

Fig. 4.3 Location of Prioritized Subprojects in Jamalpur District

APPENDIX

UPAZILA WISE SUMMARY OF UNION QUESTIONNAIRE

Table : Summary of Upazila wise Data for Jamalpur District

GeoCode No	Type of Data	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied		
Upazila Name	(T:Total)	Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari				
1.	OUTLINE OF FIELD CONDITION (Expected to be answered by Upazila Engineer):											
1.2.	Land and Land Use											
1.2.1	Total Area of Union	acre	T	112,178.29	59,522.75	84,713.95	111,107.71	42,670.31	57,334.20	56,935.35	524,463	94.1%
1.2.2	Total Forest Area	acre	T	-	580.00	375.00	2,207.00	670.42	875.79	-	4,708.21	69.1%
a	Government reserve forests	acre	T	-	212.00	-	1,769.70	126.00	217.23	-	2,324.93	72.1%
b	Homeslead Area	acre	T	332.20	1,530.00	1,122.00	941.00	907.32	1,058.22	1,055.10	6,945.84	91.2%
1.2.3	Wet lands	acre	T	7,520.00	2,253.00	14,470.75	5,290.35	4,997.19	1,904.15	2,206.25	38,641.69	98.5%
1.3.	Demography (2001)											
1.3.1	Total Population		T	248,594	244,660	410,995	478,220	229,921	343,643	299,286	2,255,319.17	100.0%
1.3.2	Female Ratio	%	A	52.31	51.49	55.45	51.60	51.93	51.24	51.52	52.22	100.0%
	Male Ratio	%	A	47.69	48.51	45.05	48.40	48.07	48.76	48.48	47.85	100.0%
1.3.3	Population more than 18 years old		T	128,575	121,817	169,769	261,945	109,051	194,305	209,752	1,195,214.00	100.0%
1.3.4	Annual Growth Rate	%	A	1.97	2.10	1.97	1.69	15.61	1.63	1.58	3.79	94.1%
1.3.5	Literacy	(%)	A	48.66	37.43	41.84	46.13	48.00	42.64	39.88	43.51	100.0%
1.4.	Social Infrastructure											
1.4.1	Number of Primary Schools											
	Primary School	in No.	T	123	106	146	173	133	132	96	909	100.0%
	Madrasa	in No.	T	32	33	45	73	24	58	49	314	97.1%
1.4.2	Number of Primary Health Care Centers	in No.	T	25	9	26	18	30	19	22	149	86.8%
1.4.3	Rural Water Supply											
a	Number of Community Wells		T	18,996	20,614	38,571	40,260	24,985	45,882	21,234	210,542	94.1%
b	Quality of domestic water (such as arsenic or other contamination)											
	Yes	%	A	7.17	5.50	19.00	3.93	58.20	7.20	8.63	110	85.3%
	No	%	A	-	-	-	-	-	-	-	-	14.7%
1.4.4	Total Household	Nos.	T	49,375	38,950	82,708	98,926	43,727	36,790	42,447	392,923	88.2%
1.4.5	% of electricity installed household	%	A	25.00	17.79	41.80	48	7.71	35.44	26.57	28.88	89.7%
1.5	Is there any BWDB Project in your Union?											
	Yes (No. of Unions answered)		C	0	1	5	3	3	1	3	16	23.5%
	No (No. of Unions answered)		C	7	5	5	12	4	5	4	42	61.8%
2.	FARM MANAGEMENT DEVELOPMENT (to be											
2.1	General idea of agricultural development											
2.1.1	Cropping Pattern											
	Considering the favorable natural and agro-ecological										0	0.0%
	Yes (No. of Unions answered)		C	5	8	9	15	6	11	8	62	91.2%
	No (No. of Unions answered)		C	0	-	-	-	-	-	-	-	0.0%
2.1.2	There are various constraints in the development of agriculture in Bangladesh. Please assess the constraints farmers are facing in your Union by the following items in your opinion. Constraints											
(1)	Limitation of agricultural land											
1)	Serious (No. of Unions answered)		C	0	-	-	-	1	2	-	3	4.4%
2)	Medium (No. of Unions answered)		C	5	3	1	1	2	6	1	19	27.9%
3)	Low (No. of Unions answered)		C	2	5	8	14	4	5	7	45	66.2%
2	Improved seeds											
1)	Serious (No. of Unions answered)		C	0	-	-	-	-	-	-	-	0.0%
2)	Medium (No. of Unions answered)		C	4	4	3	8	4	-	4	27	39.7%
3)	Low (No. of Unions answered)		C	3	4	9	7	3	10	4	40	58.8%
3	Irrigation water supply in dry season											
1)	Serious (No. of Unions answered)		C	1	4	-	6	2	3	2	18	26.5%
2)	Medium (No. of Unions answered)		C	4	3	9	7	4	5	4	36	52.9%
3)	Low (No. of Unions answered)		C	2	1	3	2	1	3	2	14	20.6%
4	Flood damages in monsoon season											
1)	Serious (No. of Unions answered)		C	6	8	12	10	7	11	6	60	88.2%
2)	Medium (No. of Unions answered)		C	1	-	-	5	-	-	2	8	11.8%
3)	Low (No. of Unions answered)		C	0	-	-	-	-	-	-	-	0.0%
5	Less development of land preparation											
1)	Serious (No. of Unions answered)		C	1	1	1	-	-	-	-	3	4.4%
2)	Medium (No. of Unions answered)		C	3	7	10	12	5	10	7	54	79.4%
3)	Low (No. of Unions answered)		C	3	-	1	3	2	2	-	11	16.2%
6	Less development of agricultural technology											
1)	Serious (No. of Unions answered)		C	0	2	-	1	-	-	1	4	5.9%
2)	Medium (No. of Unions answered)		C	3	-	3	4	3	1	5	19	27.9%
3)	Low (No. of Unions answered)		C	4	6	8	7	4	10	2	41	60.3%
7	Low inputs (fertilizer, chemicals, capital, labour)											
1)	Serious (No. of Unions answered)		C	0	1	-	-	3	-	2	6	8.8%
2)	Medium (No. of Unions answered)		C	3	2	4	4	-	5	5	23	33.8%
3)	Low (No. of Unions answered)		C	4	5	7	9	4	5	1	35	51.5%
8	Constraints in marketing											
1)	Serious (No. of Unions answered)		C	1	2	-	3	2	4	1	13	19.1%
2)	Medium (No. of Unions answered)		C	5	5	6	11	3	6	5	41	60.3%
3)	Low (No. of Unions answered)		C	1	1	5	2	2	-	2	13	19.1%
9	Less crop diversification											
1)	Serious (No. of Unions answered)		C	3	6	7	10	3	7	5	41	60.3%
2)	Medium (No. of Unions answered)		C	4	2	5	3	2	4	2	22	32.4%
3)	Low (No. of Unions answered)		C	0	-	-	1	2	-	1	4	5.9%
10	Mechanization											
1)	Serious (No. of Unions answered)		C	2	6	11	9	3	10	8	49	72.1%
2)	Medium (No. of Unions answered)		C	4	2	-	6	3	-	-	15	22.1%
3)	Low (No. of Unions answered)		C	1	-	1	-	1	1	-	4	5.9%
2.2.	Collection of data/ information on agricultural fields including processing, preservation and marketing.											
2.2.1	Breakdown of farm holdings by size by the same category as Upazila in Percentage											
	Landless	%	A	23.26	24.25	26.28	22.87	17.74	24.86	29.22	24.07	95.6%
	0.05- 0.49	%	A	30.94	22.31	27.98	31.00	23.64	31.12	24.86	27.41	95.6%
	0.50- 0.99	%	A	20.36	17.22	16.86	20.43	17.92	19.46	21.79	19.15	95.6%
	1.00- 1.49	%	A	9.09	13.74	10.51	11.18	15.11	10.51	10.97	11.59	95.6%
	1.50- 2.49	%	A	8.16	10.17	6.91	6.67	9.66	6.07	6.58	7.75	95.6%
	2.50- 7.49	%	A	5.44	7.38	5.12	4.40	7.85	5.15	3.92	5.61	95.6%
	7.50 - 14.99	%	A	2.44	3.44	4.36	2.30	3.15	2.05	1.80	2.79	94.1%
	15.00 - 24.99	%	A	1.44	1.64	3.00	0.59	2.42	0.57	0.38	1.44	86.8%
	25.00 & above	%	A	-	-	3.22	0.53	1.26	2.30	-	1.83	27.9%
	Total (100)	%	A	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	97.1%

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GeoCode No		Type of Data (T:Total,)	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied	
Upazila Name			Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari			
2.2.2 Classification of land and cultivated crops in farm												
(1) Area of Inundation Type in %												
	Highland (0-30)	%	A	12.09	11.49	11.89	14.56	10.52	10.73	11.74	89.7%	
	Med. Highland (30-90)	%	A	35.56	28.68	33.87	35.23	33.65	29.11	32.10	91.2%	
	Med Lowland (90-180)	%	A	41.38	38.53	42.27	39.89	34.54	39.67	39.35	91.2%	
	Lowland (above 180)	%	A	7.56	14.22	7.73	6.97	17.61	16.82	12.06	91.2%	
	Very lowland (above 180)	%	A	3.41	7.09	4.27	3.26	9.56	3.48	5.57	91.2%	
	Total (100)	%	A	100.00	100.00	100.00	100.00	100.00	100.00	100.00	98.5%	
2.2.3 Crop Production												
2.3.1 Type of crop rotation												
(1) Type A												
	1) Name of crop		Cropl	Mustard	Mustard	Mustard	Mustard	Mustard, Chilli	Mustard	Mustard	100.0%	
	Date of sowing/transplting			Oct	Oct	Oct	Oct	Oct	Oct	Oct	98.5%	
	Date harvesting			Nov	Nov	Nov	Nov	Nov	Nov	Nov	97.1%	
	2) Name of crop			Boro	Boro	Boro	Boro	Boro	Jute	Boro	100.0%	
	Date of sowing/transplting			Dec	Dec	Dec	Dec	Dec	Mar	Dec	98.5%	
	Date harvesting			Feb	Feb	Feb	Feb	Feb	May	Feb	98.5%	
	3) Name of crop			B Aman	B Aman	B Amab	Boro	Rice, Aman	T. Aman	Vegetables	97.1%	
	Date of sowing/transplting			Apr	Apr	Apr	Apr	Apr	Apr	Jun	92.6%	
	Date harvesting			May	May	May	Sep	May	May	Sep	88.2%	
	4) Share	%	A	60	65	60	60	45	55	57	95.6%	
	Total (100)									57.43		
(2) Type B												
	1) Name of crop			Wheat	Wheat	Wheat	Wheat	Wheat	Wheat	Wheat	100.0%	
	Date of sowing/transplting			Nov	Nov	Nov	Nov	Nov	Nov	Nov	100.0%	
	Date harvesting			Dec	Dec	Dec	Dec	Dec	Dec	Dec	100.0%	
	2) Name of crop			Jute	Jute	Jute	Jute	Jute	Boro	Jute	100.0%	
	Date of sowing/transplting			Mar	Mar	Mar	Mar	Mar	Mar	Dec	100.0%	
	Date harvesting			Apr	Apr	Apr	Apr	Apr	Mar	Apr	100.0%	
	3) Name of crop			Vegetables	Vegetables	Vegetables	Vegetables	Vegetables	Aman	Vegetables	97.1%	
	Date of sowing/transplting			Jul	Jul	Jul	Jul	Jul	Apr	Jul	94.1%	
	Date harvesting			Sep	Sep	Sep	Sep	Sep	Jun	Sep	94.1%	
	4) Share	%	A	32	25	30	30	35	35	32	95.6%	
	Total (100)									31		
(3) Type C												
	1) Name of crop			Vegetables	Vegetables	Vegetables	Vegetables	Vegetables	Vegetables	Vegetables	100.0%	
	Date of sowing/transplting			Oct	Oct	Oct	Oct	Oct	Oct	Oct	100.0%	
	Date harvesting			Dec	Dec	Dec	Dec	Dec	Dec	Dec	98.5%	
	2) Name of crop			Fallow	Fallow	Fallow	Fallow	Aman	Fallow	Fallow	98.5%	
	Date of sowing/transplting							Oct		Oct	19.1%	
	Date harvesting							Sep		Sep	17.6%	
	3) Name of crop			Vegetables	Vegetables	Vegetables	Vegetables	Vegetables	Vegetables	Vegetables	94.1%	
	Date of sowing/transplting			Oct	Oct	Oct	Oct	Oct	Oct	Oct	85.3%	
	Date harvesting			Dec	Dec	Dec	Dec	Dec	Dec	Dec	85.3%	
	4) Share	%		8	10	10	10	20	10	11	97.1%	
	Total (100)			100	100	100	100			10	44.1%	
2.2.4 Rice production and processing methods												
(1) Land preparation												
	Mechanized and name of machines		A	47.86	35.71	50.45	57.00			47.76	100.0%	
	Traditional and name of tools		A	49.29	64.29	49.55	43.00			51.53	98.5%	
	House labor .men		A	60.00	32.14	59.58	57.79	54.29	58.64	47.13	95.6%	
	House labor .women		A	6.33	7.50	6.00	6.17	13.33	7.40	4.75	75.0%	
	Hired labor men		A	24.20	48.67	25.33	27.64	35.71	24.82	45.25	92.6%	
	Hired labor women		A	9.20	8.25	10.36	9.83	10.00	10.50	7.50	9.38	72.1%
	Seed sowing										0.0%	
	Mechanized and name of machines										5.9%	
	Traditional and name of tools		A	100.00	100.00	99.09	99.58	100.00	99.00	100.00	99.67	95.6%
	House labor .men		A	71.33	52.29	70.00	73.13	58.57	66.36	59.00	64.38	95.6%
	House labor .women		A	6.00	6.50	3.91	3.92		6.00	5.00	5.22	69.1%
	Hired labor men		A	25.00	30.83	24.00	20.80	41.43	27.45	35.71	29.32	92.6%
	Hired labor women		A	2.75	7.25	2.09	3.77		2.80	4.00	3.78	66.2%
(3) Transplanting												
	Mechanized and name of machines											
	Traditional and name of tools		A	100.00	100.00	99.09	100.00	100.00	100.00	100.00	99.87	95.6%
	House labor .men		A	50.50	35.71	50.92	49.20	55.71	52.82	51.86	49.53	95.6%
	House labor .women		A	2.00	2.25	2.83	2.92		3.10	3.67	2.80	69.1%
	Hired labor men		A	41.60	57.00	41.50	44.20	45.71	40.27	44.43	44.96	92.6%
	Hired labor women		A	4.75	10.40	5.64	5.46		4.20	5.00	5.91	67.6%
(4) Weeding												
	Mechanized and name of machines		A	6.20	27.00	5.18	7.50	5.00	12.50	5.00	9.77	69.1%
	Traditional and name of tools		A	95.57	94.17	94.82	95.00	98.33	89.00	98.13	95.00	95.6%
	House labor .men		A	43.67	29.57	45.92	40.93	56.43	42.73	52.86	44.59	95.6%
	House labor .women		A	1.60	3.50	1.36	2.00	5.00	3.40	5.50	3.19	69.1%
	Hired labor men		A	46.20	54.86	44.00	50.47	37.14	42.45	49.83	46.42	92.6%
	Hired labor women		A	6.00	4.75	6.18	4.62	10.00	4.70	5.00	5.89	69.1%
(5) Irrigation												
	Mechanized and name of machines		A	94.29	84.29	93.82	93.83	85.33	92.73	90.00	90.61	97.1%
	Traditional and name of tools		A	5.71	15.71	6.18	8.22	14.67	5.90	20.00	10.91	89.7%
	House labor .men		A	88.33	85.71	100.00	96.43	72.14	90.09	76.67	87.05	92.6%
	House labor .women		A				10.00	5.00		7.50	7.4%	
	Hired labor men		A	45.00	28.33		65.00	37.00	17.80	48.33	40.24	29.4%
	Hired labor women		A	50.00	2.00		10.00				20.67	4.4%
(6) Fertilizer/Chemicals												
	Mechanized and name of machines		A	33.33	67.50	15.00	15.00	75.00	64.00	57.50	46.76	25.0%
	Traditional and name of tools		A	98.33	80.71	98.64	98.75	83.33	97.00	83.57	91.48	91.2%
	House labor .men		A	82.40	47.60	90.83	90.53	75.00	82.73	85.00	79.16	91.2%
	House labor .women		A							10.00	10.00	
	Hired labor men		A	17.60	29.33	10.00	10.92	25.00	17.27	15.83	17.99	86.8%
	Hired labor women											

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Upazila Name			Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari			
(7)	Harvesting											
	Mechanized and name of machines										5.9%	
	Traditional and name of tools	A	100.00	100.00	100.00	100.00	100.00	98.00	100.00	99.71	94.1%	
	House labor .men	A	51.67	40.50	51.42	52.20	51.43	51.36	48.57	49.59	94.1%	
	House labor .women										8.8%	
	Hired labor men	A	46.83	45.00	46.08	45.60	50.43	44.45	49.71	46.87	94.1%	
	Hired labor women	A	3.00	6.00	3.25	2.09		2.63	3.50	3.41	50.0%	
(8)	Transportation											
	Mechanized and name of machines	A	32.17	55.83	49.55	48.00	45.00	43.00	38.33	44.55	83.8%	
	Traditional and name of tools	A	72.43	52.14	50.45	60.00	70.00	61.00	65.00	61.58	95.6%	
	House labor .men	A	24.17	35.50	19.42	29.00	51.43	34.27	42.14	33.70	94.1%	
	House labor .women										5.9%	
	Hired labor men	A	69.50	50.00	73.00	63.33	46.43	58.55	60.83	60.23	88.2%	
	Hired labor women	A	9.50	7.50	9.71	9.58		7.25	10.00	8.92	50.0%	
(9)	Threshing											
	Mechanized and name of machines	A	3.00	8.67	2.91	18.27	9.83	3.64	12.29	8.37	88.2%	
	Traditional and name of tools	A	97.00	96.29	97.09	83.17	81.83	95.90	89.25	91.50	95.6%	
	House labor .men	A	48.33	42.00	49.67	47.86	56.14	52.80	59.29	50.87	91.2%	
	House labor .women	A	3.83	8.67	3.91	7.92	3.50	5.73	7.25	5.83	73.5%	
	Hired labor men	A	44.33	30.17	45.22	49.43	39.71	48.10	42.33	42.76	85.3%	
	Hired labor women	A	3.50	5.67	3.11	2.69	6.00	10.50	2.00	4.78	61.8%	
(10)	Drying											
	Mechanized and name of machines											
	Traditional and name of tools	A	100.00	100.00	100.00	99.58	100.00	100.00	100.00	99.94	95.6%	
	House labor .men	A	50.00	26.75	5.00	26.40	48.00	14.50	25.00	27.95	39.7%	
	House labor .women	A	25.00	19.50	13.89	15.71	11.43	26.82	45.00	22.48	89.7%	
	Hired labor men	A	20.00	13.00		38.75	32.00	15.00	17.50	22.71	36.8%	
	Hired labor women	A	63.33	47.00	85.56	70.93	33.57	60.30	35.00	56.53	86.8%	
(11)	Cleaning & Grading											
	Mechanized and name of machines										8.8%	
	Traditional and name of tools	A	97.14	100.00	99.55	99.83	98.00	99.90	100.00	99.20	94.1%	
	House labor .men	A	50.00	6.40		35.00	16.25	19.00	26.00	25.44	35.3%	
	House labor .women	A	25.83	23.33	12.56	13.21	27.86	16.64	37.50	22.42	89.7%	
	Hired labor men	A	25.00	9.50		14.00	16.25	18.33	33.33	19.40	33.8%	
	Hired labor women	A	61.67	49.83	86.11	80.93	53.57	62.90	45.00	62.86	85.3%	
(12)	Milling											
	Mechanized and name of machines	A	70.43	78.57	72.73	82.50	68.33	76.00	70.00	74.08	95.6%	
	Traditional and name of tools	A	29.57	21.43	27.27	19.09	31.67	24.80	40.00	27.69	92.6%	
	House labor .men	A	40.00	62.00		70.00	53.75	70.00	76.67	62.07	26.5%	
	House labor .women	A	25.00	28.25		10.00	10.00	19.00	35.00	21.21	22.1%	
	Hired labor men	A	20.00	5.00		46.25	7.50	17.50		19.25	17.6%	
	Hired labor women	A	45.00	36.00		90.00	30.00	9.00		42.00	14.7%	
(13)	Par-boiling/boiling											
	Mechanized and name of machines	A	7.71	5.50	5.00	7.13		6.00	10.00	6.89	67.6%	
	Traditional and name of tools	A	92.29	96.86	95.00	95.25	100.00	94.10	95.00	95.50	94.1%	
	House labor .men	A	32.00	23.75	24.50	25.15	5.00	44.55	20.00	24.99	73.5%	
	House labor .women	A	42.00	47.43	47.75	54.20	26.25	48.18	61.67	46.78	88.2%	
	Hired labor men	A	25.00	13.33	17.33	15.31	5.00	19.50	36.25	18.82	72.1%	
	Hired labor women	A	14.00	16.86	7.83	9.36	71.25	7.91	17.50	20.67	86.8%	
(14)	Storage											
	Mechanized and name of machines										2.9%	
	Traditional and name of tools	A	100.00	100.00	100.00	98.75	100.00	99.50	100.00	99.75	94.1%	
	House labor .men	A	70.00	55.33	75.67	75.20	65.00	71.36	68.38	68.71	91.2%	
	House labor .women	A	26.00	22.67	24.58	28.00	21.67	24.09	22.00	24.14	82.4%	
	Hired labor men	A	50.00	11.00		18.33	37.50	15.00	27.00	26.47	20.6%	
	Hired labor women							12.50	4.00	8.25	10.3%	
(15)	Marketing											
	Mechanized and name of machines										4.4%	
	Traditional and name of tools	A	99.29	97.14	100.00	100.00	100.00	98.89	100.00	99.33	94.1%	
	House labor .men	A	72.50	67.00	80.17	79.93	65.00	72.73	77.13	73.49	91.2%	
	House labor .women	A	5.00	5.00	5.45	5.50		6.60	6.00	5.59	64.7%	
	Hired labor men	A	20.17	13.40	15.25	14.60	35.00	19.55	22.86	20.12	88.2%	
	Hired labor women	A	5.00	5.00						5.00	16.2%	
2.2.5	Services of Extension Workers											
(1)	Number of agricultural extension workers	in No	T	25	20	31	54	21	30	30	211	97.1%
(2)	Frequency of visit to farmers	Time/Mont	A	2.57	5.43	1.91	3.27	2.71	4.10	3.13	3.30	97.1%
(3)	What type of problems do you discuss with										-	13.2%
2.2.7	Cooperative Activities											
(1)	Numer of Cooperatives	in No.										
	Farmers' cooperatives	S	44	54	29	66	57	30	33	313	86.8%	
	Credit group	S	46	61	51	170	29	58	38	453	82.4%	
	Water management association	S	4	4	8	15	2	4	3	40	50.0%	
	Fishery Cooperative Association	S	15	10	20	31	4	12	15	107	76.5%	
	Others	S	10	9	12	59	4	18	14	126	79.4%	
	Total	S	119	138	120	341	96	122	103	1,039	100.0%	
(2)	Organization Ratio by house holding in cooperative %											
	Farmers' cooperatives	A	23.83	26.38	29.82	33.23	21.00	23.80	27.00	26.44	89.7%	
	Credit group	A	26.00	33.50	29.18	38.00	30.00	25.67	31.33	30.53	86.8%	
	Water management association	A	5.40	7.33	13.08	8.73	7.50	6.60	9.33	8.28	60.3%	
	Fishery Cooperative Association	A	7.60	9.63	6.09	9.62	2.60	2.13	7.57	6.46	83.8%	
	Others	A	7.80	10.86	6.45	5.15	3.75	7.22	10.33	7.37	80.9%	
	Total	A	70.63	87.69	84.63	94.73	64.85	65.41	85.57	79.07	100.0%	
2.2.8	Production cost											
	Are there any survey information /data on production	in Tk										
	Rice	A	9,300.00	10,142.86	8,170.83	6,602.14	4,785.71	7,827.27	6,900.00	7,675.55	91.2%	
	Jute	A	3,740.00	4,460.00	3,100.00	4,100.00	2,442.86	4,655.56	3,250.00	3,678.34	66.2%	
	Wheat	A	4,116.67	4,780.00	3,942.86	4,566.67	2,442.86	4,230.00	3,000.00	3,868.44	70.6%	
	Vegetables	A	13,366.67	12,857.14	12,716.67	13,714.29	5,428.57	10,450.00	6,900.00	10,776.19	91.2%	
	Oilseeds	A	3,000.00	3,850.00	3,809.09	6,000.00	1,885.71	3,094.44	2,875.00	3,502.04	77.9%	
	Pulses	A	2,800.00	2,600.00	2,683.33	2,787.77	1,571.43	3,081.25	2,200.00	2,531.97	85.3%	

