have no motivation due to financial matter. Moreover, there is less demand for paid poultry services. Different projects are working in this area, sometime providing service for their stakeholders.

### **Financial Service:**

- ❑ There are some national and local Micro Finance Institutes in this area who have provision for poultry or agricultural loan. But as about 100% farmers are subsistence farmer, they have less motivation for getting credit for poultry rearing.

### **Business Enabling Environment:**

- ❑ There is a risk for Bird flu disease. But there is limited precaution for prevention, like- transportation, Processing etc
- ❑ Quality control measure is not effective for inputs, like- feed, medicine, vaccine etc
- ❑ Organic or native bird has a increasing demand due to health consciousness

### **Potentiality of Poultry:**

- Almost every family of this polder is involved with poultry rearing (90-95%), Native chick.
- Have a good growth potentiality as demand for native poultry and deshi egg is increasing within the country, high price
- This is a pro-poor potentiality. A farmer even with only homestead can rear poultry.
- It is a women intervention and a family business
- The income come from this sector mostly goes to the pocket of women
- Very easy technology and every family have the skill
- It require minimum investment
- Native chicken has higher market demand and a higher market price
- It is also a part of FFS module of component-3 of Blue Gold Program
- It provides protein nutrition for the family and contribute in family crisis

### **Constrain:**

- Production is still at a subsistence level
- Unavailability of quality day old chicks
- Vaccine and medicine is not available in the polder
- Vaccination and veterinary service system is weak and not available
- Outbreak of diseases sometime causes massive loss

## 12.2 Mung Bean Value Chain:

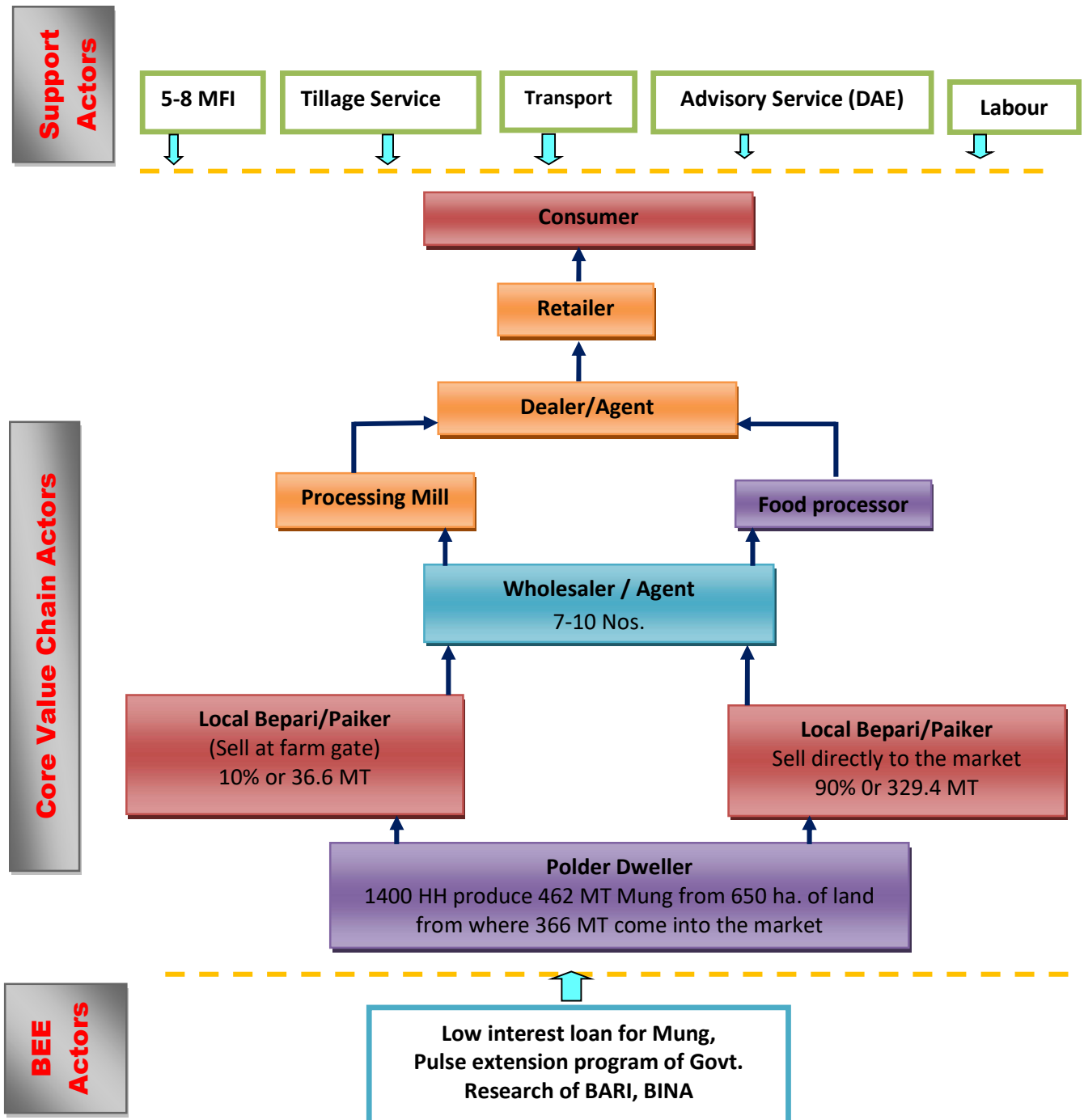


Fig: Value Chain Map of Mung bean of 43/2E Polder



### **Over view of Mung Bean Value chain at polder 43/2E:**

- ❑ The total cultivable land of the polder is about 1300 hectare. In Robi season about 20% cultivable land remain fallow which is about 260 hectare. So, net cultivated area in Robi season is about 1,040 hectare. 60% cultivated land comes under Mung production in Robi season which is estimated as 650 hectare. There is about 1400 Mung farm family. Average land holding for Mung cultivation is about 114.68 decimal. Average production is about 6 mond (48x 6 kg) per acre. Thus total production of this polder is about 9,633 mond or 462.38 MT. From the total production about one sixth is expensed as harvesting cost which is about 77 MT and market value is 40,12,500 taka. Further 19.2 MT is kept for household consumption and as seed. So, about 7,628 mond or 366 MT production comes into the market which is cost 190 million taka.
- ❑ Mung is collected or harvested by different women group as contract basis. It requires about one month for Mung harvesting and about 275 families (10% of total HH) are involved. Thus one family can earn 485 taka per day for one month of period. This money goes directly to the women and most likely to the most vulnerable group of the community.
- ❑ Seed requirement is about 19.26 MT. 80% or about 15.4 MT seed is farmers' own seed and only 3.85 MT seed is purchased from the open market. The price of the seed that need to purchase is 30,00,000 to 3,50,000 taka.
- ❑ BARI-6 type Mung is widely used in this area. There are two different variety- one is large pod and another is small pod. The large pod is mainly BARI – 6 type but the small pod variety is unknown. Although the market price of small pod is high, farmers prefer large pod type of Mung. The price difference between these two variety is 500-800 taka per mond (48 kg).

### **Potentiality of Mung Bean Value chain:**

- At present 62.5% cultivable land is under Mung cultivation in Robi season as field crop
- This is the main cash crop of the polder dwellers. 95% of the total production is sold in the market.
- It requires minimum care and management practice compare to other crops
- Actually, Mung bean is a bonus crop for the farmers after the main Rabi crop. Before sewing the Kharif crop, they want to utilize the land.
- It creates a great employment opportunity for the women
- The most vulnerable group of the society may also get benefited from Mung cultivation
- It is very environment friendly cultivation. Mung fixed nitrogen, an essential element of soil, into the soil and increase soil fertility.
- It influences subsequent Aman production (productivity increased).
- Mung bean is a very short cycle crop. The standard time to get the harvest ranges from 90 to 100 days. However, in some cases, farmers were seen getting the harvest even before the standard period. Some BINA Mung varieties can be harvested within 70 days.

### **Constrains:**

- Limited Usage of High Quality Seeds
- Inappropriate Usage of Inputs
- Not Using Modern Farming Techniques
- Low Sales Price
- Not Linked with High End Market
- Not Using Appropriate Post Harvest Processing
- Low investment
- Lack of appropriate financial package for Mung bean Farmers

## 12.3 Tilapia Value chain

### Overview of Aquaculture at Polder 43/2E:

- ❑ The total land area of the polder is about 1800 hectare with 2756 households. In this polder almost 2260 families have pond. The number of ponds vary from 1 to 3 with average of 1.3 . Thus, there is 2938 no. of ponds in this polder with 78.35 hectare or 19,353 decimal of water body. Average pond size is 8.56 decimal.
- ❑ About 72% HH have pond in this polder. In this polder about 30-35% ponds are seasonal ponds. Remaining 65-70% ponds can retain water at least 4 feet water, round the year. About 60% ponds are joint owned ponds. Among the ponds up to 9 dcm, about 50% are seasonal pond where 90% of the large ponds (above 20 dcm) are perennial pond. In the seasonal pond water remain for maximum of 7-8 months. In every pond there is fish and usually they harvest 2-5 times in a year. Very substantial cultural practice is found here. During April to June, when rain starts, people release fingerlings, in most cases without following any cultural system. Polder dwellers also use the pond water for different household usages, like-washing, bathing etc. Seldom they provide food which is available to them. Mixed culture practice is found in about 100% ponds of this polder. Usually farmer culture Common Carps, Mirror carps, Grass carps, Tilapia, Pangas, Thai puti etc in their ponds. They consume 80% and sell remaining 20% from their ponds. There is no evidence of single Tilapia cultivation in the polder area but this species is available in about 20-30% ponds. GIFT type of tilapia cultivation in increasing day by day.
- ❑ Tilapia is now a widely accepted species which is consumed by people across almost all the income groups. About 90% local demand of Tilapia of polder 43/2E is met from outside of Patuakhali and Barguna district. Retail price of Tilapia is much higher (160-220 Tk/kg) in this area than national average, which is range from 120-160 Tk/kg. Gradually farmers are also being interested in Tilapia cultivation.
- ❑ Nursery business is a 4-6 months business which is costly, risky and requires intensive care and management. The business of trading fingerling is for 1-2 months of period. Usually large farmers (usually Gher owner) collect fingerling directly from nursery and sometime they also produce fingerling in their own nursery. 90% small farmers collect fingerling from mobile traders. In last two years the demand for Tilapia is increasing. In mixed culture system 50 ps Tilapia is required for per decimal of pond.
- ❑

## Value chain Map of Tilapia

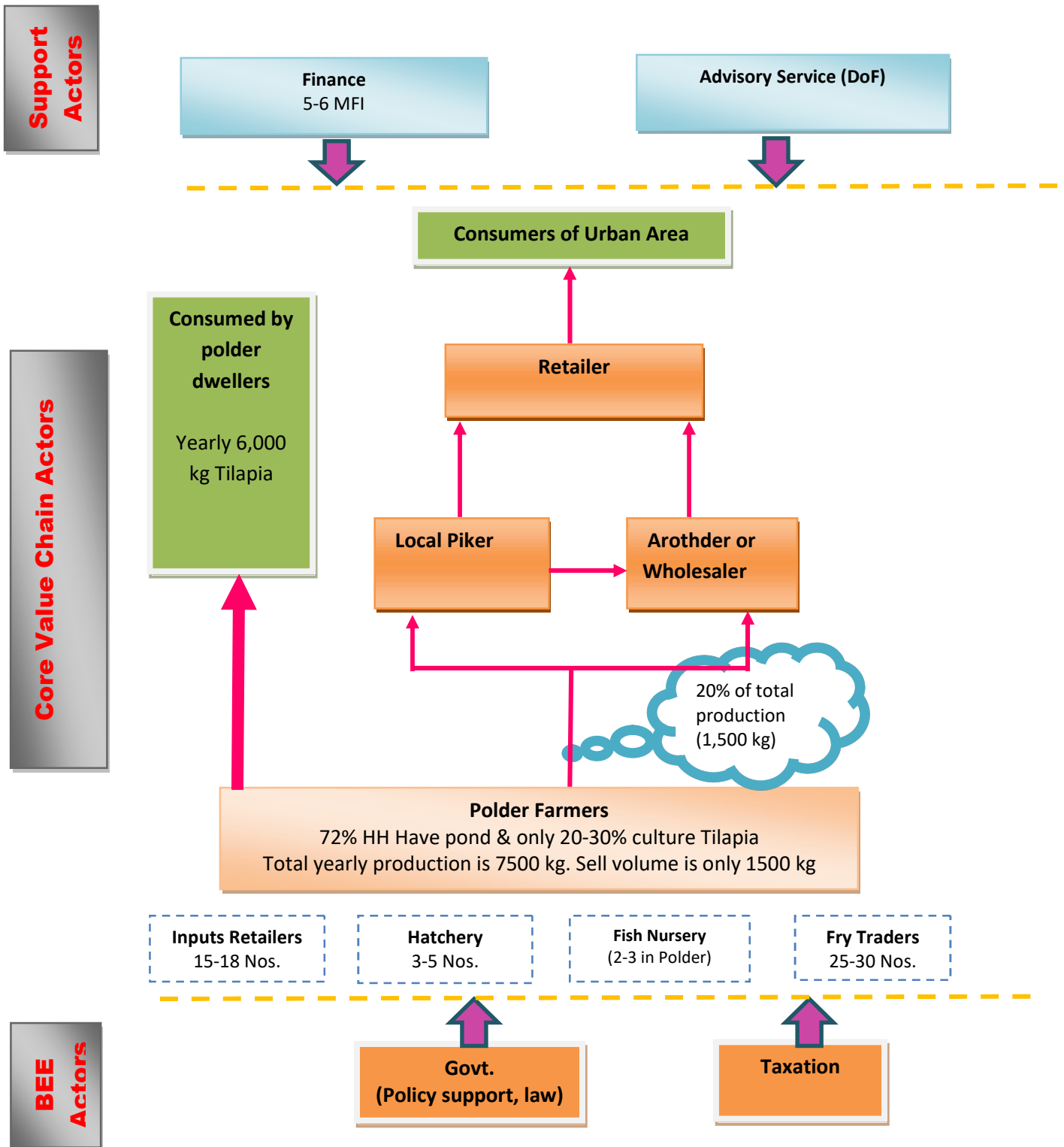


Fig: Value chain Map of Tilapia at Polder 43/2E

## **Production and marketing:**

- ❑ In traditional practice, average yearly production of aquaculture is 7.75 kg from per decimal of land. Thus yearly total production of this polder is about 150 metric ton. On an average, 20-30% ponds are occupied by Tilapia in a mixed culture system with other common carps. This is assumed that from Tilapia mixed culture ponds we may get one fifth (20%) production. Thus Tilapia production is about 7.5 MT in this polder which is 5% of the total production.
- ❑ 80% of the local production or yearly 120 MT is consumed by the polder dwellers and rest 20% or 30 MT come to the market.
- ❑ Total yearly consumption of the polder dwellers is 138 MT where 120 MT come from internal source and other 18 MT come from external source. The external sources are local market and captured fish.
- ❑ Total population of this polder is 11,294. Thus one person intake only 12.22 kg fish per year or 33.42 gm per day on an average.
- ❑ Polder dwellers usually sell fish from their ponds in harvesting time in most cases which is once or twice in a year. They sell to the “Local Piker” from farm gate or “Arothder/wholesaler” at market. Then it comes to the retailers and finally to the customer.