Table : Summary of Upazila wise Data for Jamalpur District

GeoCode No		Type of Data (T:Total,	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied
Upazila Name			Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari		
2.2.9	Livestock										
(1)	Number of animals and source of feed in your Union (2002 – 03)										
1)	Cattle										
	Number of animals	T	24,490	37,413	35,320	107,900	37,600	26,062	20,150	288,935	97.1%
	Rice straw (No. of Unions answered)	C	7	8	12	15	7	10	8	67	98.5%
	Green Fodder (No. of Unions answered)	C	7	8	11	13	7	10	8	64	94.1%
	Waste of human food (No. of Unions answered)	C	2	2	1	-	1	1	1	8	11.8%
	Farmer's own produced cereal feed (No. of Unions answered)	C	1	4	2	-	-	-	1	8	11.8%
	Procured cereal feed (No. of Unions answered)	C	7	8	11	13	6	9	5	59	86.8%
2)	Buffalo										
	Number of animals	T	4,100	2,970	4,440	11,607	5,530	1,716	417	30,780	92.6%
	Rice straw (No. of Unions answered)	C	7	8	12	15	6	10	6	64	94.1%
	Green Fodder (No. of Unions answered)	C	7	8	11	14	6	10	6	62	91.2%
	Waste of human food (No. of Unions answered)	C	0	2	1	-	-	1	-	4	5.9%
	Farmer's own produced cereal feed (No. of Unions answered)	C	1	4	1	-	-	-	-	6	8.8%
	Procured cereal feed (No. of Unions answered)	C	6	8	11	12	4	8	4	53	77.9%
3)	Goat / sheep										
	Number of animals	T	14,500	10,000	36,550	110,400	46,360	27,504	28,300	273,614	97.1%
	Rice straw (No. of Unions answered)	C	4	3	8	8	1	4	-	28	41.2%
	Green Fodder (No. of Unions answered)	C	7	8	11	15	7	10	8	66	97.1%
	Waste of human food (No. of Unions answered)	C	2	4	2	-	1	-	2	11	16.2%
	Farmer's own produced cereal feed (No. of Unions answered)	C	1	3	1	-	-	-	3	8	11.8%
	Procured cereal feed (No. of Unions answered)	C	2	5	1	3	6	1	1	19	27.9%
4)	Fowls										
	Number of animals	T	88,000	137,711	93,110	338,809	71,975	84,742	81,900	896,247	97.1%
	Rice straw (No. of Unions answered)	C	0	-	-	-	-	-	-	-	0.0%
	Green Fodder (No. of Unions answered)	C	0	-	-	1	1	-	-	2	2.9%
	Waste of human food (No. of Unions answered)	C	7	8	12	15	6	10	8	66	97.1%
	Farmer's own produced cereal feed (No. of Unions answered)	C	0	3	1	1	6	3	4	18	26.5%
	Procured cereal feed (No. of Unions answered)	C	0	4	2	3	6	4	4	23	33.8%
5)	Ducks										
	Number of animals	T	25,050	33,151	35,950	108,360	11,900	28,728	13,100	256,239	98.5%
	Rice straw (No. of Unions answered)	C	0	-	-	-	-	-	-	-	0.0%
	Green Fodder (No. of Unions answered)	C	0	-	-	-	-	-	-	-	0.0%
	Waste of human food (No. of Unions answered)	C	3	7	1	4	6	5	8	34	50.0%
	Farmer's own produced cereal feed (No. of Unions answered)	C	0	4	2	-	6	4	4	20	29.4%
	Procured cereal feed (No. of Unions answered)	C	0	5	2	-	5	3	4	19	27.9%
(2)	Seriousness of major problems in animal production in terms of the following items: Your opening (O)										
1)	Feed supply										
	High (No. of Unions answered)	C	0	-	-	1	-	-	3	4	5.9%
	Medium (No. of Unions answered)	C	7	7	12	14	7	9	4	60	88.2%
	Low (No. of Unions answered)	C	0	-	-	-	1	-	1	2	2.9%
2)	Water supply in dry season										
	High (No. of Unions answered)	C	0	-	1	1	1	-	1	4	5.9%
	Medium (No. of Unions answered)	C	7	5	9	14	4	9	6	54	79.4%
	Low (No. of Unions answered)	C	0	2	2	-	1	1	1	7	10.3%
3)	Vaccination										
	High (No. of Unions answered)	C	7	5	11	14	4	8	5	54	79.4%
	Medium (No. of Unions answered)	C	0	2	-	-	1	1	1	4	5.9%
	Low (No. of Unions answered)	C	0	1	1	1	2	-	-	5	7.4%
4)	Shelter at flooding										
	High (No. of Unions answered)	C	0	4	3	2	5	-	2	16	23.5%
	Medium (No. of Unions answered)	C	1	1	-	4	-	1	1	8	11.8%
	Low (No. of Unions answered)	C	6	3	9	8	2	7	5	40	58.8%
5)	Easiness of access to veterinary surgeon										
	High (No. of Unions answered)	C	0	-	-	1	1	1	1	4	5.9%
	Medium (No. of Unions answered)	C	6	6	10	9	4	5	6	46	67.6%
	Low (No. of Unions answered)	C	1	2	2	4	2	1	1	13	19.1%
2.2.10	Fisheries										
(1)	How many farmers with fisheries and specialized fishers are working in your Union ?										
1)	Farmers with fisheries										
	Open water fisheries	T	4,000	4,760	6,600	10,450	1,855	6,250	4,950	38,865	92.6%
	Aquaculture	T	23	102	45	194	400	-	-	764	22.1%
	Fishery in water bodies	T	1,325	1,186	2,097	7,861	2,340	1,378	2,850	19,037	95.6%
	Others (fish processing and fish dealers)										
2)	Specialized fishers.										
	Open water fisheries	T	1,203	3,315	2,133	4,645	2,275	611	2,643	16,825	94.1%
	Aquaculture	T	1,400	585	1,535	2,619	675	1,470	620	8,904	75.0%
	Fishery in water bodies	T	202	667	100	850	60	100	100	2,079	23.5%
	Others (fish processing and fish dealers)										
(2)	Open water fisheries										
1)	Name of major species		Rui	Rui	Rui	Rui	Rui	Rui	Rui	Rui	97.1%
	Fishing place		River, Beel	River, Beel	River, Beel	River, Beel	River, Beel	River, Beel	River, Beel	River, Beel	92.6%
	Total Catch/year (kg)	Kg	8,000	45,350	9,550	115,450	56,500	7,050	68,802	310,702	82.4%
	Sold fish /production (%)	%	40	57	37	35	64	34	60	47	88.2%
	Selling price (Tk/kg)	Tk/Kg	99	100	109	93	103	93	137	105	92.6%
	Change	(%)									0.0%
	Increase (No. of Unions answered)	C	0	2	-	1	3	-	-	6	8.8%
	Constant (No. of Unions answered)	C	2	-	-	1	2	1	-	6	8.8%
	Decrease (No. of Unions answered)	C	5	5	12	10	2	9	7	50	73.5%
2)	Major species		Catla	Catla	Catla	Catla	Catla	Catla	Catla	Catla	89.7%
	Fishing place		River, Khal,	Floodplain	Floodplain	Pond, Beel,	River	Flood Plain	Khal, Flood	Pond, Beel, River	94.1%
	Total Catch/year (kg)	Kg		8,000	28,000	102,400	32,200	1,200	2,000	173,800	22.1%
	Sold fish /production (%)	%		77	45		71	15	50	52	20.6%
	Selling price (Tk/kg)	Tk/Kg		101	95	104	100	91	108	100	86.8%
	Change	%									0.0%
	Increase (No. of Unions answered)	C	0	2	-	1	3	-	-	6	8.8%
	Constant (No. of Unions answered)	C	2	-	-	1	2	1	-	6	8.8%
	Decrease (No. of Unions answered)	C	5	5	12	10	2	9	6	49	72.1%

Table : Summary of Upazila wise Data for Jamalpur District

GeoCode No		Type of Data (T:Total, A:Answered)	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied
Upazila Name			Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari		
3)	c.Major species		Mrigal River, Khal,	Mrigal Khal, River	Mrigal Khal, River	Mrigal River, Beel,	Mrigal Khal, River	Mrigal Khal	Mrigal Flood Plain	Mrigal Khal, River	94.1% 88.2%
	Fishing place										
	Total Catch/year (kg)	Kg		5,000		100,200	46,250	800	1,000	153,250	19.1%
	Sold fish /production (%)	%		75		70	71	2	1	44	17.6%
	Selling price (Tk/kg)	Tk/Kg	94	96	102	89	94	89	103	95	86.8%
	Change	%									0.0%
	Increase (No. of Unions answered)	C		0	2	-	1	1	-	4	5.9%
	Constant (No. of Unions answered)	C		1	-	-	1	2	1	5	7.4%
	Decrease (No. of Unions answered)	C		6	5	11	10	2	9	6	72.1%
4)	d.Major species		Punti Khal, Pond	Punti Khal, River	Punti Khal	Punti Pond, Khal	Punti Pond, Khal	Punti Khal	Punti Flood Plain	Punti Pond, Khal	94.1% 82.4%
	Fishing place										
	Total Catch/year (kg)	Kg		5,500		44,000	67,500	300	400	117,700	17.6%
	Sold fish /production (%)	%		77		70	73	30	30	62	14.7%
	Selling price (Tk/kg)	Tk/Kg	70	74	76	75	70	71	75	73	86.8%
	Change	%									0.0%
	Increase (No. of Unions answered)	C		0	2	-	1	1	-	5	7.4%
	Constant (No. of Unions answered)	C		2	-	-	1	2	1	6	8.8%
	Decrease (No. of Unions answered)	C		5	5	12	10	4	8	6	73.5%
5)	e.Major species		Tengra River, Beel	Tengra Khal, River	Tengra Khal	Tengra Khal	Tengra Khal, River	Tengra Khal	Tengra Khal, Beel	Tengra Khal, River	91.2% 85.3%
	Fishing place										
	Total Catch/year (kg)	Kg		2,000		25,300	22,300	-	100	49,700	20.6%
	Sold fish /production (%)	%		50		50	79	10	10	47	20.6%
	Selling price (Tk/kg)	Tk/Kg	106	92	103	83	59	87	70	86	88.2%
	Change	%									0.0%
	Increase (No. of Unions answered)	C		0	2	-	1	3	1	7	10.3%
	Constant (No. of Unions answered)	C		2	1	-	-	2	1	6	8.8%
	Decrease (No. of Unions answered)	C		5	5	12	11	2	8	5	70.6%
6	e.Major species		Mola Khal	Mola Khal	Mola Khal	Mola Khal	Mola Khal	Mola Khal	Mola Khal	Mola Khal	41.2% 39.7%
	Fishing place										
	Total Catch/year (kg)	Kg					800	-	-	800	4.4%
	Sold fish /production (%)	%					70	-	-	70	1.5%
	Selling price (Tk/kg)	Tk/Kg	85	80	150	86	60	72	62	85	39.7%
	Change	%									0.0%
	Increase (No. of Unions answered)	C		0	-	-	-	-	-	-	0.0%
	Constant (No. of Unions answered)	C		0	-	-	-	-	-	-	0.0%
	Decrease (No. of Unions answered)	C		2	2	9	1	4	3	21	38.2%
(3)	Aquaculture										0.0%
1)	Name of major fish species		Rui	Rui	Rui	Rui	Rui	Rui	Rui	Rui	89.7%
	Culturing year period		May, Jun, Jul	Jun Jul	Jun Jul	May, Jun, Jul	Jun Jul	Jun Jul	Jun Jul	May, Jun, Jul	85.3%
	Source of finhgerling		Hatcheries	Own	Own	Hatcheries	Hatchery		River, own	Hatcheries	80.9%
	Type of water body		Pond	Pond	Pond	Pond	Pond	Pond	Pond	Pond	83.8%
	Sold fish production(%)	A	85	86	85	89	69	86	87	84	82.4%
	Selling price (Tk/kg)	A	75	64	87	73	107	63	89	80	85.3%
2)	Name of major fish species		Catla	Catla	Catla	Catla	Catla	Catla	Catla	Catla	88.2%
	Culturing year period		May, Jun, Jul	Jun Jul	Jun Jul	May, Jun, Jul	Jun Jul	Jun Jul	Jun Jul	May, Jun, Jul	82.4%
	Source of finhgerling		Hatcheries	Own	Own	Hatcheries	Own hatchery		River, own	Hatcheries	72.1%
	Type of water body		Pond	Pond	Pond	Pond	Pond		Pond	Pond	66.2%
	Sold fish production(%)	A	80	90	90	90	65	83	83	83	19.1%
	Selling price (Tk/kg)	A	77	65	85	71	95	64	90	78	79.4%
3)	Name of major fish species		Mrigal	Mrigal	Mrigal	Mrigal	Mrigal	Mrigal	Mrigal	Mrigal	88.2%
	Culturing Year/ period		May, Jun, Jul	Jun Jul	Jun Jul	May, Jun, Jul	Jun Jul	Jun Jul	Jun Jul	May, Jun, Jul	82.4%
	Source of finhgerling		Hatcheries	Own	Own	Hatcheries	Own hatchery		River, own	Hatcheries	73.5%
	Type of water body		Pond	Pond	Pond	Pond	Pond		Pond	Pond	61.8%
	Sold fish production(%)	A	90	95	90	90	73	83	83	87	17.6%
	Selling price (Tk/kg)	A	63	59	78	65	79	51	83	68	80.9%
4)	Name of major fish species		Carpio	Carpio	Carpio	Carpio	Carp	Carpio	Grass carp	Carpio	86.8%
	Culturing Year/ period		May, Jun, Jul	Jun Jul	Jun Jul	Jun Jul	Jun Jul	Jun Jul	Jun Jul	May, Jun, Jul	83.8%
	Source of finhgerling		Hatcheries	Own	Own	Self hatchery	Own hatchery		River, own	Hatcheries	73.5%
	Type of water body		Pond	Pond	Pond	Pond	Pond		Pond	Pond	63.2%
	Sold fish production(%)	A	90	70	90	85	68	83	58	81	17.6%
	Selling price (Tk/kg)	A	50	40	62	50	67	51	58	54	82.4%
5)	Name of major fish species					Rui	Rui, Catla		Silver carp	Rui	23.5%
	Culturing year period					Jun Jul	May Jun		Jun Jul	Jun Jul	23.5%
	Source of finhgerling					Self hatchery	Natural		River, own	Self hatchery	20.6%
	Type of water body					Pond	Pond		Pond	Pond	20.6%
	Sold fish production(%)	A			90	88	80	80	80	84	13.2%
	Selling price (Tk/kg)	A			48	1,262	75	38	35	291	23.5%
(2.2)	How many nurseries in your Union	(in Nos.)									
	By government	T	1	-	-	-	-	-	-	1	1.5%
	By private	T	11	33	14	22	34	18	2	134	55.9%
	How many Hatcheries in your Union?	T	-	-	-	11	-	-	-	11	4.4%
	By government	T	-	-	-	-	-	-	-	-	0.0%
	By private	T	2	1	7	15	1	13	-	39	35.3%
(3)	Seriousness of damages in aquaculture										
1)	Damage by Fish diseases										
	Serious (No. of Unions answered)	C	1	-	-	3	-	-	1	5	7.4%
	Medium (No. of Unions answered)	C	6	6	12	12	7	9	5	57	83.8%
	Low (No. of Unions answered)	C	0	-	-	-	-	-	-	-	0.0%
2)	Loss by flooding										
	Serious (No. of Unions answered)	C	6	6	12	12	7	9	8	60	88.2%
	Medium (No. of Unions answered)	C	1	-	-	1	-	-	-	2	2.9%
	Low (No. of Unions answered)	C	0	-	-	-	-	-	-	-	0.0%
3)	Shortage of water										
	Serious (No. of Unions answered)	C	1	1	-	1	-	1	-	4	5.9%
	Medium (No. of Unions answered)	C	2	2	5	2	6	-	4	21	30.9%
	Low (No. of Unions answered)	C	4	3	7	11	1	7	4	37	54.4%
4)	Shortage of fingerling supply										
	Serious (No. of Unions answered)	C	0	1	1	-	1	-	1	4	5.9%
	Medium (No. of Unions answered)	C	2	2	3	3	3	1	1	15	22.1%
	Low (No. of Unions answered)	C	5	3	8	11	3	7	6	43	63.2%

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GeoCode No	Type of Data	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied
Upazila Name	(T:Total,	Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari		
5) Damage by Water Pollution										
Serious (No. of Unions answered)	C	1	1	-	2	-	-	1	5	7.4%
Medium (No. of Unions answered)	C	0	1	2	-	3	-	1	7	10.3%
Low (No. of Unions answered)	C	3	1	-	1	3	1	2	11	16.2%
6) Damages by others(Please specify)										
Serious (No. of Unions answered)										0.0%
Medium (No. of Unions answered)										1.5%
Low (No. of Unions answered)										0.0%
(4) Future development										
(4) Is there any facility of fish storage in your Union ?										0.0%
Yes (No. of Unions answered)	C	0	-	3	-	-	-	-	3	4.4%
No (No. of Unions answered)	C	2	4	4	-	-	-	-	10	14.7%
(4.1) How many Ice factory and storage capacity in your Union										0.0%
Number of Ice factory	in No									8.8%
Capacity	in MT									0.0%
(4.2) How many refrigerated/ Ice van and capacity										0.0%
Number of refrigerated/Ice van	in No									8.8%
Capacity	in MT									0.0%
2.2.11 Marketing										
2.5.1 How many markets in your Union ?	in No.									
Number of daily markets	T	12	9	33	40	27	37	22	180	89.7%
Number of 1 - 3 markets in a week	T	13	23	77	69	25	45	19	271	86.8%
Total	T	25	32	110	109	52	82	41	451	100.0%
2.5.2 Registration by: Union Parishad or other organization (Please specify)										
Upazila (No. of Unions answered)	C	0	-	-	10	7	9	6	32	47.1%
Union Parishad (No. of Unions answered)	C	5	4	12	4	-	-	-	25	36.8%
Others (No. of Unions answered)	C	0	-	-	-	-	-	-	-	0.0%
2.5.3 Management by : Union Parishad or other organization (please specify)										
Upazila	C	0	2	-	1	-	-	-	3	4.4%
Union Parishad	C	5	3	12	14	7	9	6	56	82.4%
Others	C	0	-	-	2	-	-	-	2	2.9%
(3) Selling methods										
1) Selling to	%									
Self	A	65.00	81.43	57.08	51.33	45.71	56.67	63.13	60.05	94.1%
Through middlemen	A	35.00	18.57	36.25	48.67	54.29	43.33	42.14	39.75	92.6%
Contract										1.5%
Through cooperatives										0.0%
Others										0.0%
2) Selling by	%									
Independently	A	64.17	81.43	56.67	58.57	81.43	57.78	77.50	68.22	92.6%
Jointly	A	35.83	18.57	43.33	44.62	32.50	42.22	36.00	36.15	82.4%
(4) Major transportation for marketing										
1) Rice,		Rice	Rice	Rice	Rice	Rice		Rice		95.6%
Walking	A	22.14	30.00	19.58	26.33	37.14	25.63	26.67	26.78	91.2%
Cart	A	22.86	15.00	5.42	10.36	13.33	20.56	29.50	16.72	80.9%
Richshaw	A	8.33	12.50	9.33	16.43	12.50	5.63	6.67	10.20	76.5%
Van	A	32.86	42.50	26.25	42.79	29.29	34.44	38.86	35.28	94.1%
Refrigerated/Ice van			20.00						20.00	1.5%
Truck	A	20.00	20.00	22.91	16.10		16.67	10.00	17.61	47.1%
Boat	A	19.00	8.33	23.75	18.33	24.17	12.50	16.67	17.54	47.1%
Distance from farm to markets farmers usually sell produ Km			6.67			8.67		2.00	5.78	85.3%
2) Jute		Jute	Jute	Jute	Jute	Jute		Jute		95.6%
Walking	A	22.86	25.00	22.50	26.40	44.00	26.67	30.00	28.20	82.4%
Cart	A	31.00	16.25	7.67	18.13	13.33	26.00	31.25	20.52	50.0%
Richshaw	A	8.33	6.67	10.00	21.50	12.50	10.00	11.67	11.52	39.7%
Van	A	42.14	47.83	48.75	47.14	40.83	51.11	37.00	44.97	80.9%
Refrigerated/Ice van	A		5.00						5.00	1.5%
Truck	A	22.50	5.00	22.73	15.00		7.00	7.50	13.29	41.2%
Boat	A	30.00	17.00	30.50	20.71	20.71	7.00	23.33	21.32	58.8%
Distance from farm to markets farmers usually sell produ Km			6.00			8.00		2.00	5.33	79.4%
3) Vegetables		Vegetables	Vegetables	Vegetables	Vegetables	Vegetables		Vegetables		88.2%
Walking	A	38.57	63.75	40.00	42.86	35.00	42.22	62.14	46.36	80.9%
Cart	A	5.00			19.00		5.00	10.00	9.75	8.8%
Richshaw	A	17.50	20.00	15.86	20.00	22.50	18.75	10.00	17.80	61.8%
Van	A	31.43	21.25	27.38	30.79	38.75	24.44	27.14	28.74	79.4%
Refrigerated/Ice van	A		20.00						20.00	1.5%
Truck	A	15.00	20.00	20.56	18.33		16.00	5.00	15.81	39.7%
Boat	A	15.00			25.00	5.00	12.50	13.33	14.17	29.4%
Distance from farm to markets farmers usually sell produ Km								2.00	2.00	41.2%
4) Potato					Potato					2.9%
Walking	A	30.00							30.00	1.5%
Cart	A	100.00							100.00	1.5%
Richshaw	A	5.00							5.00	1.5%
Van	A	20.00							20.00	1.5%
Refrigerated/Ice van	A									0.0%
Truck	A									0.0%
Boat	A	50.00							50.00	1.5%
Distance from farm to markets farmers usually sell products										0.0%
5) Wheat					Wheat			Wheat		23.5%
Walking	A	20.00	48.33	17.50	39.00	60.00		35.00	36.64	20.6%
Cart	A	10.00	25.00	2.50	4.33				10.46	11.8%
Richshaw	A		10.00	3.00	33.75	20.00		10.00	15.35	14.7%
Van	A	70.00	27.67	35.00	37.50	17.50		57.50	40.86	22.1%
Refrigerated/Ice van	A									0.0%
Truck	A				10.00				10.00	2.9%
Boat			2.00	43.50	15.00	5.00		5.00	14.10	11.8%
Distance from farm to markets farmers usually sell produ Km			4.00						4.00	16.2%

Table : Summary of Upazila wise Data for Jamalpur District

GeoCode No	Type of Data	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied	
Upazila Name	(T:Total,	Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari			
6) Banana										0.0%	
Walking	A									0.0%	
Cart	A									0.0%	
Richshaw	A									0.0%	
Van	A									0.0%	
Refrigerated/Ice van	A									0.0%	
Truck	A									0.0%	
Boat	A									0.0%	
Distance from farm to markets farmers usually sell produ Km										0.0%	
7) Mustard					Banana			Mustard		11.8%	
Walking	A		42.50	20.00	27.50			60.00	37.50	8.8%	
Cart	A		10.00	5.00	5.00				6.67	5.9%	
Richshaw	A		5.00	5.00	42.50			10.00	15.63	7.4%	
Van	A		47.50	20.00	47.50			25.00	35.00	10.3%	
Refrigerated/Ice van	A									0.0%	
Truck	A				15.00				15.00	2.9%	
Boat	A		5.00	50.00	32.50			5.00	23.13	7.4%	
Distance from farm to markets farmers usually sell produ Km										7.4%	
8) Sugarcane										16.2%	
Walking	A	40.00	80.00		25.00			40.00	46.25	5.9%	
Cart	A	100.00	42.50	40.00	50.00		50.00	20.00	50.42	16.2%	
Richshaw	A		5.00						5.00	1.5%	
Van	A		12.50		25.00			20.00	19.17	5.9%	
Refrigerated/Ice van	A									0.0%	
Truck	A						50.00		50.00	4.4%	
Boat	A	100.00	30.00					20.00	50.00	4.4%	
Distance from farm to markets farmers usually sell products			11.00						11.00	10.3%	
9) Oilseed										1.5%	
Walking	A									1.5%	
Cart	A									1.5%	
Richshaw	A									0.0%	
Van	A									0.0%	
Refrigerated/Ice van	A									0.0%	
Truck	A									0.0%	
Boat	A									1.5%	
Distance from farm to markets farmers usually sell produ Km										2.9%	
10) Pulses										2.9%	
Walking	A		30.00						30.00	2.9%	
Cart	A									0.0%	
Richshaw	A									0.0%	
Van	A		70.00						70.00	2.9%	
Refrigerated/Ice van	A									0.0%	
Truck	A									0.0%	
Boat	A									0.0%	
Distance from farm to markets farmers usually sell produ Km			14.00						14.00	1.5%	
11) Pineapple										1.5%	
Walking	A				20.00				20.00	1.5%	
Cart	A				20.00				20.00	1.5%	
Richshaw	A									0.0%	
Van	A				10.00				10.00	1.5%	
Refrigerated/Ice van	A									0.0%	
Truck	A				20.00				20.00	1.5%	
Boat	A									0.0%	
Distance from farm to markets farmers usually sell products										1.5%	
12) Chilli						Chilli				4.4%	
Walking	A					43.33			43.33	4.4%	
Cart	A									0.0%	
Richshaw	A					21.67			21.67	4.4%	
Van	A					31.67			31.67	4.4%	
Refrigerated/Ice van	A									0.0%	
Truck	A									0.0%	
Boat	A					5.00			5.00	2.9%	
Distance from farm to markets farmers usually sell products										4.4%	
(5) What type of complains raised by the farmers in your Union (0 yes)											
Distance of market (No. of Unions answered)	C	5	5	9	12	5	7	5	48	70.6%	
Poor condition of rural road (No. of Unions answered)	C	5	7	11	15	7	9	8	62	91.2%	
Lack of market information (No. of Unions answered)	C	1	-	-	2	2	1	1	7	10.3%	
2.3 Collection of data on food consumption and human security in rural areas											
2.3.1 Food consumption and nutrition problems											
(1) Breakfast											
Not take	%	A	3.00	5.83	2.27	2.50	8.33	1.83	4.00	3.97	75.0%
Yes (No. of Unions answered)	C		7	7	12	15	7	9	8	65	95.6%
(2) Lunch											
Not take	%	A		12.75		11.00	6.67	2.00		8.10	25.0%
Yes (No. of Unions answered)	C		7	5	12	100	7	8	8	147	91.2%
(3) Dinner											
Not take	%	A		5		6.33	7.00	2	13	6.62	25.0%
Yes (No. of Unions answered)	C		7	5	12	100	7	8	8	147	89.7%
(4) Child nutrition: Number and ratio of under-nutrition by											
Wasting	in No.	T	15,100	10,130	26,260	29,583	7,000	16,145	8,010	112,228	69.1%
	%	A	28	29	27	29.18	29.29	26	43	30.27	82.4%
Stunting	in No.	T	3,124	3,000	4,067	10,915	3,000	4,200	3,100	31,406	64.7%
	%	A	7	9	7	7.36	11.89	6	19	9.64	82.4%
Underweight: Percent in person	in No.	T	26,645	9,700	58,067	57,100	10,846	33,100	14,500	209,958	67.6%
	%	A	62	44	67	61.70	42.57	61.88	71.25	58.58	82.4%
2.3.2 Sufficiency of items in human security in your Union (please answer by)											
(1) Sufficiency of drinking water											
Sufficient (No. of Unions answered)	C		6	5	11	11	5	8	4	50	73.5%
Insufficient (No. of Unions answered)	C		1	2	1	4	2	1	4	15	22.1%