## **Potentiality:**

- ❑ 72% households have ponds where tilapia culture is possible in most cases
- ❑ About 2,260 farm families are involved with aquaculture with 78 hectare of water bodies.
- ❑ Average pond size is 8.56 decimal
- ❑ 74% ponds are small pond with a area vary from 04 decimal to 20 decimal. Most of them are seasonal pond. At least 1-2 month the water depth goes down below 3 feet. Only 26% ponds is over 20 decimal where relatively improved aquaculture is found in many cases.

- ❑ FFS has module for Aquaculture and people have a long traditional experience on fish cultivation
- ❑ At present about 20-30% pond holding households culture Tilapia with other species. There is no evidence of Tilapia mono culture.
- ❑ More than 80% Tilapia producing farmer culture GIFT type and other 20% Mono sex type.
- ❑ Farmers generally are not interested for monosex Tilapia as it requires heavy feed, improve management and capital. Moreover, there is also risk for flooding or other natural disaster. In addition, it is a very common phenomenon not to have sex conversion properly.
- ❑ Tilapia and common carp has both local and national market demand
- ❑ GIFT Tilapia naturally releases spawn. In mixed culture other species of large size eat them which is turned into feed for them.
- ❑ There is a big tilapia hatchery named “Bay of Bengal” at Barguna
- ❑ The hatchery owners have an association which can help in the strengthening of this sector.
- ❑ Tilapia or carp cultivation is a highly lucrative and profitable business with high profit margins.
- ❑ There is a fish processing industry at Patuakhali
- ❑ Most people cultivating pond fisheries do so as a secondary or sporadic source of food or income
- ❑ Present productivity of the ponds are very low and it can be raised up to 50 to 80%
- ❑ “Blue Gold” earthwork will create an opportunity for aquaculture through ensuring of water management.

**Constrain:**

- People do not invest much time or planning, and therefore do not practice proper pond management.
- There is very limited number of nurseries
- The quality of the inputs is a big question (spoon, fingerling, feed, medicine etc)
- Supply chain is very weak
- Weak backward linkage is the result of low demand of inputs
- Advisory services are not easy or available
- Road communication is poor which increase the cost
- Risk of disaster, like- heavy rainfall, drought, cyclone, flood etc

## 12.4 Dairy Value chain

Backyard livestock rearing for milk or beef production is an important income generating activity to poor who have relatively less access to land. Therefore, about 60% HH Have cattle & 90% of them rear cow at polder 43/2E. They consider the advantage of lower cost of production, limited or no opportunity cost and prospect for using family labour and therefore prefer smallholder dairy activities. It provides them an opportunity to generate income, create employment and improve nutrition; all of which contribute to livelihoods. However, constrained by low income, they have difficulties in accessing inputs, service and markets. As demand for milk is increasing rapidly in the country, which is more critical in this region. The price of milk at district or wholesale market varies from 45 to 120 taka for per liter of milk. Moreover, getting one calf in a year is the most lucrative motivation for the farmers. Another important motivation is regular income opportunities.

### Value chain actors and their function:

**List of core actors of “Dairy value Chain” at polder 43/2E**

SL	Type of Actor	Total No.
01	Producer	1,488
02	Milk collector	10-12
03	Paravet	05
04	MFI	05
05	Input trader (Feed- loose)	07
06	Input traders (medicine)	05
07	Processor (only at Patuakhali town)	20



## Over view of dairy sub sector at polder 43/2E:

- ❑ Backyard cattle rearing is a common livelihood option for polder 43/2E. About 60% polder dwellers rear cattle. Among them 90% have dairy cattle. It means about 1,653 HH rear cattle among them 1488 HH have dairy cattle. Most of them (over 90%) have local breed with very low productivity. The health condition of the cattle is poor. Input utilization practice is poor with weak service channel, both from demand and supply side.
- ❑ Average milk yield is 1-1.5 liter (1.25 liter on an average). This production also varies with season. Srabon-Vhadro is off peak and Joisto-Ashard is the peak season. Unavailability of natural grass and feed is the main reason behind this. In off peak season the production come to about nill in many cases. Dairy cattle of this polder give milk 6-8 month on an average. Considering the peak and off peak production period and average milking time in a season milk production is 150 liter from a cow in a year.
- ❑ An average dairy cattle holding is 1.2 in this polder. So the total number of dairy cattle is 1785 in this polder. Due to disease and other issues about 20% cow remain out of production. Thus, active number of dairy cow is 1428. So, yearly milk production of this polder is about 2,14,200 liter or 587 liter per day.
- ❑ About 25% milk (147 liter) is consumed by the farm families per day. About 15% milk come to the market through informal channel, like- direct delivery to the houses, tea stall, local program (weeding etc) and rest 60% come to the market through formal market channel (producer-collector-processor-consumer). Thus 88 liter milk come the market through informal market and 352 liter milk come to the market through formal channel per day.
- ❑ About 12-15 milk collectors are involved with this business. Milk collectors collect milk from the producers and sell it to the processor, like- sweet maker, card shop etc. These processors are mainly in the Patuakhali district town. There are about 18-20 processors only in “Patuakhali new market” and “Puran bazaar”.

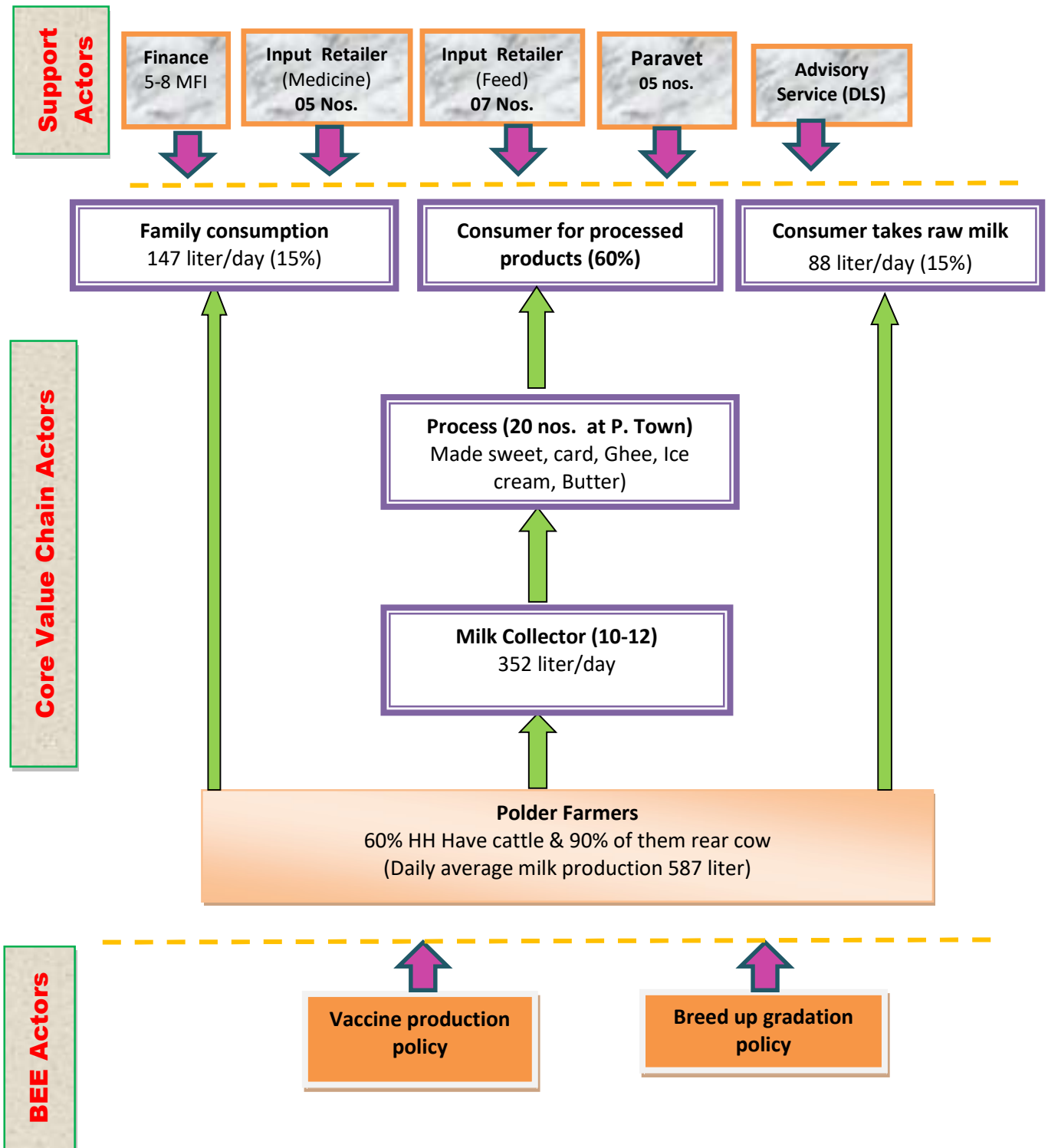
### **Dairy Potentiality:**

- 60-65% household have cattle at polder 43/2E which will come to 1653 - 1,700 HH
- Among the cattle rearing family 90% have dairy cattle and thus about 1488 HH have dairy cattle.
- The motivation of cattle rearing is that farmer family can utilize their time economically, utilize their food residues, like- rice bran, straw, rice water (Mard) etc.
- Every year farmer get one calf from their cow
- This intervention provides a regular income opportunity. There is no other lucrative intervention for the polder farmers to get regular cash.
- Farmer get milk with minimum care, management and feed.
- Average milk production is 1-1.5 liter per day with 4.5% fat.
- About 95% farmer rear indigenous type of cattle which is very much adopted with the local environment
- More than 20 milking men are dependent on milk marketing
- Cow milk, especially indigenous cow milk has great local demand. The lowest price is 45 taka per liter which some time rise to 120 taka.
- Milk has diversified use. Sweet, Ghee, Butter, Ice-cream, yogurt and curd is made of milk. Moreover, it is used in all types of deserts at home.
- A calf, two year age will be sold 15,000-20,000 taka. There is no other alternative for the farmer which can earn such a huge amount of money at a time. Farmer can utilize this money for any big investment, like – purchasing crop land, agricultural machine etc.
- Milk is protein source and it contributes in family nutrition
- Cow dung is a good source of compost and can be used in maintaining land fertility
- Cow dung can also be used in bio-gas production which is environment friendly

### **Constrain:**

- Poor health condition and low productivity of the cow
- Due to high price, farmers are not interested to provide concentrated feed for their cattle
- Lack of technical knowledge on feeding, management, health hygiene and disease
- Unavailability of quality veterinary service
- Unavailability of vaccine
- Lack of natural grass

## Dairy Value Chain Map



**Fig: Value chain Map of Dairy Milk for Polder 43/2E**

## 13 SWOT analysis of Polder 43/2E:

### Strength

- *1,300 ha cultivable fertile land with low salinity is potential for crop production.*
- *Enough or sufficient fresh water surrounding the polder which facilitate crop production*
- *Total wet land of this polder is 576 ha.of which 78 ha. is under aquaculture where 70 ha. is pond culture. 72% HH have pond (70.5 hac)*
- *Canal length is 39 km in the polder which is the source of irrigation and drainage (32 khals). It means there is about 21.66 meter khal or canal for per hacter of land in this polder.*
- *About 20 km embankment which is fairly good with 55 irrigation inlets, 02 outlet and 07 sluices.*
- *There is about 90 km road network and about 20 km embankment in this polder. The density of road is about 1 meter for per 5 decimal of land area in this polder.*
- *About 50% HHs have electricity coverage and about 98% HHs have access to mobile network. There is both PDB and REB electricity network.*
- *Within or surrounding the polder there is four brick field*
- *This polder is adjacent to the Patuakhali Pourosova and they are directly connected with the “Puran Bazar” which is the main wholesale market of the district.*
- *Among the polder dwellers about 55% are agricultural farmer. Besides, there is agriculture and non agriculture labour, fisherman, small traders, service providers, service holders etc in this polder.*
- *literacy rate is 45.98%*
- *UP office, sub register office, branch office of different MFI (micro finance institute) is providing service for the polder people.*
- *There are 12 WMGs, 02 WMC. These 12 WMGs have 2,50,000 taka bank deposit and 50,000 taka investment.*
- *Four WMGs have agricultural machine- power tiller, low lift pump and thrasher.*
- *There are six saw mills, four rice mill and two bakeries in this polder.*

## Weaknesses

- *There is no skill labour in the polder, only some agri-machine operator, motor mechanics.*
- *Among 90 km road, 70 km is kacha which is difficult for communication in rainy season.*
- *Some khals got silted up, that slows down drainage flow.*
- *Lack of Killa (shelter for livestock) and no cyclone centre.*
- *Limited number of surplus products and absence of commercial farmer.*
- *Traditional cultivation practice*
- *Fully agriculture based economy*
- *Shortage of capital*
- *Lack of technical knowledge on modern or improved cultivation practice*
- *Salinity problem in dry season and*
- *Low land and susceptibility of water logging*
- *Shortage of young work force in the polder*
- *Lack of leadership, transparency, accountability of the WMGs and week record keeping*

## Opportunities

- *Surrounding rivers is the mean of livelihood for many polder dwellers. It also provides a cheapest way of transportation and communication which may accelerate the business in this area.*
- *Closeness to the district town and wholesale market is a blessing for product marketing and alternative livelihood option.*
- *Blue Gold program is an opportunity for the polder dwellers which will help to develop their livelihood status through increasing production by utilizing water resource any business linkage.*
- *Blue Gold Program has plan for re-excavation of different canals and repairing of some*

*water infrastructure in this polder in the next year*

- *Blue Gold program is developing poultry vaccinator, livestock worker which will ensure availability of quality service in competitive price.*
- *DAE, DoF, DLS and BWDB is the partner of Blue gold program which will enhance the linkage for local economic development*
- *Skill service providers and large actors are available in the district town which is adjacent to the polder*
- *Seasonal migration is common in this polder. Migrated people may return with improve skill and idea.*
- *Different micro finance institutes are providing loan to polder women*
- *Different programs are providing skill development training for polder dwellers*
- *WMG has capital which the can use for different IGA development*
- *WMG leaders has access to different Government agencies, like- DAE, DoF, DLS which will enhance the availability of quality service for the polder dwellers and thus may help in economical growth.*
- *BADC has established an underground irrigation network through pipeline in this polder*
- *Presence of different industry in this region, like- fish processing centre (nirala at Patuakhali), fish hatcheries (Bay of Bangal at Barguna), food processing centre (Amrita at Barisal) is an opportunity for agricultural development and business development.*
- *Availability of electricity is an opportunity for development of different micro and small industry or processing units where it will be possible to process different available products.*
- *“Puran Bazar” is one of the largest wholesale market is adjacent to the polder.*
- *Productivity of different crops, like- T.Aman, Mung, poultry etc is still very low due to different reasons. So there is an opportunity to increase productivity.*
- *Different financial institutes are closer to the polder.*
- *Presence of other development programs in the area, like- IAPP, FAO, BRAC, BCUP etc.*