Table : Summary of Upazila wise Data for Jamalpur District

GeoCode No		Type of Data (T:Total)	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied	
Upazila Name			Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari			
(2) Source of drinking water												
	Well (No. of Unions answered)	C	7	7	12	15	7	9	8	65	95.6%	
	River (No. of Unions answered)	C	1	-	4	-	-	-	-	5	7.4%	
	Pond (No. of Unions answered)	C	0	-	-	-	-	-	-	-	0.0%	
	Others (No. of Unions answered)	C	0	-	-	-	2	-	-	2	2.9%	
(3) First Aide services												
	Yes (No. of Unions answered)	C	6	3	7	13	1	7	3	40	58.8%	
	No (No. of Unions answered)	C	1	4	5	2	6	2	4	24	35.3%	
	If yes, what type of organizations provides the services											
	Vaccination (No. of Unions answered)	C	6	2	7	11	-	6	3	35	51.5%	
	Weight (No. of Unions answered)	C	4	2	6	11	-	5	2	30	44.1%	
	Family planning (No. of Unions answered)	C	5	3	6	9	1	6	3	33	48.5%	
	Healthcare to mother and child (No. of Unions answered)	C	0	-	-	1	-	-	-	1	1.5%	
	Others (No. of Unions answered)	C	5	1	5	2	-	-	-	13	19.1%	
(4) Access to electricity in household %												
	Government	A	9	16	3	55	2	1	5	91	35.3%	
	Other sources (please specify)	A	45	4	54	52	11	6	5	177	72.1%	
	No electricity	A	46	79	46	50	96	8	8	332	82.4%	
(5) Housing												
	Sufficient (No. of Unions answered)	C	0	1	3	-	-	-	-	4	5.9%	
	Insufficient (No. of Unions answered)	C	6	6	9	15	7	9	8	60	88.2%	
(6) Percentage of Primary School/Madrasha Education / %												
a. Primary School												
	Boys	A	44.43	45.71	40.42	44.93	53.14	43.89	45.50	45.43	95.6%	
	Girls	A	42.43	44.29	36.42	43.40	43.71	43.89	45.50	42.80	95.6%	
b. Madrassa												
	Boys	A	20.71	20.11	17.50	23.67	8.29	20.00	19.50	18.54	95.6%	
	Girls	A	11.43	15.00	9.50	14.73	8.71	9.78	9.80	11.28	95.6%	
2.3.3 Household economy in rural area. Please put the estimated information on income based on source of income												
(1) Major sources of cash income Tk/family/year												
	1) Aus			-			2,800.00		4,250.00	2,350.00	19.1%	
	2) Aman	A	7,185.71	7,500.00	7,458.33	8,546.67	5,142.86	6,944.44	5,891.25	6,952.75	95.6%	
	3) Boro	A	7,928.57	7,642.86	7,918.18	8,673.33	6,428.57	7,900.00	10,531.25	8,146.11	94.1%	
	4) Jute	A	9,000.00	4,142.86	5,090.00	3,400.00	2,942.86	3,333.33	3,562.50	4,495.94	64.7%	
	5) Vegetables	A	6,357.14	3,814.29	6,916.67	7,073.33	2,000.00	5,444.44	2,775.00	4,911.55	95.6%	
	6) Livestock	A	2,885.71	1,833.33	3,500.00	4,171.43	3,000.00	2,022.22	1,928.57	2,763.04	91.2%	
	7) Non agricultural work and others	A	5,000.00	2,800.00	3,175.00	5,475.83	2,750.00	4,333.33	2,150.00	3,669.17	77.9%	
	8) Fish	A	1,050.00	4,325.00	600.00	9,600.00	2,600.00	1,500.00	1,035.00	2,958.57	41.2%	
	9) Pulses	A	200.00	333.33	237.50	500.00	500.00	500.00	1,027.50	471.19	22.1%	
	10) Oil seeds	A	100.00	912.50	2,500.00	1,750.00	1,000.00	1,000.00	1,510.00	1,253.21	30.9%	
	11) Poultry	A	1,000.00	1,785.71	1,933.33	2,266.67	1,000.00	1,022.22	1,837.50	1,549.35	94.1%	
	12) Sale of self labour	A	3,250.00	5,500.00	2,777.78	3,306.67	3,000.00	2,666.67	2,350.00	3,264.44	76.5%	
	13) Total	T	43,957.14	40,589.88	42,106.79	54,763.93	33,164.29	36,666.67	38,848.57	41,442.47	100.0%	
(2) Major expenditure Tk/family/year												
	1) Food	A	19,428.57	23,042.86	15,825.00	20,800.00	11,571.43	20,222.22	15,225.00	18,016.44	95.6%	
	2) Housing	A	5,500.00	2,125.00	2,833.33	4,333.33	3,800.00	1,666.67	3,240.00	3,356.90	36.8%	
	3) Clothes	A	5,428.57	3,928.57	4,708.33	5,053.33	2,571.43	4,277.78	3,750.00	4,245.43	95.6%	
	4) Health	A	3,000.00	1,471.43	2,116.67	1,886.67	1,142.86	1,845.56	2,312.50	1,967.95	95.6%	
	5) Child education	A	2,857.14	1,500.00	2,325.00	2,413.33	1,571.43	2,712.50	1,537.50	2,130.99	94.1%	
	6) Entertainment	A	2,000.00	2,528.57	1,043.64	1,180.00	1,000.00	1,244.44	1,687.50	1,526.31	88.2%	
	7) Credit Refund	A				1,500.00			1,575.00	1,537.50	13.2%	
	8) Agriculture	A				3,333.33	2,333.33	8,750.00	7,300.00	5,429.17	32.4%	
	9) Total	T	38,214.29	34,596.43	28,851.97	40,500.00	23,990.48	40,719.17	36,627.50	34,785.69	100.0%	
3 WATER RESOURCES (to be answered by UP Chairman and Secretary with Upazila Engineers assistance)												
3.2 Problem Occurrences												
3.2.1 Describe the water related problems that occur in												
(1) Flood												
	Area	Acre	T	7,600	10,075	18,280	14,910	22,500	8,500	14,180	96,045	69.1%
	Depth	Feet	A	1.33	2.67	2.12	2.07	1.50	3.59	3.68	2.42	58.8%
	Length	Km	A								-	0.0%
	Duration	Months	A	3.60	3.20	3.00	6.80	1.60	3.43	3.71	3.62	80.9%
(2) Drought												
	Area	Acre	T	4,800	6,400	5,150	4,740	5,600	3,450	7,077	37,217	52.9%
	Depth	Feet	A								-	0.0%
	Length	Km	A								-	0.0%
	Duration	Months	A	3.80	3.33	4.36	4.86	1.00	4.60	5.40	3.91	55.9%
(3) Shortage of irrigation water in agriculture												
	Area	Acre	T	5,800	9,300	6,795	5,360	1,000	4,550	7,747	40,552	58.8%
	Depth	Feet	A								-	0.0%
	Length	Km	A								-	0.0%
	Duration	Months	A	4.00	3.33	4.00	3.63		4.20	4.33	3.92	55.9%
(4) Soil Erosion												
	Area	Acre	T	2000	3200	6,315	1,300		650	400	13,865	22.1%
	Depth	Feet	A								-	0.0%
	Length	Km	A								-	0.0%
	Duration	Months	A	3.00	5.00	3.50	1.00		3.00	3.00	3.08	17.6%
(5) Water Logging												
	Area	Acre	T	2,860	4,050	4,080	3,060	1,070	1,820	810	17,750	52.9%
	Depth	Feet	A		75.00						75.00	8.8%
	Length	Km	A								-	0.0%
	Duration	Months	A	4.20	3.00	4.00	3.25	3.50	4.40	4.00	3.76	61.8%
(6) Domestic water supply												
	Area	Acre	T		800		-	300	-	300	1,400	4.4%
	Depth	Feet	A								-	0.0%
	Length	Km	A								-	0.0%
	Duration	Months	A		3.00					4.00	3.50	2.9%
(7) Water quality (Arsenic related problem)												
	Area	Acre	T				-	200	-		200	4.4%
	Depth	Feet	A		12						12	1.5%
	Length	Km	A								-	0.0%
	Duration	Months	A	12.00		12.00	12.00	6.00	12.00	12.00	11.00	44.1%

Table : Summary of Upazila wise Data for Jamalpur District

GeoCode No		Type of Data (T:Total, A)	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied	
Upazila Name			Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari			
(8)	Other problems (please specify)		Road, Culvert, F Road, Education Road, Culvert									
	Area	Acre	T								1.5%	
	Depth	Feet	A								0.0%	
	Length	Km	A								0.0%	
	Duration	Months	A		12	12				12.00	5.9%	
3.2.2	Describe the water related problems that occurred in your union in extreme year.(Please identify the problematic areas on as many maps as needed)											
(1)	Flood											
	Area	Acre	T	6,200	12,000	18,500	15,690	19,200	9,500	22,330	103,420	75.0%
	Depth	Feet	A	1.3	5	2.7	1		6	10	4.34	25.0%
	Length	Km	A								-	0.0%
	Duration	Months	A	3.6	3	3.0	2	2	3	4	2.94	79.4%
(2)	Drought											
	Area	Acre	T	3,800	7,350	5,250	5,612	1,200	4,350	10,152	37,714	63.2%
	Depth	Feet	A								-	0.0%
	Length	Km	A								-	0.0%
	Duration	Months	A	4.0	4.0	4.3	4.4	4.0	5	5	4.34	63.2%
(3)	Shortage of irrigation water in agriculture											
	Area	Acre	T	4,900		6,645	7,640	1,100	4,600	14,370	39,255	63.2%
	Depth	Feet	A								-	0.0%
	Length	Km	A								-	0.0%
	Duration	Months	A	4.0	4	3.4	3.7	3.0	4	4	3.73	61.8%
(4)	Soil Erosion											
	Area	Acre	T	2000	3000	4,730	-	3,600	-	1,000	14,330	16.2%
	Depth	Feet	A								-	0.0%
	Length	Km	A								-	0.0%
	Duration	Months	A	3.0	4.0	3.3				4	3.58	13.2%
(5)	Water logging											
	Area	Acre	T	2,800	2,550	6,190	2,940	850	3,190	1,425	19,945	55.9%
	Depth	Feet	A								-	4.4%
	Length	Km	A								-	1.5%
	Duration	Months	A	4.2	3.7	4.0	3.9	4.0	4	5	4.17	63.2%
(6)	Domestic water supply											
	Area	Acre	T				-			300	300	1.5%
	Depth	Feet	A								-	0.0%
	Length	Km	A								-	0.0%
	Duration	Months	A							5	5.00	1.5%
(7)	Water quality (Arsenic related problems)											
	Area	Acre	T					2,300	350		2,650	8.8%
	Depth	Feet	A								-	0.0%
	Length	Km	A								-	0.0%
	Duration	Months	A	12.0	12.0		12	12.0	12	12	12.00	48.5%
(8)	Other problems (please specify)											
	Area	Acre	T									48.5%
	Depth	Feet	A								-	1.5%
	Length	Km	A								-	0.0%
	Duration	Months	A			12					12.00	2.9%
3.3	Water Related Problems											
3.3.1	How does the water related problems affect your Union in a normal year?											
(1)	Human											
	Number affected		T	37,100	15,500	79,470	84,000	58,500	44,100	68,000	386,670	88.2%
	Total area	Acre	T								-	0.0%
	Length	Km	T								-	0.0%
	Estimated Quantity affected	in Tk.	T								-	0.0%
(2)	Houses											
	Number affected		T	2,360	4,450	4,715	10,500	2,900	4,510	16,130	45,565	94.1%
	Total area	Acre	T								-	0.0%
	Length	Km	T								-	0.0%
	Estimated Quantity affected	in Tk.	T	3,035,000	4,910,000	7,035,000	11,700,000	1,385,000	4,600,000	8,150,000	40,815,000	80.9%
(3)	Crops											
	Number affected		T		4,000						4,000	4.4%
	Total area	Acre	T	9,220	1,770	7,635	14,420	3,300	4,930	6,400	47,675	86.8%
	Length	Km	T								-	0.0%
	Estimated Quantity affected	in Tk.	T	20,687,000	11,830,000	37,900,000	133,700,000	17,600,000	25,500,000	312,225,000	559,442,000	83.8%
(4)	Livestock											
	Number affected		T	1,640	1,155	4,500	5,360	1,540	3,410	3,570	21,175	86.8%
	Total area	Acre	T								-	0.0%
	Length	Km	T								-	0.0%
	Estimated Quantity affected	in Tk.	T	127,000	2,740,000	5,145,000	6,202,000	2,555,000	5,045,000	544,800	22,358,800	82.4%
(5)	Road											
	Number affected		T	33	37	1,576	131	18	47	95	1,937	75.0%
	Total area	Acre	T								-	0.0%
	Length	Km	T	54	45	130	216	57	75	98	675	82.4%
	Estimated Quantity affected	in Tk.	T	5,200,000	5,600,000	30,500,000	27,700,000	25,100,000	6,370,000	17,700,000	118,170,000	83.8%
(6)	Embankment											
	Number affected		T	20	4	9		53	1	5	92	26.5%
	Total area	Acre	T								-	0.0%
	Length	Km	T		4	40	500	10	6	15	575	22.1%
	Estimated Quantity affected	in Tk.	T	1,000,000	800,000	10,400,000	800,000	650,000	800,000	2,100,000	16,550,000	25.0%
(7)	Bridge											
	Number affected		T	5	6	19	22	10	-	-	62	27.9%
	Total area	Acre	T								-	0.0%
	Length	Km	T		13	80	12	250	-	-	355	11.8%
	Estimated Quantity affected	in Tk.	T	3,500,000	1,500,000	19,400,000	5,450,000	700,000	-	-	30,550,000	23.5%
(8)	Culvert											
	Number affected		T	6	17	10	100	15	-	4	152	32.4%
	Total area	Acre	T								-	0.0%
	Length	Km	T		15	11	3	-	-	-	29	10.3%
	Estimated Quantity affected	in Tk.	T	1,300,000	200,000	3,500,000	3,500,000	550,000	-	4,800,000	13,850,000	25.0%
(9)	Regulator											
	Number affected		T				-	-			-	0.0%
	Total area	Acre	T								-	0.0%
	Length	Km	T								-	0.0%
	Estimated Quantity affected	in Tk.	T				-	-			-	0.0%
(10)	Others											
	Number affected		T								-	1.5%

Table : Summary of Upazila wise Data for Jamalpur District

GeoCode No		Type of Data (T:Total,	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied	
Upazila Name			Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari			
	Total area	Acre	T								0.0%	
	Length	Km	T								0.0%	
	Estimated Quantity affected	in Tk.	T								0.0%	
3.3.2	Describe the water related problems that occur in your Union in extreme year.(Please identify the problematic areas on as many maps as needed)											
(1)	Human											
	Number affected		T	79,500	28,000	128,250	164,100	76,500	122,220	106,200	704,770	88.2%
	Total area	Acre	T									0.0%
	Length	Km	T									0.0%
	Affected Year	Year					2004	2004		2004	6,012	51.5%
(2)	Houses											
	Number affected		T	20,050	30,800	35,725	23,200	6,700	13,800	15,880	146,155	91.2%
	Total area	Acre	T									0.0%
	Length	Km	T									0.0%
	Affected Year	Year		2004	2004	2004	2004	2004		2004	2004	86.8%
(3)	Crops											
	Number affected		T		4,000		-	-	-	2,600	6,600	4.4%
	Total area	Acre	T	12,450	8,480	25,700	26,420	15,100	21,060	15,200	124,410	83.8%
	Length	Km	T									0.0%
	Affected Year	Year		2004	2004	2004		2004		2004	2004	85.3%
(4)	Livestock											
	Number affected		T	26,100	6,740	48,780	59,700	10,310	36,450	16,100	204,180	89.7%
	Total area	Acre	T									1.5%
	Length	Km	T									0.0%
	Affected Year	Year		2004	2004	2004	2004	2004		2004	2004	89.7%
(5)	Road											
	Number affected		T	56	47	125	228	37	123	70	686	73.5%
	Total area	Acre	T									0.0%
	Length	Km	T	180	84	306	407	197	293	120	1,587	79.4%
	Affected Year	Year		2004	2004	2004	2004	2004		2004	2004	88.2%
(6)	Embankment											
	Number affected		T	21	5	30	17	1	1	9	84	32.4%
	Total area	Acre	T									0.0%
	Length	Km	T	30	5	44	16	9	6	31	141	30.9%
	Affected Year	Year		2004	2004	2004	2004			2004	2004	38.2%
(7)	Bridge											
	Number affected		T	15	10	33	49	12	46	12	177	75.0%
	Total area	Acre	T									0.0%
	Length	Km	T	335	118	355	435	315	1,425	214	3,197	57.4%
	Affected Year	Year		2004	2004	2004	2004				2004	76.5%
(8)	Culvert											
	Number affected		T	27	21	32	340	38	55	40	553	76.5%
	Total area	Acre	T									0.0%
	Length	Km	T	184	50	74	401	122	400	195	1,426	57.4%
	Affected Year	Year		2004	2004	2004	2004	2004	18,036	6,012	34,068	77.9%
(9)	Regulator											
	Number affected		T									0.0%
	Total area	Acre	T									0.0%
	Length	Km	T									0.0%
	Affected Year	Year										0.0%
(10)	Others											
	Number affected		T	60	44		115	45	62	39	365	66.2%
	Total area	Acre	T									0.0%
	Length	Km	T									0.0%
	Affected Year	Year		2004	2004		2004				2004	66.2%
3.4	Describe the water bodies lying inside or flowing through your union.(Please identify the water bodies on as many maps as needed)											
3.4.1	River											
	Area	Acre	T	1,710	5,203	13,750	6,465	4,640	2,450	4,068	38,286	73.5%
	Width	Feet	A	492	1,340	2,325	1,881.4	2,328	483	700	9,549	75.0%
	Depth	Feet	A	22	20	43	25.7	14	18	28	170	72.1%
	Perennial (No. of Unions answered)	O	C	1		5	1	1	-	-	8	14.7%
	Seasonal (No. of Unions answered)	O	C	6	3	7	6	5	9	8	44	64.7%
	Length of water stay	Months	A	8	10	10	9	7	8	8	58	82.4%
3.4.2	Khal											
	Area	Acre	T	353	1,410	2,010	2,850	1,400	1,352	795	10,170	79.4%
	Width	Feet	A	233	390	109	522.3	70	205	279	1,807	80.9%
	Depth	Feet	A	11	9	11	11.7	8	13	13	76	79.4%
	Perennial (No. of Unions answered)	O	C	1		-	-	-	-	-	1	2.9%
	Seasonal (No. of Unions answered)	O	C	5	3	12	14	5	10	5	54	79.4%
	Length of water stay	Months	A	7	6	5	5	5	6	4	39	85.3%
3.4.3	Large water body (Haor, Baor, Beel)											
	Area	Acre	T	452	185	3,310	6,880	1,450	4,410	2,347	19,034	70.6%
	Width	Feet	A	200	100	520	1,093.3	458	922	1,333	4,627	32.4%
	Depth	Feet	A	12	4	14	5.0	10	11	11	66	36.8%
	Perennial (No. of Unions answered)	O	C	3	2	7	8	-	4	3	27	39.7%
	Seasonal (No. of Unions answered)	O	C	1	2	1	4	4	6	4	22	32.4%
	Length of water stay	Months	A	11	10	12	10	6	9	8	64	77.9%
3.4.4	Pond/Dighi											
	Area	Acre	T	1,200	58	497	669	10	627	8	3,069	45.6%
	Width	Feet	A		242	200	40.0	30	705	170	1,387	17.6%
	Depth	Feet	A		8	20	10.0		10	17	65	19.1%
	Perennial (No. of Unions answered)	O	C	0	3	2	3	1	3	-	12	17.6%
	Seasonal (No. of Unions answered)	O	C	3	-	4	5	-	5	2	19	27.9%
	Length of water stay	Months	A	5	9	8	8	12	10	5	57	48.5%

Table : Summary of Upazila wise Data for Jamalpur District

GeoCode No		Type of Data (T:Total,	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied
Upazila Name			Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari		
3.5	Describe the water supply sources and associated problems in your Union(Please identify the water supply sources on as many maps as needed)										
3.5.2	Ground Water										
	Type and number of water supply sources	in No.									
	Number of wells by type										
	Hand TW	T	22,500	17,535	39,684	27,776	11,597	41,989	68,365	229,446	83.8%
	Shallow TW	T	1,949	2,384	2,128	5,716	2,687	5,037	2,105	22,006	85.3%
	Deep TW	T	46	19	90	122	-	100	40	417	57.4%
	Is there groundwater table lowering?	in feet									
	Yes (No. of Unions answered)	C	7	6	12	10	7	10	7	59	86.8%
	No (No. of Unions answered)	C	0	-	-	-	-	-	-	-	0.0%
	Constant (No. of Unions answered)	C	0	-	-	-	-	-	-	-	0.0%
5	Damages by the 2004 flood.Please estimate and										
5.2	How was the damage in the items below:										
5.2.1	Roads										
	Fully	A	20	20	20	20	20	20	20	20	100.0%
	Partial	A	50	50	50	50	50	50	50	50	100.0%
	No damage	A	30	30	30	30	30	30	30	30	100.0%
5.2.2	Houses										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.2.3	Agricultural lands										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.2.4	Crops										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.2.5	Fisheries										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.2.6	Livestock										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3	Damages in agricultural fields										
5.3.1	Damages in standing crops										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.2	Loss of seedlings										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.3	Loss of seeds										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.4	Delay of cropping by flood										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.5	Accumulation of mud										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.6	Erosion of fields										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.7	Loss of fodder										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.8	Loss of cultured fish										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.9	Loss of fingerlings										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.10	Damages of aquaculture facilities										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.11	Damages of fishing area										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No damage	A	100	100	100	100	100	100	100	100	100.0%
5.3.12	Damage of Animal										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No Loss	A	100	100	100	100	100	100	100	100	100.0%
5.3.13	Damage of Cattles										
	Fully	A	100	100	100	100	100	100	100	100	100.0%
	Partial	A	100	100	100	100	100	100	100	100	100.0%
	No Loss	A	100	100	100	100	100	100	100	100	100.0%

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GeoCode No	Type of Data	3907	3915	3929	3936	3958	3961	3985	District	Ratio of Unions Replied
Upazila Name	(T:Total, A:Average, C:Count)	Bakshiganj	Dewanganj	Islampur	Jamalpur Sadar	Madargonj	Melandah	Sarishabari		
5.3.14	Dmage of Goats									
	Fully									0.0%
	Partial									0.0%
	No Loss									0.0%
5.3.15	Diseases of animals									
	Serious									0.0%
	Medium									0.0%
	Low									0.0%
		A	100	100	100	100	100	100	100	100.0%
		A	100	100	100	100	100	100	100	100.0%

Type of Data - T:Total, A:Average, C:Count

ANNEX 12

MASTER PLAN ON SSWRD IN KISHOREGANJ DISTRICT

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTRY OF LOCAL GOVERNMENT,
RURAL DEVELOPMENT AND COOPERATIVES (MLGRD&C)
LOCAL GOVERNMENT ENGINEERING DEPARTMENT (LGED)

**MASTER PLAN STUDY
ON
SMALL SCALE WATER RESOURCES DEVELOPMENT
FOR
POVERTY ALLEVIATION THROUGH EFFECTIVE USE OF SURFACE WATER
IN GREATER MYMENSINGH**

**MASTER PLAN
ON
SMALL SCALE WATER RESOURCES DEVELOPMENT
IN
KISHOREGANJ DISTRICT**

NOVEMBER 2005

PACIFIC CONSULTANTS INTERNATIONAL (PCI), JAPAN

**KISHOREGANJ DISTRICT
DHAKA DIVISION**

KISHOREGANJ SADAR



LEGEND

- Administrative Boundary**
- International Boundary
 - - - District Boundary
 - . . . Upazila Boundary
 - - - - Union Boundary
 - Municipal Boundary

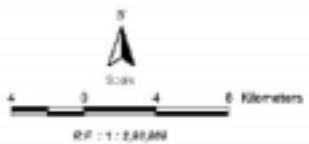
- Administrative HQs**
- District HQ
 - Upazila HQ
 - Union HQ

- Socio-economic Infrastructures**
- ⊙ Growth Centre
 - ▲ Small Health/Bus
 - ↑ Police Station
 - ⊞ Upazila Health Complex
 - ⊙ College
 - ⊙ High School
 - ⊙ University

- Physical Infrastructures**
- National Highways
 - Regional Highways
 - District Road
 - Upazila Road Pucca
 - Upazila Road Katcha
 - Union Road Pucca
 - Union Road Katcha
 - Railway Network
 - Embankment

- Natural Features**
- Wide River
 - Water Bodies
 - Char Area

- Agricultural Infrastructures**
- Embankment
 - Road Embankment



Prepared by: LOCAL GOVERNMENT ENGINEERING DEPARTMENT

**JICA MASTER PLAN STUDY ON SMALL SCALE WATER RESOURCES DEVELOPMENT
FOR POVERTY ALLEVIATION THROUGH EFFECTIVE USE OF SURFACE WATER
IN GREATER MYMENSINGH**

**MASTER PLAN
ON
SMALL SCALE WATER RESOURCES DEVELOPMENT
IN
KISHOREGANJ DISTRICT**

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Abbreviations

ADB	Asian Development Bank
BADC	Bangladesh Agricultural Development Corporation
BBS	Bangladesh Bureau of Statistics
BMD	Bangladesh Meteorological Department
BRDB	Bangladesh Rural Development Board
BWDB	Bangladesh Water Development Board
CAD	Command Area Development
DAE	Department of Agricultural Extension
DFID	Department for International Development of UK
DI	Drainage Improvement
DIWC	Drainage Improvement and Water Conservation
DOC	Department of Cooperatives
DOE	Department of Environment
DoF	Department of Fisheries
DPHE	Department of Public Health Engineering
DTW	Deep Tubewell
EIRR	Economic Internal Rate of Return
FAP	Flood Action Plan
FCD	Flood Control and Drainage
FCDI	Flood Control, Drainage and Irrigation
FD	Forestry Department
FM	Flood Management
FMDI	Flood Management and Drainage Improvement

GDP	Gross Domestic Product
GIS	Geographical Information System
HQ	Headquarter
HTW	Hand Tubewell
HYV	High Yield Variety
IEE	Initial Environmental Examination
IFAD	International Fund for Agricultural Development
IMCC	Inter-ministerial Coordination Committee set under the TAPP
JICA	Japan International Cooperation Agency
LCS	Labour Contracting Society
LGED	Local Government Engineering Department
LGI	Local Government Institutions
LLP	Low Lift Pump
M&E	Monitoring and Evaluation
MIS	Management Information System
MLGRD&C	Ministry of Local Government, Rural Development and Co-operatives
MoA	Ministry of Agriculture
MoEF	Ministry of Environment and Forest
MoFL	Ministry of Fisheries and Livestock
MoL	Ministry of Land
MoWR	Ministry of Water Resources
NGO	Non-Governmental Organization
NWMP	National Water Management Plan
NWPo	National Water Policy
NWRD	National Water Resources Database
O&M	Operation and Maintenance
PMO	Project Management Office
PRA	Participatory Rural Appraisal
PWD	Public Works Datum (0.0 m PWD = 0.457 m of SOB datum)
SOB datum	Survey of Bangladesh datum (identifiable with mean sea level)
SP	Subproject
SSWRDSP	Small-Scale Water Resources Development Sector Project
STW	Shallow Tubewell
TIP	Thana Irrigation Program
TK.	Taka, US\$ 1.00= Tk 57.4 as of October 2004
UDCC	Upazila Development Coordination Committee
UP	Union <i>Parishad</i> (Council)
UE	Upazila Engineer
WARPO	Water Resources Planning Organization
WC	Water Conservation
WMA(WMCA)	Water Management (Cooperative) Association

Chapter 1 Outline of the Master Plan Study

1.1 Background

The provisions of the National Water Policy (NWPo) of 1999 states that the local government and relevant agencies are responsible for planning and execution of water management based on the National Water Management Plan (NWMP) approved by the National Water Resources Council (NWRC) on 31st March 2004, and in regard to the regional features of local water resources¹.