## Threats

- *Price fluctuation and unstable agricultural market*
- *There is no arrangement for quality assurance of agricultural inputs, like- seed, fertilizer, pesticide etc.*
- *During rainy season communication is disrupted as 70 km is kacha road out of 90 km.*
- *This area is very much prone to natural disaster*
- *Political unrest*
- *syndicates control the market*
- *Different relief and asset transfer project or program distort the market*
- *Sudden outbreak of disease and pest*
- *Malpractice of adulteration*
- *Outmigration of work force for livelihood create shortage of agricultural labour*
- *Sudden policy change*
- *Limited scope for storage facilities*

## 14 Value Chain Matrix:

In polder 43/2E we have found some potential crops considering HH involvements, volume of production and money earning scopes. The products are T. Aman, Vegetable, sesame (cowpea), sunflower, Tilapia, native poultry, cattle, chili, Mung bean, coconut and banana. Among the products we have primarily selected three products for Value chain development through a matrix. The matrix and its rational of scoring under each area has been discussed below.

Blue Gold Program Matrix for Value Chain Selection Potential product of Polder 43/2E																					
Criteria	Indicate market level (Local, District, Regional, National, International)	Growth Potential (32)					Impact (32)					Structure of the Industry (15)				Gender & Employmen		Collecti	Risk	Total Weig hted Value	Rank
		Market Size	Unmet demand	Potential productivity improvement	Expansion area / capacity	Value adding material	Current production	Number of household involved	Contribution to HH income and wealth	Share of laborer / producer / artisan	Food Security	Nutrition	Forward/backward linkage	Existence of service providers	Favorable business environment	Other program / intervention	Involvement of women	Employment generation	Collective Action Organization		
Weight		7%	6%	6%	7%	6%	5%	5%	6%	5%	6%	5%	5%	4%	4%	2%	3%	8%	4%	100%	
T Aman	National	5	1	5	0	1	5	5	5	3	1	3	5	3	5	0	1	1	1	2.71	5th
Cowpea (Keshari)	National	1	1	3	1	1	1	0	3	3	1	3	3	1	3	0	3	1	1	1.73	10th
Til (Sesame)	International	3	5	3	3	3	1	0	1	3	1	3	3	1	3	0	1	1	1	2.07	7th
Mung bean	National/International	3	5	5	3	3	3	5	5	5	1	3	5	3	5	5	3	3	3	3.66	2nd
Sunflower	International	1	3	3	5	3	1	0	3	3	1	3	0	0	0	3	1	5	1	2.14	6th
Chilli	National	3	1	1	1	3	1	3	1	3	1	5	3	1	1	1	3	1	1	1.94	8th
Vegetable	District	5	3	5	3	1	1	3	3	1	5	5	3	3	3	5	3	0	3	2.96	4th
Banana	National	1	3	3	1	1	1	3	1	3	1	5	1	1	1	0	1	0	1	1.54	11th
Coconut	District	1	1	1	1	1	1	3	1	1	1	1	1	1	0	0	0	0	0	0.87	12th
<b>Aquaculture</b>																				0	
Tilapia	National	3	3	5	5	5	3	3	3	5	3	5	3	3	5	5	3	1	3	3.54	3rd
<b>Livestock</b>																				0	
Native poultry	Regional	5	5	5	5	1	5	5	3	5	3	5	3	3	5	5	5	0	3	3.86	1st
Cattle	National	3	3	3	3	1	1	3	3	1	1	3	3	1	1	1	1	1	1	1.94	9th

Blue Gold Business Development component has developed a comprehensive guideline for value chain selection through matrix. Total score for a product is estimated 100. The team has identified some parameters or variables and fixed up a weight against each of these parameters.



## Scoring Guideline for Value Chain Matrix

### 1. Growth Potential (32)

-**Present Market size(7)**: local, regional, national, or international level of envisaged end-market has been defined, consider volume, or value of the market to compare, cereals are usually large volumes & values = 5, but scavenging eggs are low volume & value in comparison = 1,

-**Unmet market demand (6)**: is the demand trend increasing, does the market growth by a high %, do you recognize any potential for quick expansion, do buyers clearly seek more than the supply available, than we score this 5, markets who only grow on the basis of population growth get 1, and market demand that is decreasing, some products get out of our diet or are replaced by substitutes =0

-**Productivity Improvement (6)**: do we know of accessible technological (broad sense) improvements? If no potential to improve productivity, score =0, very limited potential (<10%)=1, Medium potential(10-19%) = 3, High potential to increase productivity ( $\geq 20\%$ ) =5

-**Expansion of areas/capacity (7)**: If no scope to expand, e.g. T. Amman rice score =0, very limited scope (<10%) =1, Medium scope (10-20%)= 3, High potential ( $\geq 20\%$ ) e.g. winter crops where cropping intensity is still very low due to infrastructure constraints=5

-**Value Addition (6)**: the potential for farmers or small or micro enterprises to add value and increase earnings locally would score 5, if it requires a much larger investment by a processor at regional level =3 or even 1, when technically there is no value addition possible =0. If no value addition possible, score =0, very limited chance =1 (<10%), Medium potential (10-19%)= 3, High potential ( $\geq 20\%$ )=5

### 2. Impact(32)

**Current production(5)**: the % of the land presently under cultivation of this crop, or the present scale (scavenging versus large broiler farms) or volume of production sets the foundation for the level of impact that can be expected. T. Aman is produced on nearly 100% of the area available =5, a crop that only commands a very small percentage of the area =1 and a crop that still needs to be introduced =0, If a crop is produced on say around 50% of land then score=3

**No. of HH Involved (5):** If less than <5% HH Involved, score =0, involvement by (5-20%) =1, by (20-60%)= 3, High potential (>60% )=5 (explanations are similar as above)

**Contribution to HH income(6):**consider the present versus potential contribution to HH income (contribution to yearly income as %), score =0 (only loss making produce), very limited potential to contribution (>5%) =1 (a produce which will always be low in volume, and value despite productivity improvements), Medium potential (6-25%)= 3, High potential (>25%)=5,

**Seasonality-Short or long harvesting season(5):** Short peak harvesting window, in combination or not of being perishable, or yearlong production with regular income makes a big difference to HH financial situation. A product with a short critical harvesting window, moreover being a perishable product having to be sold rapidly score =0, if short harvesting period but not perishable =1, while a crop with a lengthy harvesting period say milk =3, while the permanent production like betel leaf =5

**Food Security (6): is it a food crop contributing to food security (availability and access in the polder)?** If no impact on food security as non-food product score =0, a food product already being produced locally in surplus has very limited impact opportunity =1, Medium potential for impact= 3, a food crop which regularly has to be imported to maintain food security in the area, has high potential to impact=5

**Nutrition -potential of increasing Nutrition intake (5):** some product which is needed to ensure proper nutritional food intake, e.g. some micro elements usually in shortage should score high; If no impact possible on nutritional intake (e.g. no food crop) , score =0, very limited potential =1, Medium potential = 3, High potential =5 e.g. moringa with recognized high nutritional value.

### **3. Structure of the Industry (15)**

**Forward/backward linkage and MD Approach (5):**Consider existence of lead firms, in either inputs, processing or marketing, the suitability of these actors and ease of getting them involved, will determine potential. If no potential for Market linkage or development approach, e.g. due to complete absence score =0, very limited potential =1, Medium potential = 3, High potential =5

**Existence of Service Providers (4)**: Similar to above, existence and performance of public and private service providers to the value chain actors. If no existence for SP, score =0, very limited presence (1/2) =1, Medium presence (2-5)= 3, High existence (>5) =5

**Favorable Business Environment(4)**:Consider relevant issues in the BEE. Absence of constraints or existence of support measures to doing business scores high, the extent of government involvement distorting the market could be negative. If business environment is obstructive in several ways score =0,score higher in accordance with the business environment being more developed (e.g. aquaculture standards are available) and supportive (any subsidies, high on government policy priorities) or not.

**Other program Interest(2)**: The extent there are opportunities for coordination, complementary action and synergy with other local programmes. If no NGO/Orgn working in the same sector, score =0, very limited presence (1-2) =1, Medium presence (3-5)= 3, High presence (>5)=5

#### **4. Gender and Employment (17)**

**-Involvement of women (9)**:Focus is on the contribution to women empowerment, not just more work while they are already overburdened and only would be to the detriment of the family. Aim is to give them for example an opportunity to retain income.If no women involvement potential, score =0, very limited potential =1, Medium potential = 3, High potential =5

**Employment Generation (8)**:Labour intensity of the envisaged intervention (could be area expansion, adding value, productivity increase). Number of employment creation, the type (quality) of employment and opportune timing thereof. If no potential for employment generation, score =0, very limited potential (<5%)=1, Medium potential (5-10%)= 3, High potential (>10%)=5

#### **5. Collective action opportunities (4)**: Does this product lend itself to Business ideas for cooperatives, on the input or market side, and producer groups benefitting of doing these collectively.

If no opportunities for collective action (working in collaboration/ as cooperatives), score =0, very limited potential =1, Medium potential = 3, High potential =5

## 15 Rational of Scoring

We, Blue Gold team have developed a matrix for selecting of most potential value chain in a defined area. We have considered eighteen (18) areas for scoring and we have also provided a weight for each area or criteria. The scoring range is from 0 to 5. Options will be limited to 0, 1, 3 & 5 only. So, the total score will also be from 0 to 5.

For Polder 43/2E, we have found T. Aman, cowpea (keshari), sesame, Mungbean, sunflower, chili, vegetable, banana, coconut, Tilapia, native chick and cattle as mostly grown crop in this area.

Using the “value chain selection matrix” we found “native Poultry” as the most potential for value chain development. Mungbean and Tilapia have scored second and third consequently. The rational of scoring is given below.

### **Market Size:**

<b>Score 5</b>	<b>Score 3</b>	<b>Score 1</b>
<i>T. Aman, Vegetable</i>	<i>Sesame, Tilapia, native poultry, chili, Mung bean, cattle</i>	<i>Cowpea (keshari), sunflower, banana, coconut.</i>

- *Cereal is consumed by 100% people of our country. It has both national and international market. So, we will score “5”. Similarly, almost every family of our country consumes vegetable throughout the year. But the supply can’t always keep pace with the demand and the price may climb to double or even triple from normal time. Vegetable has also international market and presently it is exporting from our country.*
- *Sesame, Tilapia, native poultry, chili, Mung bean and cattle have not national demand but not regular. So the market size is low compared to rice and vegetable. Moreover, sesame, Mung and beef have international market. This is why we score 3 for this group of product.*

- *Banana and coconut are not a part of daily food. Occasionally, people consume it. Cowpea (keshari) and sunflower is also very low national demand and they have alternative, like- different pulses and different oil seeds. So, the market size is very limited and we score “1” for it.*

**Unmet Market Demand:**

<b>Score 5</b>	<b>Score 3</b>	<b>Score 1</b>
<i>Mung bean, Sesame, native poultry</i>	<i>Sunflower, Vegetable, Banana, Tilapia, Cattle</i>	<i>T. Aman, Cowpea, Chili, Coconut</i>

- *The demand for both Mung bean, sesame and native poultry is increasing. If present production increase by 300%, even then the market will not be saturated. Due to health consciousness demand for native poultry is very high. Market price of native poultry is almost double than commercial poultry. Local industry and international market have a great demand for mung bean and sesame. Buyer are contracting and even giving advance to ensure the supply of mung bean.*
- *As people are being conscious about nutrition, the demand for vegetable and banana is increasing day by day throughout the country. Still supply is rather lower than the demand. Of course variety is a great concern here. Some vegetable varieties have heavy demand, like- leafy vegetable, tomato, bitter gourd etc. Moreover, There is a great opportunities for exporting of vegetable.*
- *Sunflower oil is health friendly than the other available edible oil in our country. This is why its demand is increasing within the country. It has also an international market. It is only confined in the supper shops. Due to its taste, consumers prefer sunflower oil than sesame oil.*
- *There is also a huge gap between the demand and supply for Banana, beef and tilapia for family consumption. Besides, there is a scope for processing of these food items, there is a scope for further market expansion. So, these can score “3” compare to mung bean and native poultry.*

- *But in case of other products the gap between demand and supply is very low. If supply increase by even 25% it may be exceed the local demand and price may fall down.*

**Potential productivity improvement:**

<b>Score – “5”</b>	<b>Score – “3”</b>	<b>Score – “1”</b>
<i>T. Aman, Mungbean, Vegetable, native poultry, Tilapia,</i>	<i>Cowpea, Sesame, Sunflower, Banana, Cattle</i>	<i>Chili, Coconut</i>

- *Considering present productivity of different products in the polder 43/2E, this scoring has been done. Productivity of T. Aman, Mung bean, native poultry and Tilapia can be increased by double or even triple than the present production.*

*Aman farmer use only local variety and present production is only 20-22 mond (800-840 kg) per acre of land. Using of quality inputs, like- HYV seed, improving the trodution technology it is possible to produce even 50-60 mond which is available in other parts of our country.*

*Using of foundation seed, irrigation, improving of cultural practice it is possible to produce 8-12 mond per acre which is presently 5-6 mond per acre. This is also true for vegetable production in this polder. The dwellers produce vegetable in their homestead so that they can meet their family demand. They are usually reluctant about their vegetable garden. Using quality inputs, improving technical knowledge and using of the homestead more economically, it is possible to increase more than 50% production.*

*At present if a hen has 15 chicks, finally it comes to 1-3 on an average due to mortality. Ensuring vaccination, deworming and improving management practice it is possible to check the damage and thus improve the production. Farmers don't have practice to release fingerling considering layer and density. Moreover they have knowledge gap on aquaculture. Addressing these issues will help to increase production from per unit of pond.*

- *It is also possible to increase cowpea, sesame, sunflower, banana and cattle production in polder 43/2E. But the means is rather costly compare to poultry and mung bean.*
- *Chili and coconut is actually for their household consumption and farmers have less motivation to improve production.*

**Expansion of area:**

<b>Score – “5”</b>	<b>Score – “3”</b>	<b>Score – “1”</b>	<b>Score - “0”</b>
<i>Sunflower, native poultry, Tilapia</i>	<i>Mungbean, Vegetable, Cattle</i>	<i>Cowpea, Chili, banana, Coconut</i>	<i>T. Aman</i>