The Government of Bangladesh (hereinafter referred to as “GOB”), with the support from ADB, IFAD and the Government of the Netherlands, has carried out the Small Scale Water Resources Development Sector Project (SSWRDSP-1) aiming at the rehabilitation and improvement of small-scale water resource management systems. The project was carried out from 1995 covering 37 districts of the western part of Bangladesh. Following the same concept, the second phase of this project (SSWRDSP-2), covering 61 districts throughout the country commenced in 2003 with the planned period of 7 years. However, from lessons learned from SSWRDSP-1, the preparation of district level small scale water resources development plans are recognized to have significant importance for further implementation of SSWRDSP.

Under such circumstances, the GOB requested the Government of Japan (hereinafter referred to as “GOJ”) for technical assistance regarding the preparation of district level plans for small scale water resources development (SSWRD), which will be considered as the basic development plans at district levels. In response to the GOB’s request, the GOJ dispatched a Preparatory Study Team from February to March, 2004, and signed the Scope of Work for *the Master Study on Small Scale Water Resources Development for Poverty Alleviation through Effective Use of Surface Water in Greater Mymensingh of Bangladesh* (hereafter referred as “the Study”) on February 25, 2004.

Based on the Scope of Works, the JICA Study Team, carried out the Study in Bangladesh from July 18, 2004 to July 23, 2005.

1.2 Objectives and Scope of the Study

(1) Objectives

The overall goal of the Study is **to secure safe and sustainable water resources management and to increase farmers’ income**, and objectives of the Study are;

- 1) to formulate Plan for SSWRD in Greater Mymensingh comprising program of priority programs, and the scope for the follow-on investment projects which include effective use of surface water, and
- 2) to enhance and strengthen the capacity of the counterpart in preparation of the SSWRD Plan

(2) Scope of the Study

The Study is conducted in the following 2 phases:

- Phase I: Field Survey in wet season, Identification of problems on SSWRD in the Study Area (July 2004 to November 2004)
- Phase II: Field survey and Formulation of Small Scale Water Resources Development Plans (January 2005 to July 2005)

The Study will consist of the following study items.

1) Data Collection and Analysis

- (a) Collect and review the existing data and information on physical, socio-economical and institutional settings, including hydrology, water availability and quality, land use, population, poverty and other human development indices, income, gender issues and occupational patterns; and collate the same with project objectives and outputs.

¹ Outline of the NWPo (1999) is shown in Table 1.1.

- (b) Assess the performance and issues of the economic activities of the Sub-districts (Upazila), including agriculture, fishery, forestry, and other natural resources, roads and road transport, water supply and sanitation.
 - (c) Collect information on the ongoing and proposed interventions in the Upazila in water and other relevant sectors
- 2) Inventory Survey and Participatory Rural Appraisal (PRA)
- (a) Carry out the inventory survey of existing infrastructure related to water resources, along with their status and location maps
 - (b) Select potential areas for SSWRD
 - (c) Undertake PRA at representative Unions and Upazilas that includes the potential area and assess the following: i) development status, needs and priorities; ii) water-related problems, their causes and proposed solutions; iii) stakeholders' views on the ongoing and proposed initiatives; and iv) stakeholders' willingness to contribute to the construction, operation and maintenance (O&M).
- 3) Preparation of Master Plan for SSWRD with the Target Year of 2015
- (a) Strategies and priority programs which could include flood management, irrigation and drainage, agriculture and fishery extension, rural water supply, arsenic mitigation, and institutional strengthening.
 - (b) Preparing guidelines for project assessment
 - (c) Preparing prioritized list of sub-projects
 - (d) Preparing Action Plans
- 4) Technology transfer to counterpart personnel
- (a) On-the-job training in the process of preparing the Master Plan
 - (b) Conduct workshops

1.3 The Study Area

The Study Area, as indicated in the location map, covers the six districts (Mymensingh, Tangail, Sherpur, Jamalpur, Netrakona and Kishoreganj) of the Greater Mymensingh area. The Study Area is located in the north-central part of the country bordered by the Meghna River in the east, Gazipur District and Dhaka City in the south, the Jamuna River in the west, and the Indian state of Meghalaya in the north. The Old Brahmaputra River runs through the Area flowing from the northwest to the southeast. In the southern part of the Study Area, the Madhupur terrace with an elevation of about 15 m lies in the 3 m-lowlands. The Study Area occupies 11.3 % of the country with a land area of 16,672 km², and has a population of 12.6 % (15.5 million people) of the total population (BBS, 2001). The local administration in the Study Area comprises of 6 Districts, 58 Upazilas (sub-districts) and 562 Unions.

1.4 Counterparts of the Study

As stated in S/W, the GOB counterpart institution is Integrated Water Resources Management Units (IWRMU) of Local Government Engineering Department (LGED) under the Ministry of Local Government, Rural Development and Cooperatives (MLGRD&C).

The counterparts of the Study are consisting of the staff of LGED headquarters and Executive Engineers and Upazila Engineers at the local government institution in the Study Area.

1.5 Surveys and Workshops conducted in the Study

The Study designed as participatory plan formulation with several workshops and meetings, and several surveys at each level of the administration. They are summarized as follows:

Stages	Workshops/Surveys	IMCC	National	District	Upazila	Union	Community
Phase I: Problem Identification	W/S on the Inception Report and PCM Problem Analysis						
	Socio-economic Interview Survey						
	Farm Household Interview Survey						
	Union Questionnaire Survey(UQS)						
	W/S on Phase I Survey Results						
	W/S on Interim Report						
Phase II: Development Potential and Master Plan Formulation	W/S on Planned Field Survey & Questionnaire Survey to Upazila Engineers						
	Participatory Workshops (PRA)						
	Inventory Survey						
	UQS Verification Survey						
	CM of UDCC/DSSWRDC on Master Plan Concepts and verification of potential subproject						
	Explanation on Master Plan Concepts and verified of Potential Subproject						
	W/S on Draft Master Plan Explanation and Discussion						

Notes: W/S= Workshop(s), PCM=Project Cycle Management, UQS= Union Questionnaire Survey, PRA= Participatory Rural Appraisal, CM= Consultation Meeting(s), UDCC= Upazila Development Coordination Committee(s), DSSWRDC= District Small Scale Water Resources Development Committee, IMCC= Inter-ministerial Coordination Committee, = main targeted group, =secondary targeted group

Chapter 2 Kishoreganj District

2.1 General Conditions

Kishoreganj District (the District) was established in 1984; earlier it was a subdivision under the Mymensingh district. The subdivision was established in 1860. The District spreads on an area of 2,688.62 km². The District consists of four municipalities with 39 wards, 145 mahallas, 13 upazilas, 105 union parishads, 946 mouzas and 1,775 villages. Areas of upazila are shown in the table below.

Upazila-wise Area in km²

Name of Upazila	Effective Area	River Area	Total Area	% over District
District Total	2,572.95	115.70	2,688.62	100.00
Austagram	325.10	30.43	355.53	13.22
Bajitpur	182.93	10.83	193.76	7.20
Bhairab	115.46	23.86	139.32	5.19
Hossain Pur	119.66	1.63	121.29	4.51
Itna	380.78	21.16	401.94	14.94
Karimganj	195.73	4.79	200.52	7.46
Katiadi	218.49	0.73	219.22	8.16
Kishoreganj Sadar	193.73	-	193.73	7.20
Kuliarchar	102.51	1.50	104.01	3.87
Mithamain	222.92	-	222.92	8.30
Nikli	194.59	19.81	214.40	7.98
Pakundia	180.18	0.34	180.52	6.71
Tarail	140.84	0.62	141.46	5.26

Source: Census of Agriculture 1996

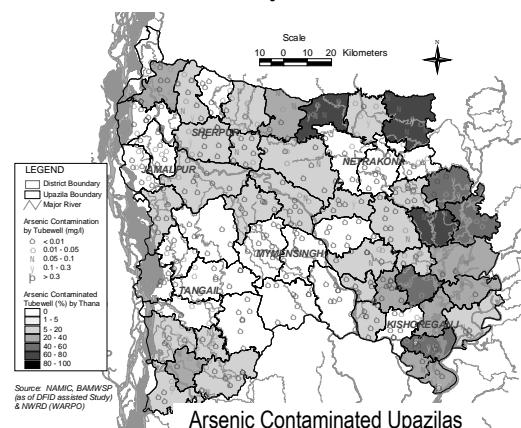
2.2 Natural Conditions

The soil of the District is mainly formed with recent and sub-recent alluvial sediments of low parts of the Old Brahmaputra floodplain and the Old Meghna estuarine floodplain. Most of the soil has silty to clay texture and low contents of organic matter. In the northern part of the District, the level of landscape under the Old Meghna floodplain comprises highly silty in texture clay soil. The floodplain of the Young and Active Brahmaputra contains grey silty clay loam. These types of soil mainly dominate in the central part of the District.

The District belongs to the North Eastern Hydrological Zone. The main rivers flowing through Kishoreganj District are the Meghna, the Brahmaputra, the Baruni, the Narsunda, the Dhanu, the Barak, the Bauli, the Kalni, the Ghora, the Basuni and the Sincua rivers (Fig.2.2). Among them the Meghna and the Brahmaputra rivers are navigable throughout the year. All the rivers are non-tidal. Total flowing length of all the rivers in the District is about 344 km. It occupies an area of 115.70 km², which is 4.30% of total area of the District. Main depressions are Humaipur (Bajitpur), Somai (Nikli), Barir (Mithamain), Surma Baula (Nikli), and Tallar Haors (Nikli-Bajitpur-Austagram).

Annual average temperatures are; maximum 33.3 °C, minimum 12 °C. The dry winter season starts from November and continues up to the end of February. Summer comes from middle of March and continues up to middle of June. The rainfall is generally heavy during July and August. The annual average rainfall at BWDB Kishoreganj station is 2,174 mm, of which 68% concentrates in monsoon season. The level of humidity is around 75 % in January and around 88 % in July.

Arsenic contamination of groundwater in the District is rather high ratio compare with other districts in the Study Area. According to the DFID survey, 40 to 60% of wells in Kishoreganj Sadar and Bajitpur upazilas are



rather higher contamination ratio. And Bangladesh Arsenic Mitigation Water Supply Project (BAMWSP) is expected to be implemented in Bhairab upazila listed in Phase 2, Kuliachar, Bajitpur, Pakundia, Hossainpur, Kishoreganj Sadar and Karimganj upazilas are listed in Phase 3.

2.3 Socio-economic Conditions

The District has populated 2.5 million (2001); male 50.29%, female 49.71%; Muslim 92.1%, Hindu 7.2% and others 0.7%. Agriculture 45.48%, fishing 1.87%, agricultural laborer 21.02%, wage laborer 3.29%, commerce 11.2%, transport 2.06%, service 4.47%, others 10.61%

Average literacy of the District is 21.94%; male 26.94% and female 16.64%. Educational institutions are; medical college 1, nursing training institute 1, university (under construction) 1, college 25, collegiate high school 4, high and junior high school 201, madrasa 120, technical training institute 2, government primary school 808, non-government primary school 1,137, kindergarten 16.

GDP of the District at current prices in 1999-2000 is estimated at Tk. 38,266 million with growth rate at 4.96 %, and per capita GDP is US\$ 276 (Tk. 13,903) which ranked the 43rd among 64 districts in Bangladesh. Sectorial shares of GDP are 19.3 % by crops & horticulture, 10.3 % by Fishing, 10.9 % by wholesale & retail trade (1999-2000).

According to “Local Estimate of Poverty and Malnutrition in Bangladesh (BBS & WFP, 2004), population ratio below the lower poverty line in the District (Tk. 528 for rural and 857 for urban area in 1999) is mostly high at 31% to 55%, Itna, Nikli and Tarail upazilas are high ratio between 37-55%, and Kishoreganj Sadar and Pakundia upazilas show the smallest at 25-31%. Percentage of population with calories intake lower than 1,805 Kcal/capita/day is very high to moderate (10% to more than 30%), of which in Austagram and Katiadi upazilas show the highest (more than 30%).

Total cultivable land 187975.31 ha, fallow land 5186.56 ha; single crop 46.74%, double crop 39.44% and treble crop land 13.82%; land under irrigation 59.06%.

Land holding type among the peasants 16.19% are landless, 13.35% marginal, 29.42% small, 18.94% intermediate and 22.10% rich.

2.4 Agriculture in the District

Kishoreganj District is rice based district because there is large area under haor where the major crop is Boro. There is also medium land and medium low land where Boro and T.Aman crops are grown. There is a small area under T.Aus where irrigation facility is available. The B.Aus and B.Aman crops are not usually grown in this district. During kharif season, large area is left fallow mainly because of flash floods, submerged and deep water flooding.

The cropping pattern and area under different land types of Kishoreganj District is as follows:

Land holding and use	No. of holding		Operated area	
	No.	%	ha	%
Total	417,189	100	183,002	100
Non farm holding	163,967	39	3,719	2
Small holding	205,334	82	73,521	41
Medium holding	40,246	16	66,174	37
Large holding	7,642	3	39,587	22

Source: Census of Agriculture, 1996

Cropping pattern	Area (ha)	Share of Total Area
Single cropped area	271,700	59
Double cropped area	155,363	34
Triple cropped area	34,827	8
Net cropped area	461,890	100
Cropping Intensity %		149

Source: 2000-2001 Annual Report of DAE

As shown the above table, 82% of the farm house holdings belong to the small farm holdings with an area of less than 1.0 ha. The medium and the large farm holdings were 16% and 3% respectively in the District. In the Study Area 84.1% of the farm holdings belong to the small farm holdings. Comparison of the 1983-84 of holdings with the 1996 indicates that the non-farm holdings increased by 1.69 times during this period. The farm holdings increased by 1.11 times, much smaller than the non-farm holdings. The small farm holdings increased by 1.19 times. On the other hand, the medium farm holdings decreased to 0.88, and the large farm holdings decreased to 0.78.

The area in the district under the cultivation of each crop generally resembles the average of the total Study Area. However, the rice cultivation is concentrated on Boro, reflecting the characteristics of the haor areas. The gross cropped area and the percentage of distribution of crops in the study area is shown below:

Distribution of Crops in the District and Study Area (%)

District	Gross Cropped Area (1,000 acre)	Aus	Aman	Boro	Rice Total	Wheat / maize	Potato	Vegetables	Spices	Pulses	Oil Seeds	Jute	Sugar Cane
Kishoreganj	571	9.7	19.2	48.1	77.1	4.1	2.1	1.2	2.6	1.4	4.3	5.5	0.1
Study Area Average	-	12.9	31.7	32.6	77.3	4.2	1.4	1.2	2.5	1.3	5.4	5.5	0.8

Source: Census of Agriculture - 1996 (BBS)

Gross value-added of major crops in the District comparing to Study Area and country is shown below. The District shows low percentage in the crops, high percentages in fishing.

Gross value-added of agriculture by District at constant Prices (2000-01)

(Unit: million Taka)

District	Crops	Animal farming	Forestry	Fishing	Total
Kishoreganj	5,349	1,171	828	3,458	11,806
Bangladesh	287,664	59,470	36,996	120,020	504,150
<Share in Agriculture (%)>					
Kishoreganj	45.3	9.9	7.0	29.3	100.0
Study Area Average	59.0	11.6	7.7	20.4	100.0
Bangladesh	57.1	11.8	7.3	23.8	100.0

Source: Statistical Yearbook of Bangladesh (2001)

2.5 Fisheries in the District

(1) Production of Fishery in Greater Mymensingh Area

Inland water fisheries of Bangladesh are divided into two types. One is inland open-water (river & estuary, Sundarban, Beel, Kaptai Lake, flood land), and the other is inland close-water (pond & ditch, baor, shrimp (freshwater shrimp) & fish farm). However in Greater Mymensingh area, there is no estuary and baor.

In the rainy season, a lot of young and old men and women in rural areas catch fish in the floodplain, public canal, river etc. In addition, backyard pond culture using the hole that has been dug when soil is taken for the construction of house, road etc., becomes active every year. Freshwater fish is an important source of animal protein accounting for around 60% of the total animal protein intake. Moreover, freshwater fish, both caught in public water and cultured, is also an important source of cash income. The proportions of the fishery industry in District GDP in Kishoreganj is 11%, which is middle among the districts in the Study Area

The table below shows annual fisheries production from inland waters in six districts in 2002. Pond and shrimp farm are culture fisheries and others are capture fisheries. According to the table, Mymensingh District ranks first in terms of total catch. The second is Kishoreganj District, followed by Netrakona District. Since Mymensingh District is the center of the great Mymensingh area, and the Faculty of Fisheries of Bangladesh Agriculture University as well as Bangladesh Fisheries Research Institute are situated there, the fisheries activities are more active than five another districts. Production by shrimp farm was recorded only in Kishoreganj District.

Total Catch of Inland Water, 2002

(Unit: MT)

No.	District	River	Beel	Floodland	Pond	Shrimp farm	Total
1	Mymensingh	2,607	5,332	25,270	23,314		56,523
2	Kishoreganj	1,284	5,584	19,191	9,237	15.82	35,312
3	Netrakona	1,344	8,013	8,867	15,682		33,906
4	Tangail	1,032	1,456	9,341	5,605		17,434
5	Jamalpur	755	2,287	6,746	3,241		13,029
6	Sherpur	85	2,330	3,830	2,486		8,731
Total		7,107	25,002	73,245	59,565	15.82	164,935

Source, Fisheries Statistical Yearbook of Bangladesh (2002), Department of Fisheries

(2) Fisheries in Kishoreganj District

The eastern part of Kishoreganj District is a low land and two large rivers flowing there. That part becomes a large flood plain named Haor in the rainy season, so that the catch from the floodland is high. The catch from the river dropped in 2002 to a level of 1/10 of the level in 1998. The production from shrimp farms increased year by year.

Annual Catches from Inland Waters in the District (MT)

Location	1998	1999	2000	2001	2002
River	11,145	2,712	1,795	1,316	1,284
Beel*	-	-	-	-	5,584
Floodland	23,104	18,254	23,389	31,214	19,191
Pond	10,933	13,089	8,410	7,167	9,237
Shrimp farm	4.65	5.37	8.10	10.70	15.82
Total	45,187	34,060	33,602	39,708	35,312

Source: Fisheries Statistical Yearbook of Bangladesh, DoF

The average catch of subsistence fisheries households in Kishoreganj District per household in 2002 decreased to the level lower than 1/2 of the level in 1998, while number of subsistence fisheries households increased. The ratio of fishery industry production in GDP is low (5%) in the District. Also the ratio of subsistence fisheries household in the district is lower than that in other districts. However, average catch per household is high (37Kg). Those might indicate that dependency on fish resources by subsistence fisheries households in the District is higher than that in other districts.

2.6 Livestock in the District

Climatic and topographic conditions, especially the high temperature and high humidity and frequent flooding, are not suitable to domestic animals. Pasture lands are not abundantly available for cattle and goats. Recently water shortages and development of agricultural machinery have caused unfavorable conditions to water buffalos. Due to the low feed efficiency, it has been difficult to enhance livestock farming in Bangladesh under the low food self-sufficiency. From these reasons, livestock farming has not been a priority area in the past. However, livestock is necessary to be developed in the future as an important income source of farmers. Livestock can be a demand-driven product. As the national economy develops, consumption of livestock will be increased.

Number of livestock in the District and Study Area according the size of holdings is shown below.

Number of Livestock in the District and Study Area (1996)

Number in 1000s

	Districts	Holdings		Farm Holdings			
		All	Non-farm	Total	Small	Medium	Large
Cattle	Kishoreganj	398	29	369	222	108	40
	Study Area Total	2,526	156	2,370	1,493	724	152
Goats	Kishoreganj	167	38	128	102	22	4
	Study Area Total	1,351	260	1,091	805	244	42
Fowls	Kishoreganj	1,742	419	1,324	973	282	68
	Study Area Total	10,346	2,070	8,311	6,088	1,896	328

Source: Census of Agriculture - 1996 (BBS)

Percentages of households which raise animals are generally high in all the size of farm holdings. It indicates that the farming is closely related with animal husbandry, and recycling and scavenging of livestock are well functioned. Difference in the number by district in the Study Area was not large in cattle. The high water level during rainy seasons is suitable for water animals and brings about high value. In the scavenging livestock, farming area of the farm lands has large effects on number of animals. Land limitation causes a shortage of feed supply in Bangladesh. As observed in the District, large haors effect on feed supply in rainy seasons. In dry seasons, competitions between animal feeds and vegetables are also severe. Various chars along large rivers such as the Jamuna river and the old Brahmaputra river are expected to be good pasturing areas. For that purpose, the water management of the rivers is important.

In Bangladesh, veterinary services are key issues for the development of livestock farming. According to the officers in Ministry of Livestock and Fisheries, the veterinary services in the Greater Mymensingh are not much different among the districts. Vaccination to poultry is already well organized. However, vaccination services to cattle and ducks are not well managed. Veterinary services in Kishoreganj and Netrakona, where duck farming is widely extended, need to be improved.

2.7 Zoning of the District

Based on the Agroecological Zone (AEZ) and inundation land type, upazilas in the District is mainly dominated by lowlands being classified as 1) lowlands of Sylhet basin, 2) medium highlands of Young Brahmaputra Floodplain, 3) lowlands of Old Meghna Estuarine Floodplain and 4) lowlands of Old Brahmaputra Floodplain (Fig. 2.3). Shares of zones in the Upazila and union-wise classifications are shown in the table below:

(unit in ha)

Upazila		Young Brahmaputra Floodplain (802)	Old Brahmaputra Floodplain (903, 904)		Middle Meghna River Floodplain (16)	Old Meghna Estuarine Floodplain (1903, 1904)		Sylhet Basin (2104)	Madhupur Tract (2801)	Total
		F1	F2	F3	F2	F2	F3	F3	F0	
Austagram	Total	0	0	0	1	0	13,017	14,493	0	27,512
	Share	0.0%	0.0%	0.0%	0.0%	0.0%	47.3%	52.7%	0.0%	100.0%
Bajitpur	Total	5,804	0	3,233	3,273	0	4,597	0	0	16,907
	Share	34.3%	0.0%	19.1%	19.4%	0.0%	27.2%	0.0%	0.0%	100.0%
Bhairab	Total	2,830	0	0	6,850	0	0	0	0	9,680
	Share	29.2%	0.0%	0.0%	70.8%	0.0%	0.0%	0.0%	0.0%	100.0%
Hossainpur	Total	10,238	1,523	0	0	0	0	0	0	11,762
	Share	87.0%	13.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Itna	Total	0	0	6	0	87	6,336	30,549	0	36,978
	Share	0.0%	0.0%	0.0%	0.0%	0.2%	17.1%	82.6%	0.0%	100.0%
Karimganj	Total	2,765	5,498	7,139	0	0	0	4,270	0	19,672
	Share	14.1%	27.9%	36.3%	0.0%	0.0%	0.0%	21.7%	0.0%	53.2%
Katiadi	Total	10,671	0	8,662	0	0	0	2,521	0	21,854
	Share	48.8%	0.0%	39.6%	0.0%	0.0%	0.0%	11.5%	0.0%	100.0%
Kishoreganj Sadar	Total	13,685	1,165	2,933	0	0	0	269	0	18,052
	Share	75.8%	6.5%	16.2%	0.0%	0.0%	0.0%	1.5%	0.0%	100.0%
Kuliar Char	Total	9,104	0	0	940	0	0	0	0	10,044
	Share	90.6%	0.0%	0.0%	9.4%	0.0%	0.0%	0.0%	0.0%	100.0%
Mithamain	Total	0	0	0	0	1,525	9,407	10,024	0	20,956
	Share	0.0%	0.0%	0.0%	0.0%	7.3%	44.9%	47.8%	0.0%	100.0%
Nikli	Total	14	0	3,307	0	0	7,198	6,889	0	17,409
	Share	0.1%	0.0%	19.0%	0.0%	0.0%	41.3%	39.6%	0.0%	100.0%
Pakundia	Total	16,314	0	0	0	0	0	0	566	16,880
	Share	96.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	100.0%
Tarail	Total	0	2,427	8,116	0	0	0	3,743	0	14,286
	Share	0.0%	17.0%	56.8%	0.0%	0.0%	0.0%	26.2%	0.0%	100.0%
District Total		71,428	10,613	33,395	11,064	1,612	40,555	72,759	566	241,992
Share		29.5%	4.4%	13.8%	4.6%	0.7%	16.8%	30.1%	0.2%	100.0%

2.8 Water Resources Development

(1) Hydrological Region and FAP

The District is under the North East Hydrological Zone. According to the National Water Resources Management Program, there is no specific regional water resources development program except national level program for the District.

The FAP study in relation to the District is FAP 6: North East Regional Water Management Project (NERWMP). Its outlines are as follows:

The Study completed on May 1994. The Study area was 24,200 km² which is 17% of total Bangladesh area. The Study proposed 44 Initiatives under 8 Strategic Thrusts to manage water resources. A list of the 8 Strategic Thrusts, is mentioned below.

- 1) Urban and Infrastructure Protection
- 2) Intensive Agriculture for Urban Consumption
- 3) Enhanced Production Systems on Seasonally Flooded Areas
- 4) Integrated Development of Deeply Flooded Areas
- 5) Biodiversity Enhancement and Sustainable Management
- 6) Improved Liveability of Rural Settlements
- 7) Navigation Improvement
- 8) Institutional Strengthening and Development

(2) Large Scale Water Resources Development Projects

Among the large scale water resources development projects constructed by BWDB (Fig. 2.2), major information in the District is as follows:

- 1) Bailgana Khal Project (No.48) and Kamarnaogaon Project are useful projects.
- 2) As a district adjacent to the Haor area, there are 2 Haor development projects (No. 13 & 18).
- 3) Bhera Mohana Temporary Closure Project (new project) is planned.
- 4) Re-excavation of Singua River has a plan of re-excavation along the 50 km.