- *Sunflower is presently growing only in 1.5% land at polder 43/2E. In other 98.5% land there are different crops in Robi season. There is about 30-40% land where it is possible to grow sunflower in this season. But due to some constrains it is not expanding. Strengthening forward and backward linkage it is possible to increase the area.*
- *Due to susceptibility of disease and unavailability of vaccination and quality advisory service farmers rear one or two hen in their homestead. But it is possible to rear 3-5 adult bird in their present capacity which is also economical.*
- *Some farmers culture Tilapia in a mixed culture system. Due to its faster growth potentiality, it will be possible to expand in more 30-40% ponds, especially in the seasonal ponds.*
- *At present Mung bean covers 65% cultivated land in Robi season at polder 43/2E. There is very limited scope for area expansion because other is either more dry or wet. There is also limited scope for homestead vegetable production. As this is mostly a low land and water logging is a common phenomena for this polder, it is difficult to produce vegetable in the field. For cattle extra accommodation, care and feed is required. This is why there is limited scope for expansion. But many families don't have cattle at present although they have scope to rear one or two cattle.*
- *As T. Aman cover almost 100% land, there is no scope for area expansion.*

**Value Adding to raw Material:**

<b>Score – “5”</b>	<b>Score – “3”</b>	<b>Score – “1”</b>
<i>Tilapia</i>	<i>Sesame, Mungbean, Sunflower, Chili</i>	<i>T. Aman, cowpea, vegetable, banana, coconut, native poultry, cattle.</i>

- *In case of Tilapia local level value adding scope is much higher. Price differs up to 50% due to live and grade fish.*
- *Oil extraction is possible at local level from Sesame, Mung bean and Sunflower. Thus it is possible to get 20-30% extra income. The price of Mung bean differs upon its pod size and moisture content. So, local level value adding is possible. It is also possible to process dried chili at household level. Compare to Tilapia it is difficult as there is cost involvement, time consuming and storing risks.*
- *In case of T. Aman, cowpea, vegetable, banana, coconut, native poultry, cattle; local level value addition is not possible. It requires a much larger investment by a processor at regional level. Although farmers process T. Aman and Cowpea locally but this is mainly for consumption.*

**Current Production:**

<b>Score – “5”</b>	<b>Score – “3”</b>	<b>Score – “1”</b>
<i>T. Aman, native poultry</i>	<i>Mung bean, Tilapia</i>	<i>Chili, Sesame, Cowpea, Sunflower, Vegetable, Banana, Coconut, Cattle</i>

- *T. Aman cover almost 100% cultivable land of the polder and more than 90% households rear native poultry. So any intervention or development of these value chains will benefit the total dwellers of the polder.*
- *Only 72% HH have pond among them 30-40% culture Tilapia in their ponds. Mung bean is cultivated in 62% cropped area in the Robi season at polder 43/2E. It is clear that the area coverage by Mung bean and Tilapia is low compared to T Aman and native poultry and thus get score “3”*



- *But Chili, Sesame, Cowpea, Sunflower, Vegetable, Banana, Coconut, Cattle are cultivated in smaller area compared to other two categories.*

**Number of HH involved:**

Score – “5”	Score – “3”	Score – “1”	Score - “0”
<i>Native poultry, T. Aman, Mungbean</i>	<i>Tilapia, Chili, Banana, Coconut, Cattle, Vegetable</i>		<i>Cowpea, Sesame, Sunflower, ,</i>

- *About 100% HH involved with T. Aman cultivation, 90% with poultry rearing and about 65% with Mung bean production.*
- *About 30-40% HH involved with Tilapia, Chili, Banana, Coconut and Cattle rearing.*
- *Below 5% HH are involved with Cowpea, Sesame or Sunflower cultivation in this polder.*

**Contribution to HH Income:**

Score – “5”	Score – “3”	Score – “1”
<i>Mung bean, T. Aman</i>	<i>Cowpea, Sunflower, Vegetable, Tilapia, Native Poultry, Cattle</i>	<i>Sesame, Chili, Banana, Coconut</i>

- *Mung bean is the main cash crop in this polder. More than 90% pulse is sold. This is the main source of cash for about 50% dwellers of this polder and 65% HH of the agricultural farmer. Although T. Aman usually don't bring cash, but it prevent the main cash out flow and provide food security.*
- *Profit margin for Cowpea, Sunflower, Vegetable, Tilapia, Native Poultry and Cattle is good enough as management cost is almost nill. Farmers' income usually come from multiple sectors. In his total income these crops have medium contribution and thus scored “3”.*
- *If it is possible to provide better management; income or profit will increase slightly from Sesame, Chili, Banana and Coconut.*

**Production or harvesting Season:**

<b>Score – “5”</b>	<b>Score – “3”</b>	<b>Score – “1”</b>
<i>Mung bean, Tilapia, Native poultry.</i>	<i>T. Aman, Cowpea, Sesame, Sunflower, Chili.</i>	<i>Vegetable, Coconut, Cattle, Banana</i>

- *Native poultry have year round production with regular income. Moreover, poultry egg can be stored for about 20 days. Mung bean has very short harvesting period but it can be stored for a long period. From perennial ponds it is possible to get table Tilapia throughout the year. Considering these criteria we score them “5”.*
- *T. Aman, Cowpea, Sesame, Sunflower, Chili has longer harvesting period compare to Mung bean.*
- *For Banana and coconut the harvesting period is so longer. For fattening it requires more than 6 months in country method (natural feeding plus slight supplementary). Sometime it requires 2-3 years to be salable. Vegetable is very much perishable and it usually mature or harvest in a same period. So there is always a scope for low price at harvesting time.*

**Food Security:**

<b>Score – “5”</b>	<b>Score – “3”</b>	<b>Score – “1”</b>
<i>Vegetable</i>	<i>Native poultry, Tilapia</i>	<i>T. Aman, Cowpea, Sesame, Mung bean, Sunflower, Chili, Banana, Coconut, Cattle.</i>

- *Considering the expectation of intake for the polder dwellers rice, vegetable, salt, oil and fish are the main items for their food security. In this context, vegetable production is still much below than the demand. In local market more than 70% vegetable come from outside. Polder dwellers can meet two-third of their vegetable demand from their homestead production. Although this intake is much lower than the requirement. Moreover, vegetable contains many essential micro elements. Some micro nutrient should intake regularly as they are not stored in the body, water soluble vitamins. As vegetable is cheap, dwellers like to take vegetable with rice almost regularly.*

- *Poultry and fish (Tilapia) is the source of protein. Their present protein intake is much lower than the requirement. But it is not essential to intake in a regular manner.*
- *Rice production is almost sufficient in the polder. So here is less scope to contribute for food security. Other potential crops, like- Cowpea, Sesame, Mung bean, Sunflower, Chili, Banana, Coconut, beef has little demand. Therefore, there is many available alternatives.*

**Nutrition:**

<b>Score – “5”</b>	<b>Score – “3”</b>	<b>Score – “1”</b>
<i>Chili, Vegetable, Banana, Tilapia, Native poultry</i>	<i>Sunflower, T. Aman, Cowpea, Sesame, Mung bean, Cattle.</i>	<i>Coconut</i>

- *Among the polder dwellers, micro-nutrient deficiency and protein deficiency is high. Especially, females are suffering for vitamin C and iron. Chili and Vegetable contain huge Vit. C and Banana contain enough iron. Tilapia and Native poultry are the source of protein. This is why we score “5” for these food items.*
- *Cowpea, Mung bean and beef are the source of protein but its production and demand gap is very low. In some cases production of these crops are surplus. T. Aman is carbohydrate source and sometime intake is more than requirement. Sunflower and sesame is oil source and requirement is comparatively low.*
- *Coconut have potassium source and the requirement is very low. Deficiency is not makeable among the polder dwellers.*