According to the NWRD of WARPO, there are eleven (11) large-scale water resources development projects, which were constructed by BWDB. Their outlines are summarized as follows:

Name of Project	Length of Embankment (km)	Length of canal (km)	No. of Regulator /Sluice Gate	New Type of System	Project Area (ha)	Irrigable Area (ha)	Starting Year	Completion Year	Status
Adampur Sub-Project	0.00	6.00	0	FCD	1,440	0	1990	1992	Complete
Re-Excavation Of Singua River	0.00	50.00	0	I + DR	12,500	800	1976	1979	Complete
Baraikhali Khal Sub-Project	5.30	8.50	1	FCDI	9,385	180	1992	1993	Complete
Alalia Bahadia. Sub-Project	0.00	7.00	1	FCDI	1,822	115	1981	1983	Complete
Charfaradee-Jangalia Sub-Proj.	11.62	0.00	4	FCD	3,485	0	1989	1991	Complete
Humaipur Haor Project	57.75	29.00	8	FCDI	5,263	280	1957	1986	Complete
Gazaria Beel Project	0.00	18.50	2	FCDI	2,030	200	1985	1986	Complete
Re-Excavation Of Bardal Khal	0.00	16.00	0	FC	2,591	0	1992	1994	Complete
Bashira River Re-Excavation	0.00	20.00	2	FCDI	7,150	1,600	1981	1987	Complete
Modkhola-Bhairagirchar Sub-Pro Project	10.80	0.00	1	FCD	2,060	0	1990	1993	Complete
Dewghar Haor Sub-Project	15.40	0.00	6	FCD	231	0	1991	1993	Complete

Source: National Water Resources GIS Data Base (NWRDB)

(3) Minor Irrigation Development in the District

Minor irrigation equipment and irrigated area during Boro 2003 in the Upazila is show as follows:

Upazila	DTW		STW		LLP		Total Irrigated (ha)
	Numbers.	Area (ha)	Numbers.	Area (ha)	Numbers.	Area (ha)	
Austagram	0	0	204	892	278	5,531	7,592
Bajitpur	13	432	1,042	4,809	263	4,489	9,730
Bhairab	1	38	749	2,643	6	45	2,727
Hossainpur	70	1,466	423	1,909	34	228	3,603
Itana	0	0	497	3,380	835	17,369	21,024
K. Sadar	86	1,961	388	1,962	36	262	4,185
Karimganj	36	749	932	4,060	76	482	5,291
Katiadi	17	435	1,817	7,630	18	241	8,306
Kuliachar	13	107	1,485	3,649	3	41	3,798
Mitamain	0	0	158	1,269	389	8,645	10,754
Nikli	3	71	548	4,701	288	4,778	9,550
Pakundia	32	721	1,394	6,122	33	220	7,063
Tarail	20	423	1,008	4,300	68	515	6,147
Total	291	6,404	10,645	47,327	2,327	42,847	99,770

Sources: Survey Report on irrigation Equipment and irrigated Area 2003, BADC, Total irrigated area including the area irrigated by other traditional equipment

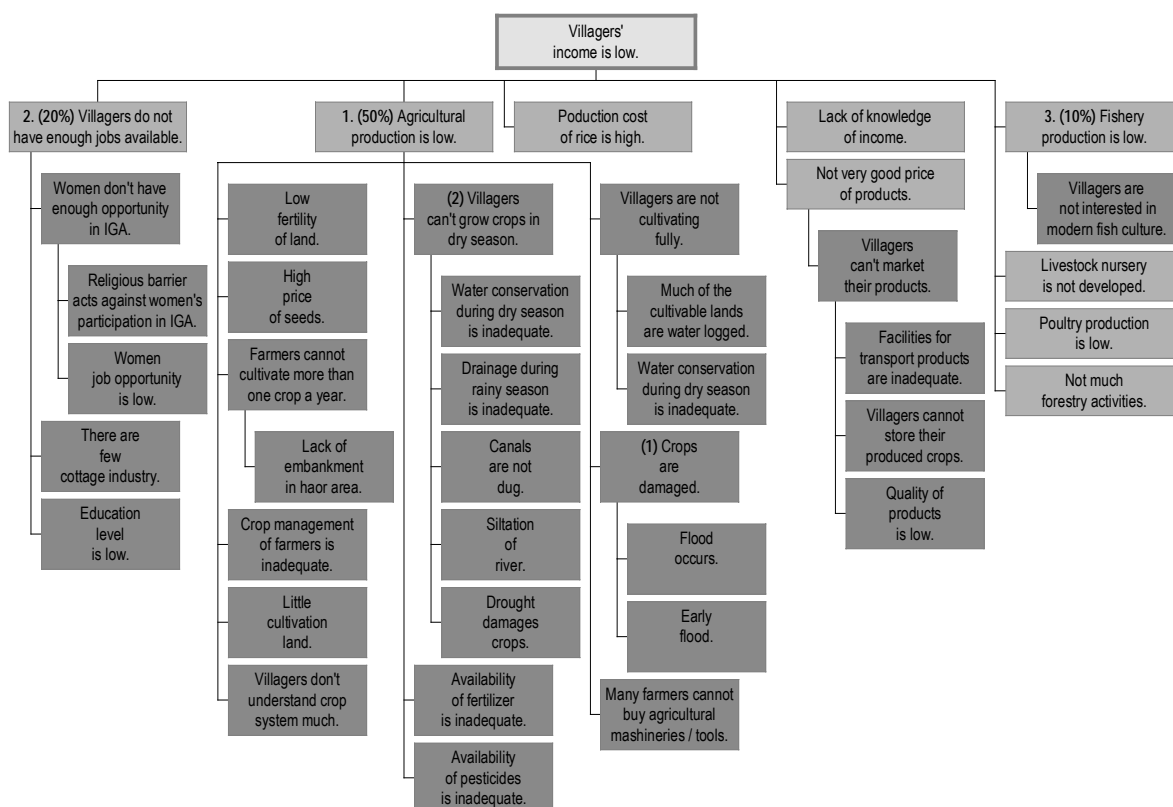
Chapter 3 Problem Analysis and Participatory Workshops in the District

3.1 Problem Identified through the Workshops in the District

In order to clarify the main issues concerning water resources management and livelihood in the District, three (3) workshops were conducted at various levels. Problem analyses were carried out in each workshop.

(1) Problem Identification Workshops of Government Officials

A workshop targeting government officials was held at district levels. District-level workshop was participated by LGED officials/officers, government district agencies and representative of Union *Parishads*. The results were summarized in problem trees as shown below.



(2) Problem Identification Workshops of Villagers in Subproject Areas

Workshops at Union level were held at 2 unions and WMAs during the period of 11 - 12 Sep. 2004. Selection of the workshop sites was done based on the zoning of the Upazilas. Their problem trees are shown in Fig. 3.1.

(3) Summary of the Problem Analysis Workshops

Problem analyses were carried out at each workshop with the core problem defined as “villager’s income is low”. Direct causes in each workshop in the District are shown below.

Name of District/Upazila/Union	Kishoreganj District	Joyka Union, Karimganj Upazila	Tarail Union, Tarail Upazila
Direct Cause 1.	1. Low agricultural Production	1. Low agricultural Production	1. Low agricultural Production
Direct Cause 2.	2. No jobs / work	2. Low fish production	2. Low price of products
Direct Cause 3.	3. Low fish production	High agricultural production cost	3. No jobs / work
Direct Cause 4.	-	Expenditure is large.	Women can't earn.
Direct Cause 5.	-	Women can't earn.	Expenditure is large

The direct causes identified as the least common multiplier of all the problems identified in the Study

are: 1) Low agricultural production, 2) Limited work opportunity, 3) Low profit from products, 4) Low fish production, 5) Large family expenditure, and 6) Women cannot earn, low livestock production, etc. (Fig. 3.2).

3.2 Problems and Issues Identified

(1) Problems identified in the District

Problems for small scale water resources development identified in the District through interviews, discussion and hearings are summarized in the following table.

Problems related to Natural conditions:		
- Flat low lying terrain	- Arsenic Contamination	
- Strong Seasonal Bias of Rainfall		
Problems related to Socio-economic Conditions:		
- Poverty/Vulnerability of Farmers	- Gender Issues	- Local Conflicts
- Illegal Land Occupation	- Fragmented Agricultural Area and Small Landholdings	
- Communication Gap between Local Government and Villagers		
Problems related to agriculture, livestock and fisheries:		
(Agriculture)		
- Land development	- Water Related Problems	- Rice Monoculture
- Problems of deficit farmers	- Seed Production and Supply	
- Malnutrition by poor protein supply		
(Fisheries)		
- Flood damages	- Shortage of water during dry season	
- Insufficient fishery extension services	- No management of indigenous fish and conservation area	
- Shortage of improved fish feed		
- Hard to access for water bodies leasing by poor fishermen		
(Livestock)		
- Feed shortages in dry seasons	- Luck of duck hatcheries	- Veterinary services
(Marketing)		
- Poor marketing environment		
Rural Infrastructure Conditions:		
- Damages to roads	- Rural Community Water Supply	- Poor road network

(2) Findings of Farm Household Interview Survey and Union Questionnaire Survey

The survey was conducted to understand/identify profitable farming style. According to the results of farmers' interview survey, farmers expressing their request to the Union Parishads are summarized in the table. As far as water resources concerned, irrigation and drainage problems are expressed by farmers.

Priority of Farmers' Requests to Union

Requests	Kishoreganj	Study Area Average
Transportation (Marketing)	1	1.2
Sanitary facilities	2	1.7
Irrigation	3	3.0
Seed supply	4	4.5
Drainage	4	4.8
Health services	7	5.2
Fertilizer supply	4	5.5
Training for new technologies	8	7.2
Credit services.	10	8.7
Information services	8	9.5
Cooperative services	10	9.8

Source: JICA Farm household survey (2004)

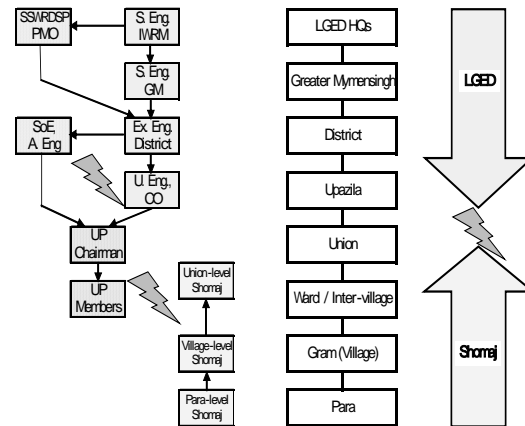
(3) Other Issues

1) PRA used in SSWRDSP-2

The PRA used in SSWRDSP-2 is a step of a project appraisal process by SSWRDSP-2. Therefore, PRA starts from the proposed project, not from the needs of the villagers or their future image. However, PRA workshops become the venue to talk about the development of the area, to get better consensus among stakeholders and improve subproject design.

2) Communication Gap

There found two major communication gaps in subproject planning, one between Union level and village/*para* level, and the other between project employee and LGED employee line. The former gap hinders getting the consensus of the people and establishing participation and ownership of the people. The latter gap hinders identifying and designing a good subproject. In this context, more participation of Upazila Engineer and Community Organizer to design-discussion meeting seems to be necessary. Also, consensus of *shomaj* elders at village-level and *para*-level should be reached before finalizing the proposal of subproject..



Communication Gap

3.3 Participatory Workshop (PRA) for Sustainable Water Resources Management

(1) Methodology

1) Issues

As sated above, two communication gaps found; one between union level and *gram* (village) / *para* level, and the other between project employee and LGED employee line.

2) Assumptions

Organizing several participatory workshops (PRA) at *gram* level beside subproject level, with active participation of villagers, local leaders, UEs, AEs (SP-2), SoEs (SP-2), SAEs (SP-2) and other local LGED staff, can conquer these communication gaps and promote better project design and better consensus among all the actors.

The Team requested AE (SP-2) and/or SoE (SP-2) of each district to choose one promising subproject area to organize participatory workshops.

➤ Expected benefits for the Study Team / LGED

To collect more grass-roots information especially on decision-making and collaboration in the community-base projects and activities.

To clarify the needs of the community

To verify a participatory planning and decision making process for small-scale water resources development including involvement of UEs, AEs (SP-2), SoEs (SP-2), SAEs (SP-2) and other local LGED Staff.

➤ Expected benefits for the local communities as a by-product

To share the ideas and opinions at intra-*gram*, inter-*gram* and subproject levels.

To start some collaborative actions for consensus and for the future.

Capacity building of the individuals and the communities.

(2) Process of Participatory Workshops (PRA)

1) Arrangement of workshops with local leaders

Preparation of about four gram level workshops to strategically cover all the study area.

Preparation of one integrated workshop at subproject level for summary and some consensus building.

Miking by UP Chairpersons, UP Members, *matabbors* and other local leaders for participation.

2) *Gram* level interviews and workshops

Interviews focused on poor villagers.

Mapping, rich-poor profile and other RRA tools if necessary.

Appreciative Inquiry : a) Discovery Stage by sharing success stories of community- based projects and activities, b) Dream Stage by sharing the future image of individuals and the community where they can repeat more success stories, c) Design Stage by sharing what actions they can take today, tomorrow and next week.

3) Integrated workshops

Presentation of the results of the *gram* level workshops.

Presentation of observation and analysis by the Team: identification of intra-*gram* / inter-*gram* issues, and subproject / *upazila* / district level issues if any.

Discussion especially on inter-*gram* and subproject level issues, and on immediate actions.

Interviews and Participatory Workshops Schedule at Each Subproject Area

1 st – 3 rd day:	Meeting with key persons and arrangement of workshops by the Study Team, transect of the study area and interviews of villagers by the PRA Contractor.
4 th – 7 th day:	Four <i>gram</i> level workshops (three <i>para</i> level workshops at the subproject area in <i>Sherpur</i> District) using mapping, rich-poor profile and <i>Appreciative Inquiry</i> .
8 th day:	An integrated workshop at subproject level: <ul style="list-style-type: none"> - Presentation of the results of the four <i>gram</i> level workshops by villagers - Presentation of the observation and analysis by the Study Team and the PRA Contractor - Technical issues of the proposed subproject by UE and/or AE (SP-2) or SA (SP-2) - Social issues and WMCA by SoE (SP-2) - Question & answer, and free discussion
9 th – 10 th day:	Reporting by the PRA Contractor.

(3) Records of Participatory Workshops (PRA) in Kishoreganj District

<u>Sub-project Name:</u> Not known yet.	<u>Grams:</u> 1) <i>Ulkhola</i> and 2) <i>Sindrip</i> and 3) <i>Uttar-Nansree</i> in Noabad Union, 4) <i>Baliabari</i> , 5) <i>Khidirpur</i> , 6) <i>Shimulgora</i> and 7) <i>Bankata</i> in Joyka Union, and 8) <i>Patda-degreekanda</i> and 9) <i>Patda-pataria</i> in Boulai Union	<u>Appraisal Status:</u> Under preparation.
<u>Type / Project Area (Benefited Area):</u> Catchment area development and drainage improvement / Area not known yet.		
<u>Major Proposed Activities / Facilities:</u> Canal re-excavation and construction of a sluice gate.		
<u>Necessary Modification:</u> It is a two- <i>upazila</i> and three-union, not a one- <i>upazila</i> and two-union subproject as in the proposal.		
<p>The UP Chairperson who submitted the proposal left the office and the new UP Chairperson might not be so enthusiastic about the subproject.</p> <p>The real project area includes three unions two <i>upazilas</i> not two unions one <i>upazila</i> as mentioned in the project proposal, more over, the additional gram of the third union could be benefited by the proposed subproject the most. The villagers of that gram are very serious about the subproject and outnumbered other villages including where the venue was.</p> <p>By the initiative of the matabbors of the additional gram, local leaders decided after the integrated workshop to have a meeting to reach a consensus on the subproject.</p>		

(4) Some Cross Sectional Analysis

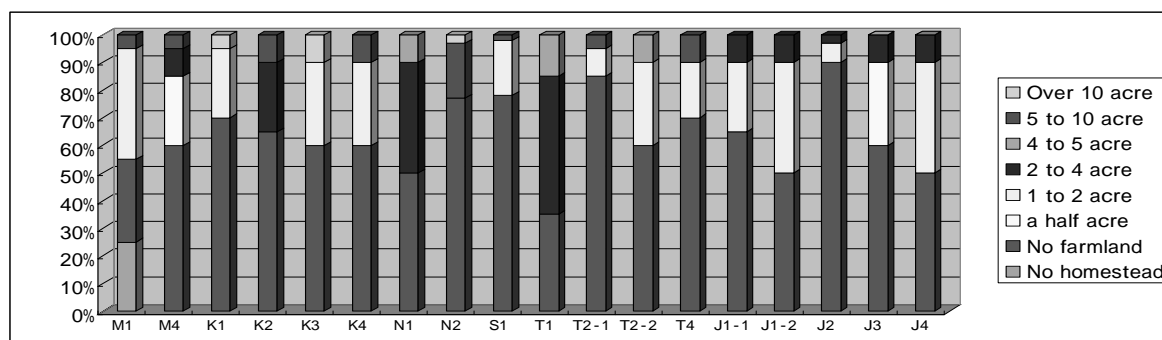
1) Rich-poor profiles at the *gram* level workshop

18 Rich-poor profiles conducted at the *gram* level workshops show that villagers define landless farmers as poor and the ratio of the poor ranges from 50% to 85%.

At all of the *gram* level workshops in *Kishoreganj*, villagers define the rich as the landowners of more than 20-40 *kany* (7-14 acre) or 2.5 ha (6.25 acre) and that is more than any other districts. It is probably because they are in the *haor* area and there are some large landowners.

Rich-Poor Profile at *Gram* Level Workshops

	M1	M4	K1	K2	K3	K4	N1	N2	S1	T1	T2-1	T2-2	T4	J1-1	J1-2	J2	J3	J4	
No homestead	25%																		
No farmland	30%	60%	70%	65%	60%	60%	50%	77%	78%	35%	85%	60%	70%	65%	50%	90%	60%	50%	
a half acre		25%																30%	
1 to 2 acre	40%		25%			30%				20%		10%	30%	20%	25%	40%	7%		40%
2 to 4 acre		10%		25%				40%			50%								
4 to 5 acre							10%			15%		10%		10%	10%	3%	10%	10%	
5 to 10 acre	5%	5%		10%		10%			20%	2%		5%							
Over 10 acre			5%		10%			3%					10%						



Note: Mymensingh (M1, M4), Kishoreganj (K1 to 4), Netorakona (N1, N2), Sherpur (S1), Tangail (T1, T2-1, T2-2, T4), Jamalpur (J1-1, J1-2, J2 to 4)

➤ Cash income of relatively poor villagers

The PRA Consultant Team made 92 interviews in total, 15 or 16 interviews at each subproject site. They did a purposeful sampling of interviewees by visiting rather small and shabby huts. 26 out of 92 interviewees or 28.3% are women, and strikingly, 14 out of 26 or 53.8% of the women are single (13 widows and one divorcee). At the subproject area in *Kishoreganj*, all the four women interviewed are widows.

8 out of 26 female interviewees or 30.8% said they are doing maid and earn something like three meals and Tk. 30/day or 0.5 kg of rice per day to 1 mond (40 kg) per month. 6 out of 26 or 23.1% are day laborer earning Tk. 30 to 100 and they are all in *Sherpur*. 5 out of 26, or 19.2% said they are hawkers of fishes, vegetables and household goods, and earn Tk. 25 to 60/day. Also another 5 said they are housewives.

32 out of 92 interviewees or 34.8% said their major income source is day labor and the daily wages range from Tk. 30 to 100/day. At the subproject area in *Sherpur*, 14 out of 15 interviewees or 93.3% are engaged in day labor of farming, forestry and earthen work etc. One villager said he is a farmer with 50 decimal (0.5 acre) of farmland.

The daily wages and availability of farming labor vary from month to month. For example in *Jamalpur*, the wage is about Tk. 50/day in July-September, about Tk. 60/day in January-March, about Tk. 80/day in November-December, and about Tk. 100 in April-June. Usually one meal and 0.5 kg of rice are provided by the landowners in planting and weeding seasons, and two meals and 1 kg of rice in harvesting season.

9 out of 92 interviewees or 9.8% said they are share-croppers but their land sizes are something like one or two bigha (0.33 or 0.66 acre) and they do day labor substantially. 8 out of 92 interviewees or 8.7% are rickshaw/van pullers and earn Tk. 50 to 200/day. Some are working in Dhaka. 7 out of 92 interviewees or 7.6% are hawkers of fishes, vegetables, ice cream and household goods and earn Tk. 25 to 100 (Tk. 25 to 60 for women)/day.

In conclusion, options of day labor for women are less and wages are lower than men. Men can choose fishery or farm labor in high season, and rickshaw/van pullers, earthen work or hawkers in low season. Many of them can still make Tk. 50-70 per day all year round. Maximum wages women can make, however, is Tk. 60/day if earthen work is available. Only some women are lucky enough to find wood cutting / planting jobs or to be able to work in the field. Otherwise, to work as a maid might be the best regular occupation.

The majority of poor farmers (55 out of 92 interviewees or 59.8%, the cases with no interest are excluded) are borrowing money at very high interest (8% to 20% per month or 100% to 240% per year). 57.9% are the loans for food, agriculture, business etc. and the average amount is Tk. 1,873. 34.2% are for health problems and the average amount is Tk. 3,431. Others are for land and

houses (Tk. 20,000 and Tk. 14,000 from NGOs), and for wedding (Tk. 7,800)

(5) Participatory Planning and Decision Making Process

COMMON ISSUES	POSSIBLE IMMEDIATE ACTION
On Project Designing	For Project Designing
1. All of the six subprojects where the Team had workshops go beyond union borders. If the benefited area is close to 1,000 ha and the area of each union is something like 2,000-3,000 ha, the subproject most likely is a multi-union project.	1. Assuming all the subprojects are multi-union, UE, AE (SP-2), SoE (SP-2) and other local LGED Staff need to check all the subproject proposals and rewrite them accordingly.
2. Negative impacts tend to occur near the border of the project area, especially beside the facilities such as embankment, sluice gates and culverts. They are not paid attention so that no mitigation measures can be taken, if appraisal teams only study inside of the project area.	2. The study area for the appraisal teams need to include potentially affected areas such as outside of embankment, outlets or inlets of sluice gates and culverts, and upstream of dams. The study area must be significantly wider than the project area.
3. Project purpose, major project facilities and activities are not so clear in the subproject proposals, and they are being refined through "appraisal" process by the appraisal teams.	3. UEs, AEs (SP-2), SoE (SP-2) and other local LGED staff must refine the subproject proposals so that the project purpose, major project facilities and activities are clear.
4. UEs, AEs (SP-2) and other local LGED staff are not involved in substantial project designing because it is considered as "appraisal" process.	4. Full and active participation of UEs, AEs (SP-2), SoE (SP-2) and other local LGED staff in project designing is a must. Participation does not only mean participation of the villagers, but of all the actors.
5. Phasing of the projects and priority in <i>upazila</i> / district development (plans) are not so clear.	5. UEs, AEs (SP-2) and other LGED staff at <i>Upazila</i> and District levels need to add comments to the subproject proposals on phasing and priority in the <i>upazila</i> and the district.
On Consensus Building	For Consensus Building
1. Few districts or <i>upazilas</i> have full appraisal reports, so that local LGED staff cannot explain the results, either the proposals pass or fail, fully to UP Chairpersons and villagers.	1. For transparency and accountability to UP Chairpersons, UP members, local leaders and villagers, copies of all the appraisal reports must be sent to each district and the <i>upazila</i> (s) so that AEs (SP-2), SoE (SP-2), UEs and other local LGED staff can explain the results of appraisals to them.
2. Few UP Chairpersons consult <i>gram</i> level leaders, sometimes not even UP members, before submitting subproject proposals.	2. Accountability to the villagers and consensus of <i>gram</i> level leaders such as <i>matabbors</i> need to be the pre-requisites for UP Chairpersons to submit subproject proposals
3. One transect walk and one workshop in a subproject area are not enough for consultation. Important negative impacts and social conflicts can be unrecognized by the appraisal teams, and many questions of the villagers will be unanswered.	3. Two-day interviews and three to five <i>gram</i> level workshops need to be conducted in addition to one transect walk and one workshop by the PRA team. A workshop for more than three <i>grams</i> usually cannot attract so many ordinary villagers from all the <i>grams</i> . A workshop for every one or two <i>grams</i> is recommended.
4. Neighboring villagers of a subproject do not have opportunities to be consulted by the appraisal teams	4. The villagers of neighboring <i>grams</i> and unions must be included to the interviews and workshops by the PRA team. They could be affected negatively by the proposed subproject. The primary purpose of impact assessment is not to show there are little negative impacts, but to show how many mitigation measures are identified and how much project design has improved from the original one.
5. Many villagers do not have opportunities to get information on WMCA so that they do not know what WMCA is even after they have agreed to join WMCA.	5. Full explanation to the villagers on major activities, pre-requisites and benefits of WMCA is necessary before asking about their promises to join WMCA.

(6) WMA or WMCA

1) WMAs in SSWRDSP-1

There are 280 sub-projects in SSWRDSP-1 and the average members of WMA are 413, of which 100 or 24.2% in average are female members. The members are largest at 833 (an average of four WMCAs) in Pabna District and smallest at 110 (an average of four WMCAs) in Bogra District.

The target amount of beneficiary contribution is Tk. 128,417 in average per WMA. The amount is highest at Tk. 363,342 (an average of six WMCAs) in Chapai Nawabganj District and lowest at Tk. 27,259 (an average of seven WMCAs) in Thakurgaon District.

The collected amount of beneficiary contribution is Tk. 290 per member in average. It is highest at Tk. 1,247 per member in Bogra District and lowest at Tk. 104 per member in Jhenaidah District.

2) Community-Based Projects

From the success stories of community-based projects, the Team has found that about 20 villagers invested for a gram level earthen dam project in *Sherpur* District about Tk. 240,000 every season for nine years. In case of a gram level DTW project in *Mymensingh*, 35 villagers invested Tk. 350,000. The amount is almost as much as the target amount of beneficiary contribution in *Chapai Nawabganj* District.

The water fee of the earthen dam project in *Sherpur* District is Tk. 800/acre, and that of the DTW project in *Mymensingh* District is Tk. 140/Katha (Tk. 1,750/acre). The investment, water fee, construction wages and who work as day laborer etc. were decided by *shomaj* of *matabbors* and villagers have had no serious problems of investment nor collecting water fees.

The interviews showed that more than 20% of the poorer households in the villages could be female-headed. Also more than half of the population is usually landless and poor. The figure could be as high as 90% in some grams.

Women have much less options and opportunities for cash income in the villages. If they are not lucky enough to be able to work in the forest or in the paddy field, the best they can do is to find temporary earthen work, work as a maid (usually 40 kg of rice per month plus three meals) or as a hawker (could be Tk. 30-40/day).

3) RECOMMENDATION

It seems to be very difficult for poor families, especially female-headed families, to contribute Tk. 300, sometimes more than Tk,1,000 in cash to join WMCA. They might not be the direct beneficiaries of the sub-projects either if they are landless. On the other hand, it is not difficult for villagers to invest Tk. 300,000 at gram level if they are community-based projects, the decision was made through shomaj, and landowners, who are more likely the real direct beneficiaries of sub-projects, invest and pay the water fee. Therefore:

To exempt poor landless farmers, especially female-headed households, from cash contribution to join WMCA.

To introduce progressive cash contribution system based on gram level decision.

To charge operation and maintenance fee solely on landowners' accounts.

To include community-based water resources development projects into WMCAs under SSWRDSP-2 even if they are not selected as sub-projects.

Chapter 4 Small Scale Water Resources Development Potentials

4.1 Surface Water Resources in the District

(1) Perennial/seasonal Waterbodies

There are about 560 perennial waterbodies, with a total area of about 4,599 ha which cover 1.8% of the District. Among them, beels are counted as 160 with an area of 1,158 ha in the District as shown in the following table. There is no beel in 1 upazilas and 60 unions; in other wards, 55% of unions have beels in the District.

District	Total Numbers		No. having Beel		No. of Beel*	Beel Total Area (ha)
	Upazila	Union	Upazila	Union		
Kishoreganj	13	110	12	50	160	1,158
Total	58	565	52	250	664	15,033

Source: NWRD, WARPO

Notes: * because a beel locates in the several unions

In regard to the water scarcity in dry season, it may be said that all waterbodies especially beels with considerable scale have some potential for SSWRD. Installation of supplemental water retention facilities or dredging may improve its utilization.

(2) Haor Area

The eastern part of Netrakona and Kishoreganj districts are classified as Haor areas, as characterized by its low altitude and long inundation period. Inundation depth rises up to more than three meters, and continues for several months. The haor area has rich development potential but careful attention shall be paid environmental impact.

(3) Flood water

While floods are the major constraints for livelihood in the Study Area, it is also a fact that it is a source of water, and with an excessive amount. Retention and utilization of flood water for supplementary irrigation may enhance agricultural production particularly in areas with relatively high altitude.

4.2 Small Scale Water Resources Development In the District

(1) Previous SSWRD Program

There was not significant project operated in the District except Thana Irrigation Program (TIP) in 1960s and Canal Digging Program (CDP) since 1979 up to 1996, Also the SSWRDSP, started 1995, was implemented in the western part of Bangladesh. Since July 2002, the SSWRDSP-2 has started covering the District.

(2) Progress of SSWRDSP-2

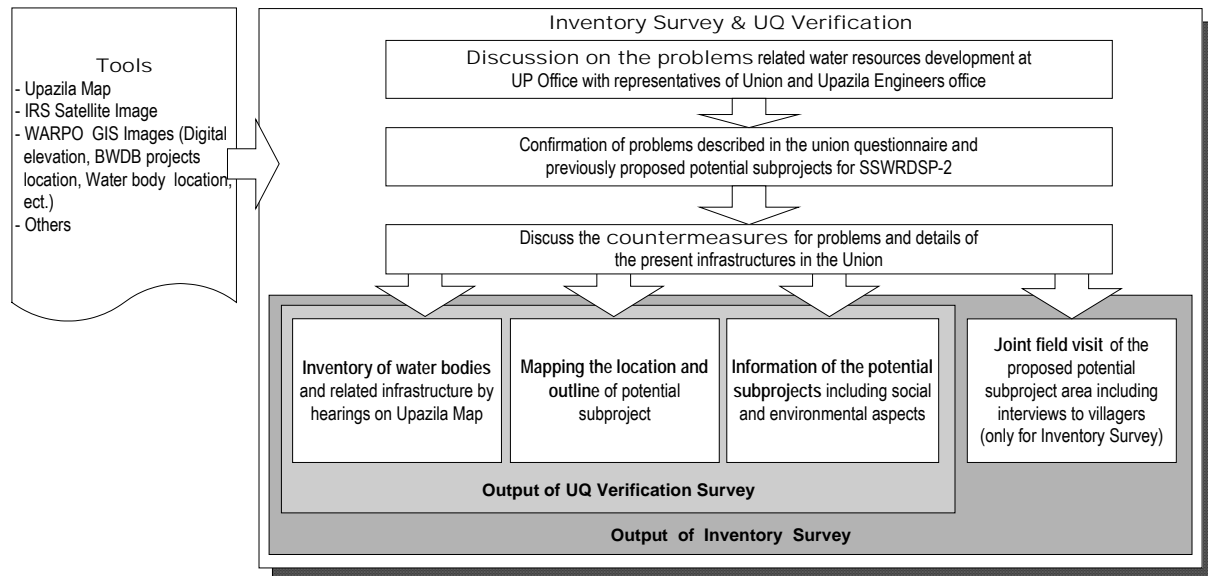
There are 73 subprojects proposed from 40 unions in 12 upazilas of the District as shown in as shown in Table 4.1. The subprojects proposals were screened by the following procedures: 1) prescreening at district level, 2) reconnaissance by PMO, 3) PRA/Pre-feasibility survey by local consultants, 4) Feasibility Study by consultant. Up to the reporting period, seven (7) subprojects were granted approval for implementation. Most of reasons for failure at prescreening stage are incomplete proposal format.

4.3 Identification of Potential Subprojects

(1) Methodology

Identification of potential SSWRD subproject was conducted by the inventory and union questionnaire verification surveys. Both surveys conducted firstly, discussion and clarification of the answer of union questionnaires on the water related problems in the Union among UP chairman and members,

representative of villagers and staff of Upazila engineer's office at Union office. Then the locations, necessary countermeasures for the problems faced by people in the Union were confirmed. These scopes of works for the potential subprojects not only the technical aspects but also environmental and social aspects were discussed and recorded by surveyor and enumerator of the Study Team. In case of the inventory survey, the proposed potential subprojects were visited to confirm the present conditions and conduct the preliminary technical assessment including interviewing the potential beneficiaries by members discussed in the Union office. Processes of both surveys are shown below:



(3) Inventory Survey

1) Objectives

To examine the situation of water resources related infrastructure, confirm the contents of the collected Union Questionnaires and to identify the potential subprojects for SSWRD in selected 41 Unions of the District

2) Selection of Unions to be surveyed

Selection of unions to conduct the inventory survey was done based on the submission of subproject proposals for SSWRDSP-2. Unions, which were previously selected, based on the understanding that information on present water bodies and related infrastructure is required.

3) Survey Procedures

The survey was conducted by dispatching consultants to each Union and by conducting interviews to relevant government officers, UP chairmen and members, village heads, Upazila Engineers and other local stakeholders and actual field survey to the water resources infrastructures and potential subproject sites. The survey process for each union was as follows:

- a) Explanation of survey to relevant officers at Union complex
- b) Identification of water bodies / infrastructure location and access route
- c) Survey on water bodies / infrastructure
- d) Verification of information indicated in the Union Questionnaires
- e) Discussion with relevant officers at Union complex for identification of potential subproject areas and possible intervention plans based on identified water bodies/ infrastructure

(3) Union Questionnaire Verification Survey

1) Objective

To verify the contents of the collected Union Questionnaires and to identify/collect information relevant to potential subprojects for SSWRD in the 69 unions of the District, which were not selected for the Inventory Survey.

2) Survey Procedures

The Survey was done through interviews to local stakeholders including UP chairmen, members, village heads, Upazila Engineers and other local representatives.

(4) Identified Potential Subprojects

1) Results of Potential Subproject Identification Survey

In preparation of the list of potential subprojects for SSWRD in the District, the results of field surveys were carefully examined and necessary modification were made. Accordingly, the Study Team identified 141 ungrouped potential subprojects in the District. The identified potential subprojects were categorized into four types; 1) Flood Management: FM, 2) Drainage Improvement: DI, 3) Command Area Development: CAD and 4) Surface Water Conservation: WC, accordingly to their contents. The type, scale of gross area and relation with BWDB projects in the district are summarized in the following tables, while the locations of these subprojects are indicated in Fig. 4.1. The preliminary identified potential subprojects has further been screened to clarify whether they should be implemented under small-scale water resources development schemes, and then has been prioritized in order to select those for further implementation arrangements.

Identified Potential Subprojects by type

District	FM	DI	CAD	WC	FM&DI	FM & WC	DI&WC	FM, WC&DI	Total
Kishoreganj	22	13	0	29	8	2	48	19	141
Study Area Total	118	145	2	67	83	25	185	69	694
% within total	17.0	20.9	0.3	9.7	12.0	3.6	26.7	9.9	100

Identified Potential Subprojects by Scale of Area

Upazila	Gross Subproject Area (ha)					BWDB Related
	1,000	1,000 < 1,500	1,500 < 2,000	> 2,000	Total	
Kishoreganj	126	9	3	3	141	15
Study Area Total	572	57	18	47	694	176

2) Verification of Identified Potential Subprojects

After discussion in the UDCC, DSSWRC and IMCC, the identified subprojects were reviewed in the light of the comments received in these meetings. The hydrological features and contents of the identified subprojects were also examined to verify its adequacy as a single subproject. Consequently, a total of 123 potential subprojects were verified. About 13 % of the potential subprojects were grouped in each district. This was mainly due to: 1) multiple upstream-downstream subprojects with contents of re-excavation continuously located on the same river/*khal* and 2) multiple subprojects with continuous contents of embankment rehabilitation/construction. Out of the 123 verified subprojects, 107 had gross areas of 1,000 ha or below. This counts up to some 87% of the total verified subprojects.

Verified Potential Subprojects by type

District	FM	DI	CAD	WC	FM&DI	FM & WC	DI&WC	FM,WC &DI	Total	Total before verification
Kishoreganj	16	7	0	24	9	4	38	25	123	141
Study Area Total	91	101	2	57	80	23	157	82	593	694
% within total	15.3	17.0	0.3	9.6	13.5	3.9	26.5	13.8	100.0	-

Verified Potential Subprojects by Scale of Area

District	Gross Subproject Area (ha)					BWDB Related
	1,000	1,000 < 1,500	1,500 < 2,000	> 2,000	Total	
Kishoreganj	107	7	2	7	123	29
Study Area Total	473	63	24	33	593	170

4.4 Prioritization of Potential Subprojects

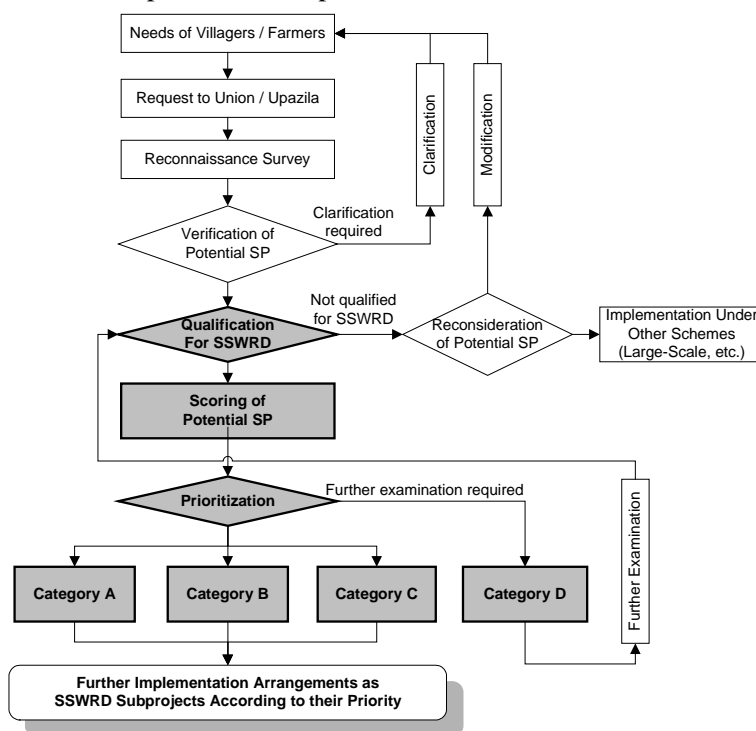
(1) Necessity of Prioritization

In order to effectively utilize limited inputs, development activities of the Master Plan should be implemented at the right place for the right purposes, contributing at the maximum extent to its overall goals. Prioritization of subprojects should be done with necessary criteria to select the most important interventions. Before prioritization, the verified subprojects which were obviously unqualified for SSWRDSP were screened out, and then the qualified potential subprojects were scored and categorized into four categories (A, B, C and D) depending on their scores and maturity in planning.

(2) Method of Prioritization

Identification of potential subprojects was done by first identifying the needs of the local villagers and then by formulating a package of measures to cope with these problems. This was done so that the measures to cope with the most important problems were not forced to take the form of SSWRD, neglecting the possibilities of other forms such as medium and large-scale interventions, which may be more suitable in certain cases. In this context, the verified subprojects were not necessarily designed as SSWRD subprojects from the beginning.

Among prioritization, the verified potential subprojects were pre-screened to exclude subprojects that clearly do not fit into the SSWRD scheme. For this process, the gross area and location of the verified subprojects were applied, where medium and large-scale subprojects as well as small-scale subprojects lying in areas protected for the purpose of environmental conservation were excluded.



Flow of Prioritization

After pre-screening, the qualified subprojects were scored by applying a method for multi-criteria analysis. The criteria and weight of the scores were carefully examined based on available information, and each qualified subproject was scored accordingly. The main items regarded in the criteria were: 1) Impact on Poverty Alleviation, 2) Significance of Benefit, 3) Hydrological and Environmental Considerations, and 4) Easiness of Implementation of the Subproject and O&M by Local Beneficiaries in the Subproject Area

Subsequently, the maturity of the qualified subprojects were checked based on the criteria developed under the SSWRDSP-2, which is the current scheme for implementation of SSWRD subprojects. Those found to require further examination for implementation as SSWRD subprojects were categorized as Priority D, while others were categorized into A, B and C according to their scores.

(3) Qualification of Verified Subprojects

1) Criteria for Qualification of Verified Subprojects

Under the NWPo, water resources development interventions with the benefiting are of 1,000 ha or less are categorized as “Small-Scale”. In this regard, all such interventions can be referred to as

potential SSWRD subprojects. However, LGED has developed a set of selection criteria under the SSWRDSP-1 and 2 to qualify subprojects that are expected to be effective and efficient. This criterion covers a wide range of issues from economic viability / technical feasibility to social acceptability and environmental soundness.

In regard that the potential subprojects that are identified and prioritized under this study are to be implemented by LGED, and that the SSWRDSP-2 following its first phase is currently the only scheme under LGED to implement SSWRD subprojects, these criteria (or modified according to future needs) would be most appropriate in qualifying such potential subprojects.

However, in order to give concrete decisions on whether the potential subproject is fully qualified or not, analysis must be done in detail for each individual criteria. In regard that the Master Plan Study has not stepped in to the very details of the individual subprojects, but rather concentrated in collecting general but overall information to provide the directionality for SSWRD, it is not favorable to completely judge the potential subprojects at this stage, where those judged unqualified will be excluded from further examinations. In this regard, two fundamental criteria were applied for qualification (pre-screening) of the verified potential subprojects, while the remaining selection-criteria were considered later on for the prioritization of qualified subprojects.

The criteria applied were:

Gross subproject area: Based on the definition of SSWRD subprojects, the benefiting area of each subproject must be 1,000 ha or less. At this stage, detailed analysis of topography and hydrology is not done for individual subprojects; therefore, accurate figures of benefiting areas are not presented. Taking into regard that based on GIS analysis of the layout of verified subprojects, some 20% of the subprojects area is expected to be settlements, roads etc., qualification of the subprojects were done by adding 20% margin to the current frame. Also taking into regard that the range of benefiting area as defined in SSWRDSP-2 is 50 to 1,000 ha, verified subprojects with the gross area falling outside of the range of 60 to 1,200 ha were excluded.

Overlapping with protected areas : In order to prevent obvious negative impact on the environment, implementation of subprojects in protected areas should be avoided.

2) Qualified potential subprojects

Through the process of pre-screening in regard to the criteria set above, some 11% of the verified subprojects were considered to be of large scale. As a result, 110 subprojects out of the 123 verified subprojects were found qualified. These qualified subprojects will be prioritized for further implementation arrangements. The average area of a single qualified subproject is 459 ha in the District. Out of the District, 19.2 % will be under the gross subprojects area if all 110 subprojects are implemented.

District-wise Number and Area of Qualified Subprojects

District	Number of verified subprojects	Number of qualified subprojects	Total gross area of subprojects (ha)	Average gross area of subproject (ha)	Total area in the District (ha)	% of Total gross area within the District
Kishoreganj	123	110	51,544	468.6	268,900	19.2
Study Area Total	593	496	266,743	537.8	1,667,200	16.0

Type-wise Number of Qualifies Subprojects

District	FM	DI	CAD	WC	FMDI	FMWC	DIWC	FMDI & WC	District Total
Kishoreganj	14	5	0	23	8	4	32	24	110
Study Area Total by Type	81	89	2	52	70	21	118	63	496

(4) Prioritization of Qualified Potential Subprojects

1) Prioritization Method

After qualification, the potential subprojects were prioritized and categorized into four categories (A, B, C and D) according to their priority. This was done by two approaches. One to screen out and lower the priority of potential subprojects that are qualified but yet require additional information to confirm if they satisfy certain criteria for SSWRDSP-2. The other is to score the qualified subprojects by using a multi-criteria analysis method, and selecting those with higher priority based on a set of criteria. The potential subprojects selected in the former process was categorized into category D, while the remaining were categorized in to A, B, and C.

a) Screening of Category D Subprojects

Out of the set of selection criteria developed under SSWRDSP-2, two were applied in the process of qualifying the potential subprojects. The remaining criteria were not applied in consideration that the potential subprojects should not be completely screened at Master Plan level. However, based on the information collected in the study, preliminary judgment for the criteria concerning subproject construction cost can be made, where potential subprojects not satisfying the criteria at this point should be bound for further examination. In regard that such examination will require more time and resources, they should have lower priority among implementation. The potential subprojects not satisfying the criteria were categorized into “Category D”, which require further examination to clarify whether they can (with or without modification) satisfy the set of selected criteria.

SSWRDSP-2 Selection Criteria and its Application for Screening “D Category” Subprojects

SSWRDSP-2 Selection Criteria	Application	Reason
The SP must be in line with district strategies and guidelines for SSWR and approved by DIAPEC	Applied for qualification	The Master Plan itself is positioned as the district strategy for SSWRD. Approval of DIAPEC will be done at the stage of implementation
More than 40 % of the SP benefited area will be operated by landless share croppers, marginal farmers	Not applied	Examination should be done based on reliable information obtained at the stage of feasibility study
No more than 30 % of the households depend on subsistence capture fisheries.	Not applied	Examination should be done based on reliable information obtained at the stage of feasibility study
Each SP will entail rehabilitation / upgrading of an existing water control system	Not applied	Examination will be done at field reconnaissance
SP cost must not exceed \$ 1000/ha for CAD and \$ 500 for other schemes without ADB's prior approval.	Applied	Examination will be done by checking the contents of the potential SPs
Benefited area served by the SP must be more than 50 ha and not exceed 1000 ha.	Applied for qualification	Already applied for qualification of verified subprojects
Each subproject must be technically feasible; economically viable (EIRR > 12 %)	Not applied	Detailed study should be examined at the stage of feasibility study.
Capacity of beneficiaries in ensuring the sustainability of submersible embankments must be shown for Interventions in the deeply flooded part of the Northeast Region	Not applied	Detailed study should be examined at the stage of feasibility study
The SP shall be environmentally sound and IEE/EIA study has to be undertaken and appropriately approved after consulting the beneficiaries and project affected people	Partially applied for qualification	SP areas in environmentally sensitive areas have been taken into consideration
The SP shall be socially sound and require no or minimal displacement of people and land acquisition, and not involving sensitive areas	Not applied	Detailed study should be examined at the stage of PRA
Enrollment of 70 % of the direct beneficiary households as member of the WMA.	Not applied	Detailed study should be examined at the stage of PRA – WMA formulation
Recurrent cost of subproject O&M shall be covered by beneficiaries through formulated WMA	Not applied	Detailed study should be examined at the stage of PRA – WMA formulation

b) Scoring Method of Qualified Subprojects

Scoring of subprojects was done by applying *Analytical Hierarchy Process* (AHP) method, which is a tool for decision making with various parameters (multi-criteria analysis). During the last three decades, especially when the social or administrative and environmental or hydrological impacts have been emphasized in decision making process, traditional methodologies such as Cost-Benefit Analysis

(CBA) or Cost-Utility Analysis (CUA) have been gradually replaced or complemented by Multi-Criteria Decision Methods (MCDM), with prominence for AHP. The main concept is to examine relative importance of various factors for decision-making using a matrix chart called a "decision-tree". Comparison of importance is examined by hierarchy by examining relations of two items and then integrating the relations into one matrix.

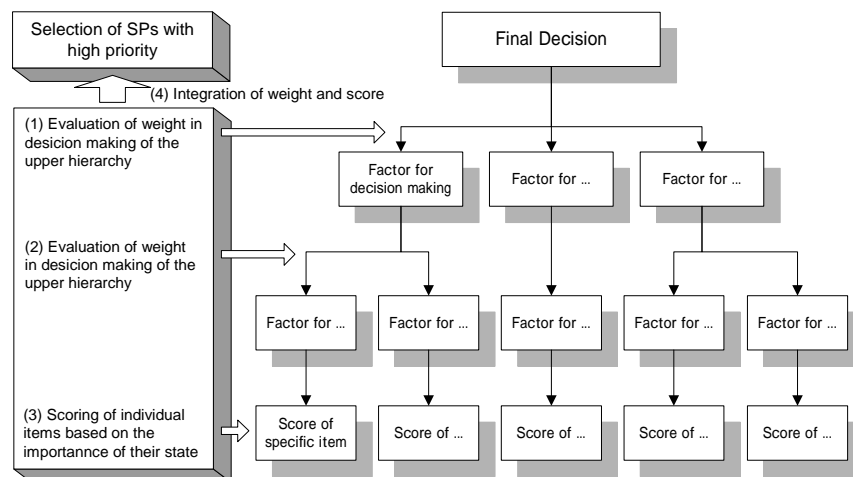
Relative importance of items/decision factor called “natural states” regarded for categorization of SPs was considered and weights for scoring of these items were examined. The main procedure consists of four steps.

- Examining weight of importance of each category
- Examining weight of importance of each item in the same category
- Scoring of individual items in consideration of each state
- Integration of individual scores and weight to prioritize potential subprojects

Pair wise Comparison Scale

Relative Preference / Importance	Numerical Rating
Extremely preferred/important	9
Very strong to extremely	8
Very strongly preferred/important	7
Strongly to very strongly	6
Strongly preferred/important	5
Moderate to strongly	4
Moderately preferred/important	3
Equally to Moderately	2
Equally preferred/important	1

In scoring individual items, a pair-wise comparison matrix is formed reflecting relative importance of the items based on a nine-point Relative Importance Scale as shown in the right table.



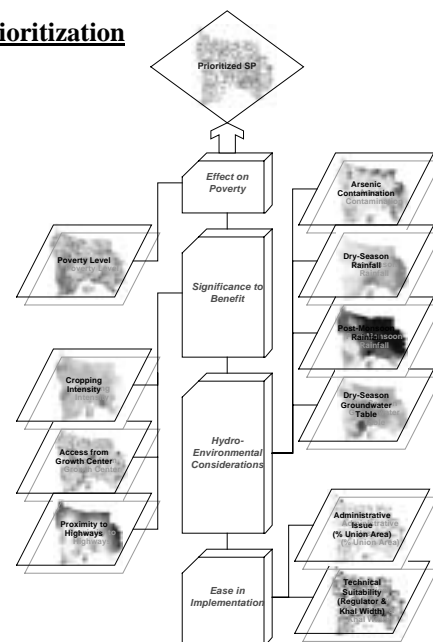
Process of Subprojects Prioritization

c) Criteria for Scoring

Among implementation, the basic requirements for SSWRD subprojects will be covered by applying the selection criteria of SSWRDSP-2. In this regard, scoring for prioritization of potential subprojects shall concentrate on selecting subprojects that may have more positive effect than the others. The items for considering the scoring of the subprojects are: 1) Effect on Poverty by the Subproject (applicable to all types of subprojects), 2) Significance of Benefit, 3) Hydrological and Environmental Considerations, and 4) Easiness in Implementation of the Subproject and O&M by Local Beneficiaries.

d) Weighting of Scoring Criteria

The basic idea of calculating evaluation weight of categories/items and scoring of individual items are shown in the table below. Importance of each factor is calculated so



AHP Data Layers

that the total of each category / item will sum up to a total of one (1). The method and weight of each criterion for prioritization are indicated in the following table.

In applying the AHP method, overlaying subproject with various data collected, updated and developed by the study team and converted them to buffers and grids, has been carried out under GIS environment. The figure on the right gives an image of the GIS data layers used in prioritization.

Sensitivity Analysis has been carried out to check the effect of weight of particular criteria on overall scores of the sup-projects. This eliminates skewness in sup-project priority such that a single criterion doesn't play a sharp role in overall priority and smoothes out the effect of different criteria. Through such sensitivity analysis, the final weights of the criteria have been decided. The table in the next page shows the final criteria and weight.

Weight of Multi-Level Criteria for Subproject Prioritization

Primary Criteria (Level 1)	Weight	Secondary-Criteria (Level 2)	Weight	Tertiary Criteria (Level 3)	Weight		
Effect on Poverty by the Subproject (Applicable to all types of SPs)	0.61*	Very High Poverty Area	0.59	-	-		
		High Poverty Area	0.22	-	-		
		Moderate Poverty Area	0.12	-	-		
		Low Poverty Area	0.07	-	-		
Significance of Benefit (applicable to all types of SPs)	0.13*	Cropping Intensity	0.75	Low having Inundation Land Type F3 & F4	0.76		
				Medium having Inundation Land Type F2	0.16		
				High having Inundation Land Type F0 & F1	0.08		
	Access to and from Growth Center	0.18	Proximity to National and Regional Highways	0.07	Easy	0.68	
					Moderate	0.22	
					Difficult	0.10	
	Hydrological and Environmental Considerations (depends on types of SP)	0.10*	Arsenic Contamination (applicable to WC type only)	0.64*	High Contaminated Area	0.69	
					Medium Contaminated Area	0.23	
					Low Contaminated Area	0.08	
Dry Season Rainfall: Nov. ~ Mar. (applicable to WC type only)			0.14*	Post-Monsoon Rainfall: Sep. ~ Oct. (applicable to DI type only)	0.14*	Low Rainfall	0.65
						Moderate Rainfall	0.23
Dry Season Ground Water Table: Nov. ~ Mar. (applicable to WC/ CAD type only)			0.08*	High Rainfall	0.12	High Rainfall	0.65
	Moderate Rainfall	0.23					
	Low Rainfall	0.12					
Easiness in Implementation of the SP and O&M by Local Beneficiaries in the SP Area (applicable to all types of SPs)	0.16*	Administrative Issue	0.75	Deep Groundwater Table	0.65		
				Medium Groundwater Table	0.23		
		Technical Suitability	0.25	Shallow Groundwater Table	0.12		
				Single Union	0.83		
		Multiple Unions	0.17				
		Structures are of adequate scale	0.90				
		Structures exceed adequate scale	0.10				

* Different weight applied depending on type of SPs. For detailed figure, refer to Annex-7.