**Forward & Backward Linkage:**

<b>Score – “5”</b>	<b>Score – “3”</b>	<b>Score – “1”</b>	<b>Score - “0”</b>
<i>T. Aman, Mung bean</i>	<i>Cowpea, Sesame, Chili, Vegetable, Tilapia, Native Poultry</i>	<i>Banana, Coconut, Cattle</i>	<i>Sunflower</i>

- This region is the main Mung producing belt which contributes about 70% of the total production. There is processing industry that consumes Mungbean at Barisal. Market actors are available and pro active. BARI has developed different HYV and DAE is disseminating the technology. All inputs are available and service quality is fairly good. Only problem is “accessibility” where there is scope for development. In case of Mung bean all inputs are available, service system is efficient and market actors are available. Besides, government also purchases rice. As forward and backward market actors are available and linkage is also good we give them score “5”.
- Although polder dwellers produce Cowpea, Sesame, Chili, Vegetable, Tilapia and Native Poultry but the lion share is consumed by themselves. There is very limited volume for the market. Same condition for cattle. Farmers only give then straw, rice residue, bran, natural grass and sometime oil cake which is available to them. Service quality is poor. Moreover, input (vaccine, artificial semen) and service are not available. This is why both forward and backward linkage is very weak compared to Mung and rice.
- For banana and coconut farmers don't use any inputs. Usually farmer seldom sells it. So there is no formal market for them.
- Sunflower has no formal market. There is also no input or output actor for sunflower. BRAC is playing the role at present in this area.

**Existence of Service Providers:**

Score – “5”	Score – “3”	Score – “1”	Score - “0”
-	T. Aman, Mung bean, Tilapia, Native Poultry, vegetable.	Cowpea, Sesame, Chili, Banana, Coconut, Cattle	Sunflower

- Farmer need advisory service, financial service, tillage or mechanization service etc for their production. For T. Aman, Mung bean, Tilapia, Native Poultry and vegetable there is both public and private service providers. But there is quality and availability problem. This is why we have given score “3”.
- The service for Cowpea, Sesame, Chili, Banana and Coconut is poor. The service providers have knowledge limitation. As the number of farmer is comparatively fewer than the above, there is a very limited service provider. The number of cattle service providers is also very few.
- There is no service provider for sunflower.

**Favorable Environment:**

Score – “5”	Score – “3”	Score – “1”	Score - “0”
T. Aman, Mung bean, Tilapia, Native Poultry	Cowpea, sesame, Vegetable	Chili, Banana, Coconut, Cattle	Sunflower

- *Paddy is the highest concern for the Government. For increase its production Govt. is providing subsidy in diesel and fertilizer, priority in electricity supply and bank loan. After harvesting Govt. also purchase paddy from the farmers and fixed a minimum rate.*  
*DAE has different program for Mungbean extension. Research institute has research program. Government is providing subsidy to vaccine for poultry development. For poultry sector development have specific policy. Avian influenza cell is active to prevent and eradicate this disease. DoF and FRI is working for Tilapia extension a improvement. Government is providing tax exemption/reduction for total aquaculture. Beside world fish is working for Tilapia hetchary improvement through skill development. So, there is a favorable environment for the growth of T. Aman, Mung bean, Tilapia and Native Poultry.*
- *Government has different program for extension of Cowpea, sesame and Vegetable. Government also has provided soft loan for these products. But reluctance is found for execution of the facilities or the stakeholders are not serious about these crops.*
- *For sunflower there is no such provision.*

**Other Program Interest:**

Score – “5”	Score – “3”	Score – “1”	Score - “0”
Mung bean, Vegetable, Native poultry, Tilapia	Sunflower	Cattle, Chili	T. Aman, Cowpea, Sesame, Banana, Coconut

- *In almost every development program in this polder has poultry and vegetable intervention. Blue Gold Program is providing technical knowledge through FFS on*

poultry, vegetable and aquaculture. IAPP, FAO, World fish are working on Vegetable, Native poultry and Tilapia. DAM and other organization are working on Mung in this region. Government has also taken initiative for the development of Mung bean in this region. Considering their involvement and coverage “Mung bean, Vegetable, Native poultry and Tilapia” crop group has the most preference to other development program.

- BRAC is working with Sunflower. But their coverage is limited.
- Blue Gold program is providing technical knowledge on cattle rearing and developing paravet to provide service. Different NGO is working on cattle development as a mean of livelihood development. Government has fodder development program which will enhance the growth of livestock subsector in this area. AFE is working on chili. Government has program on spice sub sector development. But these are weak program and not enough for measurable development. So we score them “1”.
- For the development of T. Aman, Cowpea, Sesame, Banana and Coconut there is no such type of program from NGO or government.

**Involvement of Women:**

Score – “5”	Score – “3”	Score – “1”	Score - “0”
Native poultry	Cowpea, Mung bean, chili, vegetable, Tilapia	T. Aman, Sesame, Banana, Sunflower, Cattle.	Coconut

- Native poultry is solely a women intervention. Women are responsible for rearing, management, treatment and marketing. Moreover, she has control over this income with some rare exception. So it will score “5”.
- Women are fully involved in harvesting of Mung bean, cowpea, vegetable and chili. These create employment opportunity for women. In aquaculture women are mainly involved with feeding management. Here, their involvement is comparatively short than poultry. Man is involved in marketing.
- In T. Aman, Sesame, Banana and Sunflower production women are mainly involved in post harvest management. But the scope is comparatively limited than the previous group.
- In case of coconut there is no scope for women involvement.

**Employment Generation:**

Score – “5”	Score – “3”	Score – “1”	Score - “0”
Sunflower	Mung bean,	Cowpea, chili, Tilapia, Cattle, Sesame, T. Aman	Vegetable, Banana, Coconut, Native poultry.

- *Sunflower is labour intensive crop. Labour is not only required for land preparation, sowing and postharvest management but also for inter culture management. So there is a great potentiality for employment generation.*
- *Mung bean required paid labour for harvesting where almost 90% are women.*
- *Cowpea, sesame and chili require labour for harvesting. Considering the present production volume of the polder these crops contribute less in employment generation and also there is low potentiality for employment generation. Paid labour is used only for harvesting of Aman and sesame in maximum cases. For cattle and Tilapia mainly family labour is used.*
- *There is no employment scope for Vegetable, Banana, Coconut or Native poultry.*

**Collective Opportunity:**

Score – “5”	Score – “3”	Score – “1”	Score - “0”
-	Mung bean, Vegetable, Native poultry, Tilapia.	T. Aman, Cowpea, Sesame, Sunflower, Chili, Vegetable, Banana, Cattle	Coconut

- *Considering the present production volume and household involved, there are considerable or limited opportunities for collective action for the potential crops of this polder. Among them Mung bean, Vegetable, Native poultry and Tilapia have most potentiality for collective action. In case of poultry there is possibility for collective action for input (vaccine) and marketing, as per household production is very low. There is possibility for collective action for input (seed) collection and marketing. Farmer can also develop producer group for cluster formation which will attract market actors and service providers. This is also possible for Tilapia and vegetable*

*as maximum farmers are small producers. Considering these possibilities there is better opportunities for collective action.*

- *As production volume for Cowpea, Sesame, Sunflower, Chili, Vegetable and Banana is low there is limited scope for collective action. T. Aman is mainly for consumption and farmer sell the surplus as per their need. Farmers also sell their cattle as per their need. Scope for collective action is input, like- seed, feed and vaccination service.*
- *There is no scope for collective action for coconut.*

***Interpretation of Matrix analysis:*** *On the basis of matrix analysis we primarily can select the top three scorer products- Native poultry, Mungbean and Tilapia for polder 43/2E for value chain development.*