2) Prioritization of Potential Subprojects

a) Screening of D Category Subprojects

Screening of Category D subprojects were done based on the costs of individual subprojects estimated from their components. In the District, out of the 110 qualified subprojects, 43 subprojects were determined to have costs exceeding US\$500/ha (US\$1,000/ha for CAD type subprojects). In addition to this, one CAD type subproject was screened into category D in regard that necessity of medium scale low-lift pumps should be further examined. In total, 44 subprojects were screened into Category D. The numbers of such subprojects by district are indicated below.

Screening of Category D Subprojects

District	Number of qualified subprojects	Number of category D subprojects	Number of category A- C subprojects	Gross area of category A-C subprojects (ha)	Average gross area of category A-C subprojects (ha)	Total area in the District (ha)	% of gross area of category A-C subprojects within the District
Kishoreganj	110	44	66	33,420	506.4	268,900	12.4
Study Area Total	496	146	350	200,942	574.1	1,667,200	12.1

Type-wise Number of Category D Subprojects

	FM	DI	CAD	WC	FMDI	FMWC	DIWC	FMDI & WC	District Total
Kishoreganj	9	0	0	8	3	3	10	11	44
Study Area Total by type	32	3	2	22	25	7	32	23	146

b) Prioritization of Qualified Subprojects

After screening of Category D subprojects, each of the remaining subprojects are marked with a score indicating its relative importance in the light of the set criteria. The scores varied from 0.18 to 0.98 with the average of 0.45. However, it should be noted that because of the characteristics of the AHP method, the scores do not indicate the value of actual importance of the subprojects, but represent relative importance between the subprojects.

Prioritization of the scored subprojects was done upazila-wise in regard of the capacity of the Upazila Engineer office in implementation. One subproject with the highest score was selected in each upazila for implementation under the short-term activities of the Master Plan. Such subprojects were categorized as Priority A. Furthermore, some 30% were selected from the remaining 53 subprojects for categorization in Priority B. This counted up to 19 subprojects. Finally, the remaining 34 subprojects were categorized into Priority C, which will be implemented under the long-term activities of the Master Plan. The prioritized subprojects have been checked upazila-wise and then district-wise so that implementations of the prioritized subprojects become distributed among the upazilas and districts. Lists of prioritized subproject in each district are shown in Table 4.2. The following table summarizes the number of subprojects in each category. The distribution of prioritized subprojects is indicated in Fig. 4.3.

Prioritized Verified Potential Subprojects by Type in Kishoreganj District

Category	FM	DI	CAD	WC	FMDI	FMWC	DIWC	FMDI & WC	Total	BWDB related
Category A	3	2	0	1	2	0	3	2	13	2
Category B	1	0	0	7	0	0	8	3	19	1
Category C	1	3	0	7	3	1	11	8	34	6
Category D	9	0	0	8	3	3	10	11	44	1
Total	14	5	0	23	8	4	32	24	110	10

Chapter 5 Master Plan on Small Scale Water Resources Development

5.1 Basic Concept of Small Scale Water Resources Development Plan

(1) Objectives

The National Water Policy (NWPo) has been formulated to provide direction to all agencies working with the water sector, and institutions that relate to the water sector, for achievement of specified objectives. Under this policy, the sector agencies of Government and local bodies will prepare sub-regional and local water-management plans in conformance with the NWMP and approved Government project appraisal guidelines. In regard of the above, the Master Plan of District Water Resources Development has been started by LGED including the Study covering 6 districts in Greater Mymensingh as one of the pioneers. The overall goal of the Study is to secure safe and sustainable water resources management and to increase farmers' income. The Master Plan is prepared comprising of strategies, prioritized subproject list, priority programs, and the scope for the follow-on investment project which include effective use of surface water.

(2) Basic Concepts of the Small Scale Water Resources Development

Integrated Rural Development: Improvement plan of agriculture, livestock, and fisheries including extension credit, system, post harvesting, marketing, etc., shall be conducted in the subprojects.

Water Resources Development complying with NWPo and NWMP: The Master Plan prepared through this Study should be positioned under the NWPo and NWMP, and must be in line with the contents of the policy.

Flood management in Small Scale Water Resources Development: Human life shall be protected from all the conceivable floods. In reality, complete flood management conditions cannot be realized, and flood management would be improved only in steps both in areal extent and increase level of protection.

Participatory Development Process: At all stages of the subproject, local stakeholders shall be involved or participated in order to formulate the ownership of the subproject for the sustainable O&M.

Income Generation for Weak through the Project Implementation: Specific measures shall be taken to ensure the poor, marginal/small farmers and destitute women benefit from the subprojects.

Institutional Strengthening: Small scale water resources development is implemented in the rural area, and Union and Upazila level officials shall act as the enabler. But considering the present conditions, they need capacity building for implementation.

5.2 Small Scale Water Resources Development Plan

(1) Target Year and Phasing of the Implementation

The target year of these plans, the target year of the Master Plan shall be the year of 2015. And the target year of the Master Plan is set in the following three stages;

- Short Term: by 2007 to complete the feasibility study and some construction of priority A category subprojects
- Mid Term: by 2010 to implement the priority B category subprojects along with or within the SSWRDSP-3 as much as possible
- Long Term: by 2015 to implement the priority C category subprojects and complete the permissive subprojects proposed

(2) Strategy of Small Scale Water Resources Development Plan

Basically the implementation of Master Plan will follow the on the line of SSWRDSP-2 after modification of its procedures.

Upazilas in the District is categorized into three (3) major zones; 1) highland, 2) medium highland, and 3) Medium lowland by the inundation land type. Strategies for the small scale water resources development of each zone shall be set as follows:

Highland: The Madhupur Tract area is a typical area of the highland zone. Strategy of SSWRD shall be based on water retentions of the monsoon flood water and rainfall for irrigation during the dry season. The development potential of the pond at the depression of the hill shall be examined.

Medium highland: The medium highland spreads outside of the highland zone in the old Brahmaputra flood plain. Strategy of the SSWRD of the zone shall be based on flood management to reduce damage of *aman* at the beginning of flood season and to drain submerged water for the early re-transplanting *aman* paddy.

Medium lowland: The medium lowland spread outside of the lowland and the young Brahmaputra and Jamuna flood plain. The strategy of SSWRD shall be based on flood management to delay the submergence of grown *aman*, and drainage improvement after flooding. Embankment height will be reasonably set.

Lowland: The lowland with inundation depth between 180 and 300 cm spread outside of the Haor area. Because of the inundation depth, flood proofing in this zone is rather difficult without major river flood management, and strategy of SSWRD shall be concentrated mainly on drainage after flood season.

Very lowland (Haor Area): The very lowland zone is the *Haor* area of the old Meghna estuarine flood plain. The strategy of the small scale water resources development shall be mainly concentrated to the drainage acceleration before *boro* cultivation and flood management of early flood. It is required to pay careful attention on the natural conservation and navigation in the area.

Also, in this Master Plan Study, paurashavas areas are excluded from the Study Area basically.

(3) Upazila-wise hydrological condition and Development Strategy of SSWRD

1) Austagram Upazila

The Upazila locates in the haor area of Sylhet Basin and Old Meghna Estuarine Floodplain. Main rivers are; the Meghna, Ghorautra, Kalmi, and Barak rivers. Main beels are; Balian, Bandra, Dhopa, Mamda beels. Most of the land in the Upazila is at the elevation between 0.15 m to 7 m (PWD).

Haor area is submerged deeply during monsoon seasons, and dry season become the rice basket with water retained by soils and sometimes by supplemental irrigation. Therefore SSWRD strategies will be fishery and aqua-animals development during monsoon season, and drainage acceleration before Boro paddy cultivation also flood management of the early flood damage mitigation. It will need the combination with the rehabilitation of existing large scale flood control projects. Also appropriate countermeasures shall be considered on the siltation by flood and water logging in the khals and canals which require high cost as a recurrent cost.

2) Bajitpur Upazila

The Upazila spread on the transitional area between the deeply inundated haor area and medium highland. Main rivers are the Meghna, Baulai, Ghorautra, Old Brahmaputra rivers; canals 7, Jalmahal 15; Bengla Charabadha are important water bodies. Annual average rainfall at Bajitpur BWDB station, recorded at 2,248 mm, and 68% of the rain concentrates in the monsoon season. Elevation of land in the Upazila is between 1 m to 10 m (PWD).

The development strategy of SSWRD in haor area is as described in 1) Austgram Upazila.

Major part of the Upazila is medium highland of young floodplain where inundation problems are not so serious and suitable for the agriculture. The strategy of the medium highland area is the flood management to reduce the damage of grown aus paddy from inundation at the beginning of flood season and to drain the submerged water rapidly for the early transplanting *aman* paddy after flood season.

3) Bhairab Upazila

The Upazila is located in the haor area in the eastern part and the medium highland area in the western part. Based on the Agroecological Zone (AEZ) and inundation land type, the Upazila is mostly the medium lowland of Middle Meghna River Floodplain, and western part is the medium highland of Young Brahmaputra Floodplain. Main rivers are the Meghna and Old Brahmaputra rivers. Annual average rainfall at Bhairab Bazar BWDB station recorded at 2,235 mm, and 60% of the rain concentrates in the monsoon season. Elevation of land in the Upazila is between 1 m to 7 m (PWD).

The major part of Upazila is the medium lowland of Middle Meghna River Floodplain. SSWRD strategies in these areas will be the flood management to delay the submerge of grown aman paddy, and drainage to drain the inundation rapidly after flooding. Embankment height of polder will be reasonably set along the border of beneficiary area.

4) Hossainpur Upazila

The Upazila locates at the border of the Old Brahmaputra and Meghna river basins. Based on the hydrological region of the NWMP and FAP, the Upazila belongs to the North East Region. Major rivers are Old Brahmaputra, Bthail and Narsunda rivers; noted depression is Panan Beel. Average annual rainfall at BWD Nandail Station, the nearest rainfall station, shows at 2,861 mm, and 68% of rainfall concentrates in monsoon season. Ground elevation in the Upazila ranges 5 to 15 m (PWD).

The Upazila locates at the western border of the haor area of the Brahmaputra Old Floodplain or Sylhet basin, most area of northeastern part is covered by this area. Most of the southwestern area is covered by the medium highland of Young Brahmaputra floodplain. SSWRD strategies in these areas will be as follows:

The development strategy of SSWRD in haor area is as described in 1) Austgram Upazila.

On the other hand, the strategy of the small scale water resources development of the medium highland will be the flood management to reduce the damage of seeded aman paddy from inundation at the beginning of flood season and to drain the logged water rapidly for the early transplanting of aman paddy after monsoon season.

5) Itna Upazila

The Upazila mostly locates in the haor area of Sylhet Basin and Old Meghna Estuarine, flood plain. Main rivers are Dhanu, Surma, Baulai, Kalni and Baruni. Main beel are, Maora, Chapra, Boali, Kaira, Ugli, Sonabandha and Ghora. Ground elevation in the Upazila ranges 0.15 to 7.0 m (PWD). Most of the Upazila is haor area and is classified as Sylhet Basin (F3) or Old Meghna Estuarine, Floodplain (F3).

The development strategy of SSWRD in haor area is as described in 1) Austgram Upazila.

6) Karimganj Upazila

Based on the hydrological region of the NWMP and FAP, the Upazila belongs to the Northeast Region. The Upazila locates at the western border of the haor area of the Old Brahmaputra River Floodplain or Sylhet basin, eastern half is covered by this area. Most of the western half area is covered by the medium lowland of Old Brahmaputra River Floodplain. Major rivers are the Narsunda, Bathail, Singua, Dhanu rivers. Notable beels are Balia, Naoli, Beel Bara, Ukhla, Chhotaharia, Kolai. Average annual rainfall at BWD Kishoreganj Station, the nearest rainfall station, shows at 2,346 mm, and 68% of rainfall concentrates in monsoon season. Ground elevation in the Upazila ranges 1 to 10 m (PWD).

The development strategy of SSWRD in haor area is as described in 1) Austgram Upazila.

The strategy of the SSWRD of the medium lowland will be the flood management to reduce the damage of seeded aman paddy from inundation at the beginning of flood season and to drain the logged water rapidly for the early transplanting of aman paddy after monsoon season.

7) Katiadi Upazila

The Upazila locates at the western border of haor area on the east. Most of the Upazila is classified as the lowland of Old Brahmaputra Floodplain and medium highland of Young Brahmaputra Floodplain. Main rivers are the Singua, Old Brahmaputra, Suti and Kurikhal Gang rivers. Beels of Doba and Reksa are notable. Average annual rainfall at BWDB Kishoreganj Station, the nearest rainfall station, shows at 2,346 mm, and 68% of rainfall concentrates in monsoon season. Ground elevation in the Upazila ranges 1.0 to 10 m (PWD).

The development strategy of SSWRD in haor area is as described in 1) Austgram Upazila.

On the other hand, the strategy of the small scale water resources development of the medium highland will be the flood management to reduce the damage of seeded aman paddy from inundation at the beginning of flood season and to drain the logged water rapidly for the early transplanting of aman paddy after monsoon season.

8) Kishoreganj Sadar Upazila

Most of the Upazila is classified as Young Brahmaputra Flood Plain (F1), and at the southeaster corner of the Upazila covered by haor area of Sylhet Basin (F3) Major waterbodies in the Upazila are; the Singua in southern border, the Narsunda at the center, the Bathail and Narsunda rivers on northwestern border, Mansa and Duasura beels. Ground elevation in the Upazila ranges 5 to 10 m (PWD).

The strategy of the small scale water resources development of the medium highland will be the flood management to reduce the damage of seeded aman paddy from inundation at the beginning of flood season and to drain the logged water rapidly for the early transplanting of aman paddy after monsoon season.

The development strategy of SSWRD in haor area is as described in 1) Austgram Upazila.

9) Kuliarchar Upazila

The Upazila spreads between two major rivers, the Meghna river on the east and the Old Brahmaputra river on the west. Main rivers are the Meghna, Old Brahmaputra and Arial Khan rivers. Annual average rainfall at Bajtpur, the nearest BWDB station, recorded at 2,248 mm, and 68% of the rain concentrates in the monsoon season. Elevation of land in the Upazila is between 3 m to 10 m (PWD).

The Upazila locates in the mostly medium highland. The strategy of the small scale water resources of the medium highland zone shall be the flood management to reduce the damage of grown aus paddy from inundation at the beginning of flood season and to drain the submerged water rapidly for the early transplanting aman paddy after flood season.

10) Mithamain Upazila

Most of the Upazila is classified as haor area of Old Meghna Estuarine Flood Plain and lowland and Sylhet Basin with lowland zones. Major rivers are the Dhanu and Kalai rivers; depressions are: Boragop, Haturia, Deoduria and Nikli Beel. Ground elevation in the Upazila ranges 0.15 to 7.0 m (PWD).

The development strategy of SSWRD in haor area is as described in 1) Austgram Upazila.

11) Nikli Upazila

Most of the Upazila locates in the haor area of Sylhet Basin and Old Meghna Estuarine Floodplain. Main rivers are the Dhanu - Baulai - Ghorautra, Boda river; depressions are 16; Bara Beel, Tegulia Beel, Nayanbali Beel and Raoar Beel are notable. Ground elevation in the Upazila ranges 0.15 to 7 m (PWD).

The development strategy of SSWRD in haor area is as described in 1) Austgram Upazila.

12) Pakundia Upazila

The Upazila locates in the medium highland of Young Brahmaputra Floodplain. Main rivers are the Old Brahmaputra, Narasunda and Banar rivers. Annual average rainfall at Kishoreganj, the nearest BWDB station, recorded at 2,346 mm, and 68% of the rain concentrates in the monsoon season. Elevation of land in the Upazila is between 5 m to 15 m (PWD).

The SSWRD strategy of the small scale water resources of the medium highland zone shall be the flood management to reduce the damage of grown aus paddy from inundation at the beginning of flood season and to drain the submerged water rapidly for the early transplanting aman paddy after flood season.

13) Tarail Upazila

Based on the hydrological region of the NWMP and FAP, the Upazila belongs to the Northeast Region. Major rivers are the Narsunda, Bauri and Bathail rivers. Average annual rainfall at BWDB Kendua Station, the nearest rainfall station, shows at 3,230 mm, and 70% of rainfall concentrates in monsoon season. Ground elevation in the Upazila ranges 1 to 10 m (PWD).

The Upazila locates at the western border of the haor area of the Old Brahmaputra River Floodplain or Sylhet basin, eastern half is covered by this area. Most of the western half area is covered by the medium lowland of Old Brahmaputra River Floodplain. SSWRD strategies in these areas will be as follows:

The development strategy of SSWRD in haor area is as described in 1) Austgram Upazila.

On the other hand, the strategy of the small scale water resources development of the medium lowland will be the flood management to reduce the damage of seeded aman paddy from inundation at the beginning of flood season and to drain the logged water rapidly for the early transplanting of aman paddy after monsoon season.

5.3 Relevant Sectors' Development Strategies and Plan

(1) SSWRDP and Other Relevant Sector Development Plans

As the nature of SSWRD other sector activities can not involve in the project like those in integrated rural development. It is considered that beneficiary sector activities will be implemented by the other financial resources. However, beneficiary sector development shall be implemented together with small scale water resources development in order to achieve the targets of the Master Plan.

(2) Agricultural Development (ref. Table 4.2)

- Improve human nutrition by diversified agriculture
- Focus on profitable farming through higher productivity
- Upgrade of general agricultural technology—Technical packages other than water management will not be obstacle to agricultural production
- Collaborate with other agricultural projects
- Develop Value Added Agriculture
- Develop community-based activities to fulfill basic regional needs for the rural human security
- Develop wide-area based water management: Ex. Multiple function of paddy fields
- Human Resources Development

(2) Fishery Development (ref. 4.3)

- Encouragement of integrated fish culture
- Introduction of tilapia culture
- Introduction of freshwater prawn culture
- Introduction of freshwater ornamental fish culture
- Conservation of indigenous/natural fish in Beel, Khal, River and Haor
- Propagation of indigenous/natural fish by fish culture

(3) Livestock Development

- Stability of feed supply
- Development of animal health
- Processing/ slaughtering of animals

(4) Suggestions to Future Development in Agriculture and Livestock

- Rice Terrace Cultivation in. Haor Area
- Rural Industrial Complex
- Development of vaccination system in rural areas.
- Efficient Irrigation Technology in Highland Area.
- Small Scale Mechanization
- Field Training for Seed Production and Processing for Farmers Own Use.
- Development of Rural Recycling in Farming System
- Integrated forestry-livestock farming
- Development of market information system for fish and fresh vegetables
- Human Resources Development

5.4 Priority Programs

In order to implement the SSWRD Project smoothly and assure the expected effects, the priority programs will be conducted in parallel with the SSWRD subproject implementation.

(1) Collaboration and Coordination among Stakeholders

Collaboration works with relevant government agencies are strongly expected to the implementation of SSWRD Project. National, district and Upazila level government agencies coordination committees should be maintained to achieve multiplication effects of the Project.

(2) Strengthening of Local Government Engineering Department

In order to support smooth implementation of daily works of the Project office equipment and facilities will be improved at District and Upazila level offices. This includes transportation vehicles, computer and peripherals/software, photocopy machines, etc.

(3) Capacity Building of the Local Government Level Technical Officials

There are not enough water resources development planners/engineers in LGED, especially at district and upazila level. Technical training program shall be considered to strengthen the capacity of local government officials of LGED for planning and implementation of SSWRD.

(4) Water Management Associations

In order to maintain the sustainability of SSWRDP sub-projects, capacity building of WMA members is indispensable. In parallel with training of WMA members, national level federation of WMAs will be formulated to exchange experiences and information among individual WMAs.

(5) GIS and IT

At present, the GIS coordination system between WARPO and LGED is deferent. Standardization is required for exchanging information of GIS. Inventory of water bodies and existing projects under the NWRD is no completed yet. It needs to formulate nation wide inventory survey of water resources among stakeholders under the coordination of WARPO.

5.5 Implementation Plan (Action Plan)

(1) Project Implementation

The Project aims to achieve the sustainable agriculture and improve the farmers' living conditions through increase of agricultural production and resources mobilization in the Project Area. The Project consists of two major components; 1) SSWRD Subprojects and 2) Priory programs. Considering the

similarity of interventions, implementation arrangement of SSWRDSP-2 will be applied for the Project with improvement, if appropriate. The Project is basically assumed to be implemented by the Bangladesh Government budget with external financial support.

(2) Executing Agencies

The project management office (PMO) will be established at LGED headquarters. The major functions of the PMO are: i) coordination of agencies concerned, ii) preparation of overall implementation plan, annual project work plans and budget, iii) review and approve subproject appraisals, iv) review and approve designs, v) supervise LGED district offices in preparing tender documents, evaluating bids, and awarding contracts, vi) maintain financial accounts, vii) prepare periodic reports on implementation progress and viii) monitor project progress and evaluate environmental impact. PMO will procure the consultants to support the PMO on the technical aspects and institutional strengthening.

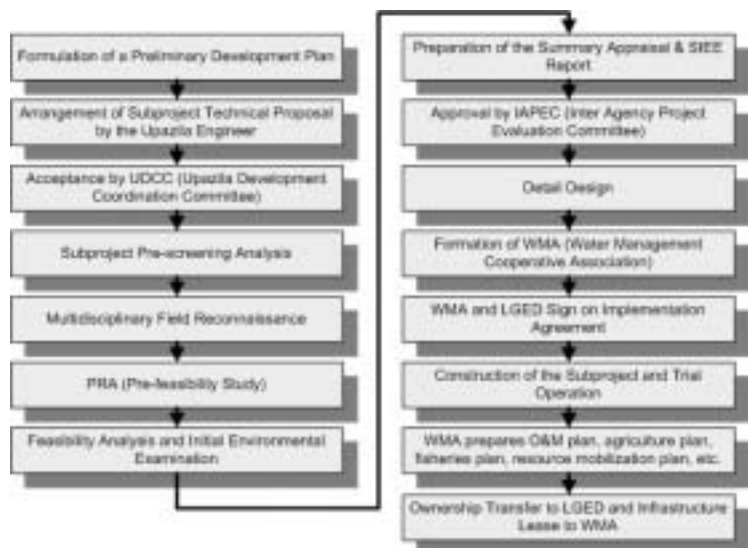
Under close guidance and supervision of the PMO, LGED district offices will be responsible for the day-to-day implementation at the subproject level with assistance from the upazila offices. The LGED district Executive Engineer will act as Subproject Manager and 1) prepare individual subproject implementation with stakeholder participation, 2) coordinate with other agencies and organizations, 3) support organization of WMAs, 4) carry out field surveys, 5) supervise construction activities and make payments to contractors, and 6) monitor and report subproject development to the PMO.

At National Level, Inter-ministerial Coordination Committee (IMCC) shall coordinate the agencies for smooth implementation of the Project. District-level Small-scale Water Resources Development Committees (DSSWRDCS) will meet when required to coordinate the activities of the district level Government agencies. MLGRDC will issue an order requiring the Upazila Development Coordination Committee (UDCC), composed of the union chairpersons and upazila-level officials, to put the review of subproject progress on the agenda of all its regular meetings. LGED district offices will maintain close coordination with BWDB through the Inter-Agency Project Evaluation Committee to ensure that proposed subprojects do not conflict with planned or existing BWDB projects.

(3) Implementation Plan

Identification and appraisal process for an individual sub-project on SSWRDSP-2 set by the LGED are as indicated in the diagram.

The high priority subprojects, after prioritization, are not equally distributed to each district and upazila. Some Upazila concentrate many high priority subprojects and only few high priority subprojects in some upazila. If subproject selected to implement from higher priority, some upazila has no subproject and some upazila concentrate more than 3 subprojects. To avoid these cases, SPs will be selected based on higher prioritized subprojects in the upazila.



Selection of subprojects in each phase, are set as follows:

Short term (2 years): 13 Category A subprojects of the highest in each upazila

Medium term (3 years): 19 Category B subprojects of the secondary highest in each upazila

Long term (5/4 years): 34 Category C subprojects of the thirdly highest in each upazila

Civil works of subproject will be contracted with local contractors under local competitive bidding

(LCB) under the standard LGED procurement procedures. Small scale earthwork contracts with labour contracting societies (LCSs).

After completion of the subproject construction, WMA conduct O&M/management under guidance of Upazila engineer office for one year. After one year, O&M committee of WMA takes responsibility of subproject O&M. WMA bare the O&M expenses by collecting fees, based on the investment cost of subproject, from WMA members.

Implementation schedule of the whole Project component are indicated in the chart below.

Phase	Short Term		Medum Term			Long Term					Total
Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Small Scale Water Resources Development (No. of Subproject)											
Kishoreganj District	6	7	6	6	7	8	8	9	9		66
Study Area Total	25	33	29	33	37	46	50	52	45	0	350
Monitoring & Evaluation by PMO											
Engineering Services											
Priority Programs											
Capacity Building of Upazila Engineers Office											
Training of WMA Management Board Members											
GIS Database system improvement											
Collaboration works on the Stakholders											

6. Further Activities Required at Upazila Level

Potential subprojects identified and prioritized through surveys under the Study are only at the initial stage of the whole procedure. The Upazila Engineers are required to take necessary measures to mature the technical proposals of these subprojects. In this process, emphasis should be put on potential subprojects with higher priority. At the actual proposal preparation stage, some of them will be selected and requested as subprojects for SSWRDSP-2.

6.1 Union Level

The potential subproject appeared through the discussion with UP members and representatives of villagers. It is necessary to discuss among the potential stakeholders at union level to confirm the needs and get the consensus among stakeholders to the potential subproject. It is recommended to conduct the PRA among stakeholders as the JICA Study team demonstrated in Noabad, Joyka nad Boulai Unions of Karimganj Upazila in the District. During the formulation of consensus of the potential subproject, technical assistance will be required from the upazila engineer's staff. The proposal will be discussed and authorized at UP meeting for submission to Upazila Engineer.

6.2 Upazila Level

After the approval of the prioritized potential subproject list, the upazila engineers are expected to start the technical support for the stakeholders' discussions/workshops in the union level for the preparation of the technical proposal to submit to District LGED executive engineers.

Table 1.1 Outline of National Water Policy (NWPo)

Issues	Description
<i>River Basin Management</i>	The government will work with co-riparian countries to establish a system for exchange of information and data on relevant aspects of hydrology, morphology, water pollution, ecology, changing watershed characteristics, cyclone, drought, flood warning, etc., and to help each other understand the current and emerging problems in the management of the shared water sources.
<i>Planning and Management of Water Resources</i>	<ul style="list-style-type: none"> WARPO will prepare, and periodically update, a NWMP addressing the overall resource management issues in each region and the whole of Bangladesh. Sector agencies of the government and local bodies will prepare and implement sub-regional and local water-management plans in conformance with the NWMP and approved government project appraisal guidelines. The Executive Committee of the National Water Resources Council (ECNWRC) will resolve any interagency conflict in this regard. BWDB will implement all major surface water development projects and other FCDI projects with command area above 1,000 hectares. The Local Government will implement FCDI projects having a command area of 1,000 hectares or less after identification and appraisal through an interagency Project Appraisal Committee. Any interagency dispute will be resolved by means prescribed by the government
<i>Water Rights and Allocation</i>	<ul style="list-style-type: none"> In general, the priority for allocating water during critical periods in the water shortage zones will be in the following order: domestic and municipal uses, non-consumptive uses (e.g. navigation, fisheries and wild-life), sustenance of the river regime, and other consumptive and non-consumptive uses such as irrigation, industry, environment, salinity management, and recreation. The above order of priority could however be changed on specific socio-economic criteria of an area by local bodies through local consensus. The government may empower the local government or any local body it deems fit, to exercise its right to allocate water in scarcity zones during periods of severe drought, and it will monitor the water regime and enforcement of the regulations through specifically designed mechanisms.
<i>Public and Private Involvement</i>	<ul style="list-style-type: none"> The management of public water schemes, barring municipal schemes, with command area up to 5,000 ha will be gradually made over to local and community organizations and their O&M will be financed through local resources. Public water schemes, barring municipal schemes, with command area of over 5,000 ha will be gradually placed under private management, through leasing, concession, or management contract under open competitive bidding procedures, or jointly managed by the project implementing agency along with local government and community organizations. Ownership of FCD and FCDI projects with command area of 1,000 ha or less will gradually be transferred to the local governments, beginning with the ones that are being satisfactorily managed and operated by the beneficiary/ community organizations.
<i>Public Water Investment</i>	<ul style="list-style-type: none"> Planning and feasibility studies of all projects will follow the Guidelines for Project Assessment (GPA), the Guidelines for People's Participation (GPP), the Guidelines for Environmental Impact Assessment (EIA), and all other instructions that may be issued from time to time by the government. Interests of low-income water users, and that of women, are adequately protected in water resource management.
<i>Water Supply and Sanitation</i>	<ul style="list-style-type: none"> Preserve natural depressions and water bodies in major urban areas for recharge of underground aquifers and rainwater management. Mandate local governments to create awareness among the people in checking water pollution and wastage.
<i>Water and Agriculture</i>	<ul style="list-style-type: none"> Improve efficiency of resource utilization through conjunctive use of all forms of surface water and groundwater for irrigation and urban water supply. Strengthen crop diversification programs for efficient water utilization.
<i>Water and Industry</i>	Standards of effluent disposal into common watercourses will be set by WARPO in consultation with DOE
<i>Water and Fisheries and Wildlife</i>	<ul style="list-style-type: none"> Water bodies like baors, haors, beels, roadside borrow pits, etc. will, as far as possible, be reserved for fish production and development. Perennial links of these water bodies with the rivers will also be properly maintained. Water development plans will not interrupt fish movement and will make adequate provisions in control structures for allowing fish migration and breeding.
<i>Water and Navigation</i>	<ul style="list-style-type: none"> Water development projects should cause minimal disruption to navigation and, where necessary, adequate mitigation measures should be taken. Minimum stream-flows in designated rivers and streams will be maintained for navigation after diversion of water for drinking and municipal purposes.
<i>Water for Hydropower and Recreation</i>	Recreational activities at or around water bodies will be allowed provided it is not damaging to the environment.
<i>Water for the Environment</i>	<ul style="list-style-type: none"> Give full consideration to environmental protection, restoration and enhancement measures consistent with the National Environmental Management Action Plan (NEMAP) and the NWMP. Adhere to a formal environmental impact assessment (EIA) process, as set out in EIA guidelines and manuals for water sector projects, in each water resources development project or rehabilitation program of size and scope specified by the Government from time to time. Protect against degradation and resuscitate natural water-bodies such as lakes, ponds, beels, khals, tanks, etc. affected by man-made interventions or other causes.
<i>Preservation of Haors, Baors, and Beels</i>	<ul style="list-style-type: none"> Haors that naturally dry up during the winter will be developed for dry season agriculture. Take up integrated projects in those water bodies for increasing fish production.
<i>Economic and Financial Management</i>	<ul style="list-style-type: none"> Water charges realized from beneficiaries for O&M in a project would be retained locally for the provision of services within that project. Effective beneficiary participation and commitment to pay for O&M will be realized at the project identification and planning stages by respective public agencies.
<i>Research and Information Management</i>	Develop a central database and management information system (MIS) consolidating information from various data collection and research agencies on the existing hydrological systems, supply and use of national water resources, water quality, and the eco-system.
<i>Stakeholder Participation</i>	<ul style="list-style-type: none"> The "Guidelines for People's Participation (GPP) in Water Development Projects" be adhered to as part of project planning by all institutions and agencies involved in public sector management of water resources. Guidelines for formation of water user groups (WUG) and similar community organizations will be formulated. Generally 25 % of the earthwork of any public water project will be offered to specific target groups or beneficiaries. New projects proposed by a community or local institution will be considered for implementation on a priority basis only when the beneficiaries have mobilized a certain percentage of the total cost as their contribution to the project.

Table 4.1 List of Subprojects Proposed to SSWRDSP-2 in Kishoreganj District

Upazila	Union	No. of SP	Proposed Subproject Name	Re-Screen	Reconnaissance	PRA	Appraisal
Austogram	Deoghar	13	Darzigaon with Gorla Irrigation Subproject	X			
			Gabindaghona Irrigation Subproject	X			
			Golakati Irrigation Subproject	X			
			Katakhal Irrigation Subproject	X			
			Lamchar Karanal Irrigation Subproject	X			
			No. 1 Gobinda Ghona Irrigation Subproject	X			
			No. 1 Golakata Irrigation Subproject	X			
			No. 2 Golakata Irrigation Subproject	X			
			Paila Dhua Irrigation Subproject	X			
			Paon Bhoalarbhita Irrigation Subproject	X			
			Savinagar Bara Beel Irrigation Subproject	X			
Sutarpauri Irrigation Subproject	X						
Vailunga Gangkul Irrigation Subproject	X						
Bajitpur	Baliardi	1	Baliardi Subproject (CAD)	Passed	X		
	Dilalpur	1	Dilalpur Subproject (CAD)	Passed	X		
	Gazirchar	1	Gazirchar DR Subproject	Passed	?		
	Halimpur	2	Halimpur Drainage Subproject	?			
			Kutbpur Drainage Subproject	Passed	?		
	Humaiapur	1	Humaiapur DR & WC Subproject	X			
	Kailag	1	Kailag DR Subproject	X			
Majchar	1	Majchar DR Subproject	X				
Pirijpur	1	Pirijpur DR Subproject	X				
Bhairab	Aganagar	2	Gukulnagar Subproject	Passed	X		
			Re-excavation of Shampur-Baishkala Subproject	X			
	Gazaria	5	Baider Khat at Gazaria Subproject	X			
			Banshgari Kurerpar Subproject	X			
			Banshgari Saillarbaid Subproject	x			
			Banshgari-Bagaikandi Subproject	X			
	Const. of Parikharpar Embkt. at Nayahati	Passed	X				
	Kalikaprashad	3	Kachari Beel Subproject	X			
Kalikaprashad-Siddirchar Subproject			X				
Sadekpur	1	Kumirmara Beel Subproject	X				
		Bhabanipur-Badhunagar Subproject	X				
Hossainpur	Jinari	3	Hazipur-Porabari Subproject Embankment	Passed	Passed		
			Jinari FMD Subproject	Passed	X		
			Re-construction Hazipur Embankment	x			
	Pumdi	1	Pumdi Drainage & WC and Fish Dev. Subproject	Passed	X		
Sidhla	2	Re-construction Shahebpur Embankment	X				
		Sidhla FMD Subproject	Passed	X			
Itna	Boribari	1	Boribari FMD Subproject	X			
Karimganj	Joyka	1	(Joyka Subproject:Imple.)	Passed	Passed	Passed	Passed
	Noabad	2	Bhatishar Subproject	?			
			Vatiswar Khal Subproject	?			
Starpara	1	Sutarpara FMD Subproject	X				
Katiadi	Lohajuri	2	Oriadhar Bazar Subproject	x			
			(Purba Charparatala Subproject:Imple.)	Passed	Passed	Passed	Passed
Kishoreganj	Binnati	1	Dhari Binnati-Jugi Khali Subproject	X			
	Danapathuli	1	CAD Subproject	X			
	Josdal	1	Narsonda Khal Subproject	x			
	Korsha Kariaail	2	Jura Burir Khal Subproject	X			
			(Korshakariaail Subproject:Imple.)	Passed	Passed	Passed	Passed
	Latibabad	1	Makua Beel-Vaskar Khila Beel Subproject	X			
	Mahinanda	1	Vaskarkhila Dubila Beel Subproject	x			
	Maj Khapan	2	Maj Khapan Subproject	Passed	Passed	Passed	Passed
Kalia Kori Khal Subproject			X				
Maria	1	Utharia Khal Subproject	X				
Rasidabad	1	Rasidabad FMD Subproject	X				
Kuliarchar	Osmanpur	1	Osmanpur Subproject (FMD)	Passed	X		
	Ramdi	1	Ramdi Drainage Subproject	Passed	X		
Nikli	Dampara	1	Aliapara WC Subproject	X			
	Jaraitala	1	Rower Beel FMD Subproject	X			
	Singpur	1	Bara Bundh Natun Khal Subproject (FMD)	Passed	Passed	Passed	Passed
Pakundia	Egarosidhur	1	Egarosidhur FMD Subproject	Passed	X		
	Sukhia	1	(Sukhia-Padmakuri Beel Subproject:Imple.)	Passed	Passed	Passed	Passed
Tarail	Dhamiha	1	(Kajla Subproject:Imple.)	Passed	Passed	Passed	Passed
			Flood Management Subproject	X			
			Makran Beel Subproject	?			
	Jawar	3	Makran Subproject	?			
			Bhelantala Subproject	Passed	Passed	X	
			Kanchana Owl Baojani Subproject	?			
Tarail Sachail	5	Pangpachia Subproject (FMD)	Passed	X			
		Simulhati-Narsundha Nadi Subproject	X				
		Kaikona	Passed	Passed	?		
12	40	73		25	10	7	7

Table 4.2 List of Prioritized Potential Subprojects in Kishoreganj District (1/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Austagram	Khoyerpur Abdullahpur	34802120	Moraghoper Khal SP	WC	300	None	A	
	Kastail	34802030	Pedula - Zia Khal SP	DIWC	677	None	B	
	Austagram Sadar	34802041	Pathairbanda - Narsing Purbabad - Barahaor Khal SP	WC	540	None	B	
	Deoghar	34802010	Noli Khal SP	WC	550	Modkhola-Bhairagir Char Sub-Project	C	
	Deoghar	34802020	Boro Khal SP	WC	136	Modkhola-Bhairagir Char Sub-Project	C	
	Austagram Sadar	34802042	Beelbolli Beel SP	DIWC	699	None	C	
	Banglapara	34802050	Goja Khal and Jora - Charer Beel SP	FMWC	240	None	C	
	Kalma	34802060	Patirdia Khal SP	WC	134	None	D	Further examination to be required
	Kalma	34802070	Tofa Beel SP	FMWC	200	None	D	Further examination to be required
	Khoyerpur Abdullahpur	34802080	Pashkona - Saibeela Khal SP	FMWC	851	None	D	Further examination to be required
	Khoyerpur Abdullahpur	34802090	Cheenanager Khal SP	WC	179	None	D	Further examination to be required
	Adampur	34802100	Boitakhali Khal SP	WC	514	None	D	Further examination to be required
	Purba Austagram	34802111	Ekurdia - Borokhal - Badaghat Khal SP	WC	417	None	D	Further examination to be required
	Purba Austagram	34802112	Kalikurer Bak Khal SP	WC	166	None	D	Further examination to be required
Bajitpur	Dighirpar	34806130	Naldir - Chandair Beel SP	DIWC	496	Humaipur Haor Project	A	
	Gazir Char	34806060	Ghagotia Khal SP	WC	217	None	B	
	Dilalpur	34806070	Nagner Khal SP	WC	333	None	B	
	Pirijpur	34806010	Rupar Khal SP	DI	81	None	C	
	Halimpur	34806020	Boiddonodir Khal SP	DIWC	168	None	C	
	Hilachia & Sararchar	34806031	Tejkhali Khal, Agarpur Khal SP	WC	958	None	C	
	Maijchar	34806090	Boro Khal SP	FMDIWC	301	Humaipur Haor Project	C	
	Humaipur	34806100	Baruner Khal SP	WC	282	Humaipur Haor Project	C	
	Hilachia	34806050	Guja Beel SP	WC	205	None	D	Further examination to be required
	Baliardi	34806080	Barudia Khal SP	WC	106	None	D	Further examination to be required
Dighirpar & Koilag	34806120	Chamakpur Beel - Pourashava Khal, Khadangir Khal SP	DIWC	741	None	D	Further examination to be required	
Bhairab	Gazaria	34811050	Tatal Char Khal SP	DI	200	None	A	
	Kalikaprasad	34811010	Kalikaprasad Khal SP	FMDIWC	260	None	B	
	Aganagar	34811040	Nalir Khal SP	DIWC	117	None	B	
	Shimulkandi	34811030	Kodalkati Khal SP	WC	501	None	C	
	Sadepur	34811070	Bajmadorer Beel SP	DIWC	126	None	C	
	Shibpur	34811020	Bhatkrishnanagar Khal and Beel SP	DIWC	230	None	D	Further examination to be required
Srinagar	34811060	Horar Khal and Beel SP	FMDIWC	277	None	D	Further examination to be required	

Table 4.2 List of Prioritized Potential Subprojects in Kishoreganj District (2/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD		
							Priority	Remarks	
Hossainpur	Araibaria	34827030	Hossainpur Drainage Canal SP	FM & DI	304	None	A		
	Sahedal	34827050	Rohimpur - Chapra Beel SP	DIWC	427	None	B		
	Sahedal	34827040	Narasunda River (Kawna - Rampur - Char Pumdj) SP	DIWC	584	None	C		
	Gobindapur & Pumdi	34827060	Jhulupuri Khal, Borai Khali Khal SP	DIWC	2,736	None	L	Benefited area more than 1,000 ha	
	Araibaria & Jinari & Sidhla	34827090	Char Bishnathpur - Char Jamail Mosque, Hazipur Bazar - Porabaria - Char Bishnathpur Embankment SP	FM	1,461	BWDB embankment at the South boundary	L	Benefited area more than 1,000 ha	
	Gobindapur	34827070	Please Refer to SP34849010 of Sadar/Kishoreganj						
	Gobindapur	34827080	Please Refer to SP36172050 of Nandail/Mymensingh						
Itna	Raituti	34833021	Suair-Pachassia SP	FMDI	624	None	A		
	Mriga	34833120	Bamon Digha SP	FMDIWC	502	None	B		
	Joysiddhi	34833130	Nali-Azur Beel SP	FMDIWC	556	None	B		
	Badla	34833022	Shizly Khal SP	FMDI	636	None	C		
	Badla	34833050	Saluar Khal SP	DIWC	649	None	C		
	Elongjuri	34833070	Naluya-Mukti Beel SP	FMDIWC	385	None	C		
	Elongjuri	34833080	Kaktangur SP	FMDIWC	416	None	C		
	Itna	34833090	Geol Khal SP	FMDIWC	249	None	C		
	Dhanpur	34833100	Katakhal SP	FMDIWC	359	None	D		
	Joysiddhi	34833140	Dudbon - Duair Beel SP	FMDIWC	856	None	C		
	Raituti	34833010	Hulia Khal SP	FMDIWC	321	None	D		
	Itna	34833060	Bonpur-Mirakandi SP	FMWC	319	None	D	Further examination to be required	
	Mriga	34833110	Jhorkandi-Ujan Rajibpur - Vera Mohan SP	FMDIWC	333	None	D	Further examination to be required	
	Dhanpur	34833150	Bishnupur SP	FMDIWC	313	None	D	Further examination to be required	
Baribari & Chauganga	34833040	Baribari, Moara-Kamalbhog Embankment SP	FMDI	1,679	None	L	Benefited area more than 1,000 ha		
Karimganj	Gundhar	34842150	Singua River (Fazil Khali to Chulli) SP	DIWC	623	None	A		
	Kadir Jangal	34842030	Aamayna Bari - Pachahara Beel SP	DIWC	837	None	B		
	Noabad	34842070	Kumuria - Hugli Beel SP	DIWC	628	None	B		
	Dehunda	34842110	Khamar Dehunda Boro Beel SP	DIWC	143	None	B		
	Guzadia	34842010	Kala Huliya Beel SP	DIWC	132	None	C		
	Baragharia	34842080	Joka - Gudhar Khal SP	DIWC	824	None	C		
	Niamatpur	34842120	Narasunda river (Sakhua Bridge to Nakasindi) SP	FMDI	855	None	C		
	Niamatpur & Sutar Para	34842130	Rohabaid - Charitolla Beel, Rajjani Khal SP	FMDIWC	1,106	None	C		
	Sutar Para	34842160	Pangay Beel SP	FMDIWC	329	None	C		
	Guzadia	34842020	Singroil Beel SP	FMDIWC	251	None	D	Further examination to be required	
	Jafrabad	34842040	Narasunda river (Subandi to Jafrabad Nayapara), Bagaria Khal SP	FMDIWC	841	None	D	Further examination to be required	
	Karimganj	34842090	Mogli - Bairdoli - Tinkuri - Peruya - Talla Beel SP	DIWC	429	None	D	Further examination to be required	
	Dehunda	34842100	Sakhua Khal SP	FMDI	329	None	D	Further examination to be required	
Joyka & Noabad	34842061	Please refer to SP34876050 of Nikli/Kishoreganj							

Table 4.2 List of Prioritized Potential Subprojects in Kishoreganj District (3/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Prior ity	Remarks
Katiadi	Jalalpur	34845020	Arial Khan River Embankment SP	FM	655	None	A	
	Lohajuri	34845030	Char Kaunia Khal - Latia Badh Khal SP	FM	570	None	B	
	Mosua	34845010	Sorbomongal - Meratola Khal and Betal Doba Khal SP	DI	1,033	Ramdi - Digambordi Embankment Project	C	
	Banagram	34845060	Naogaon - Viti Para SP	FM	616	None	D	Further examination to be required
	Shahasram Dhuldia	34845070	Phulbaria D. C. Road - Singua River Embankment SP	FM	386	None	D	Further examination to be required
	Kargaon	34845080	Jokerpur RHW Road - Haria Bari (Pachuli Para) Embankment SP	FM	258	None	D	Further examination to be required
	Achmita & Chandpur & Mumurdia	34845043	Topai Khal, Manik Khali Khal, Topai - Magura Khal SP	DIWC	3,461	None	L	Benefited area more than 1,000 ha
Kishoreganj Sadar	Baulai	34849070	Dhubajora - Paniumra - Phul Mogra - Bor Mogra - Machua Beel SP	DIWC	952	None	A	
	Dana Patuli & Korsha Kariail	34849060	Khaikhodia Khal SP	DIWC	705	None	B	
	Latibabad	34849021	Makua - Vashker Khali, Hutzra Ghati and Borhai Ghati Khal SP	DI	440	None	C	
	Rashidabad & Gobindapur	34849010	Barai Khali Khal, Panan Beel SP	FMDI WC	1,852	Barai Khali Khal Sub-Project. There exist one regulator on BWDB embankment.	L	Benefited area more than 1,000 ha
	Mahinanda & Maji Khapan & Musulli	34849022	Anar - Vashker Khila - Kaliakuri Khal, Dhurua Khal SP	DIWC	2,832	Betai - Sukajuri Embankment SP	L	Benefited area more than 1,000 ha
	Binnati & Chauddasata	34849030	Haidolia - Joyonti Khal SP	DI	2,216	Re-excavation of Singua River project. There exist one 2-vent damaged regulator at the downstream.	L	Benefited area more than 1,000 ha
	Jasodal & Maria	34849040	Maria - Narsunda Khal SP	DI	2,110	None	L	Benefited area more than 1,000 ha
	Korshakarail	34849050	Nagdora Khal SP	WC	1,284	None	L	Benefited area more than 1,000 ha
Kuliar Char	Ramdi	34854020	Kalkara Beel SP	DI	184	None	A	
	Faridpur	34854050	Faridpur-Akanbaid Khal, Ali Nagar East Faridpur Embankment SP	FMDI	615	Katkhal Sluice Gate	C	
	Goboria Abdullahpur	34854010	Joaria Beel SP	DIWC	189	None	D	Further examination to be required
	Chaysuti	34854070	Tia Kata Bridge - Lalpur Embankment SP	FM	240	None	D	Further examination to be required
	Chaysuti & Osmanpur	34854090	Tia Kata Bridge - Kapasati Embankment, Dudh Katar Khal SP	FMDI	417	None	D	Further examination to be required
	Chaysuti & Salua	34854040	Ganak Khali Khal, Jutir Khal - Napit Khali Khal SP	DIWC	2,223	BWDB sluice gate at downstream	L	Benefited area more than 1,000 ha
Mithamain	Boirati	34859050	Char Khat Khal - Bahar Char Village extending up to Taleb Ali's House Embankment SP	FM	902	None	A	
	Gopedighi	34859020	Ghorbhanga River SP	WC	729	None	B	
	Gopedighi	34859010	Gofra Khal - Bekhuya Khal SP	WC	168	None	D	Further examination to be required
	Mithamain Sadar	34859030	Jail Bhanga Khal SP	FMDI	457	None	D	Further examination to be required
	KhatKhal	34859040	Kaisar Village - Mora Nadi via Khat Kha Embankment SP	FM	515	None	D	Further examination to be required
	Dhaki	34859060	Pathorkandi SP	FM	674	None	D	Further examination to be required
	Ghagra	34859070	Siahara - Maliker Dargah Embankment and Chamakpur - Bhara Flood Wall SP	FM	956	None	D	Further examination to be required
	Keorjore	34859080	Pathorkandi - Kanchampur Bazar - Raniganj Embankment and Maliker Dargah - Keorjore Bazar Flood Wall SP	FM	1,371	None	L	Benefited area more than 1,000 ha

Table 4.2 List of Prioritized Potential Subprojects in Kishoreganj District (4/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Nikli	Singpur	34876160	Mirkhali Khal SP	FM	353	None	A	
	Nikli	34876070	Sojoni Khal and Roda Khal SP	WC	371	None	B	
	Karpasha	34876020	Shaharmul Imam Khal SP	WC	197	None	B	
	Nikli	34876140	Horchoki Beel SP	WC	384	None	B	
	Karpasha	34876030	Mojlishpur Kata Khal SP	WC	64	None	C	
	Singpur	34876060	Jailbhanga - Ghagani Khal SP	DIWC	1,008	None	C	
	Chattiarchar & Nikli	34876080	Doparpar - Shapmari Khal, Borolia Khal SP	WC	926	None	C	
	Chattiarchar	34876100	Cheenardir Khal SP	DIWC	247	None	C	
	Singpur	34876150	Lalpur Khal SP	FM	441	None	C	
	Dampara	34876040	Bannar Khal SP	DIWC	546	None	D	Further examination to be required Large navigation gates
	Chattiarchar	34876130	Chipalya Khal SP	FM	200	None	D	Further examination to be required
Gurai & Jaraitola	34876120	Beri Khal, Roar Beel SP	DIWC	1,430	None	L	Benefited area more than 1,000 ha	
Nikli & Kaimga (n)	Dampara, Karpasha, Joyka & Noabad	34876050	Narsunda Khal, Baniajan Khal, Jola - Katarcha - Kanjia Beel, Bhatishwar Kha SP	DIWC	4,127	None	L	Benefited area more than 1,000 ha
Pakundia	Egarasindur	34879050	Holhola Khal SP	FMDIWC	793	Motkhola - Boiragir Char Embankment Project	A	
	Charfaradi & Pakundia	34879020	Narsunda Khal, Anwar Khali - Molongsha - Jugir Gang Khal SP	DIWC	876	Embankment, Regulator	B	
	Charfaradi	34879040	Borsha Gati Khal SP	DIWC	811	None	C	
	Chandipasha	34879060	Biharir Khal SP	DIWC	261	None	C	
	Jangalia	34879010	Noluadoba - Boddho Doba Khal SP	DIWC	561	Embankment and regulator	D	Further examination to be required
	Narandi	34879070	Salonkajoka Beel SP	DIWC	124	None	D	Further examination to be required
	Narandi	34879080	Purabaria Khal - Choto Ajoldi Khal SP	DIWC	257	None	D	Further examination to be required
	Hosendi & Patuaghanga	34879092	Nobagia, Patuabhanga Embankment SP	FM	561	None	D	Further examination to be required
	Burudia	34879101	Nobagya Beel, Singua Khal, Nola Beel SP	DIWC	611	None	D	Further examination to be required
	Sukhiai	None	No SP since LGED's ongoing SP covers most of the union area					
Tarail	Dhala	34892040	Sekandar Nagar SP	FMDIWC	642	None	A	
	Tarail Sachail	34892020	Kaiknar Beel SP	FMDIWC	414	None	C	
	Taljanga	34892010	Bethail River SP	DIWC	540	None	D	Further examination to be required, Intercept major river
	Rauti	34892030	Daudpur SP	FMDIWC	670	None	D	Further examination to be required
	Digdair	34892060	Juarla Khal, Kobadia Khal SP	FMDIWC	586	None	D	Further examination to be required
	Damiha	34892070	Baruk - Becha - Boro Beel SP	FMDIWC	454	None	D	Further examination to be required
	Jawar	34892080	Makran Beel SP	FMDIWC	623	None	D	Further examination to be required

Table 5.1 List of Potential Subproject for SSWRDP in Kishoreganj District (1/4)

Sr. No.	Upazila	Proposed Union	Priority	SP_ID	Title	Type	Gross Area (ha)	Expected Work Volume		BWDB Project	Investment Cost (Tk. '000)
								Earth Work	Structure		
1	Austagram	Khoyerpur Abdullahpur	A	34802120	Moraghooper Khal SP	WC	300	Reexcavation of Moraghooper khal: L=1.2km, W=65m, D=1.7m	None	None	4,352
2	Bajitpur	Dighirpar	A	34806130	Naldir - Chandair Beel SP	DIWC	496	Re-excavation of khal from Naldir beel - Chandair beel - Bengla river L=2km, W=18m, D=2.1m	One regulator on embankment at North of Bengla river	Humaipur Haor Project	10,005
3	Bhairab	Gazaria	A	34811050	Tatal Char Khal SP	DI	200	Re-excavation of Tatal Char khal: L=2km, W=8m, D=1.5m	1 culvert at downstream of Tatal Char khal which is closed at present	None	1,343
4	Hossainpur	Araibaria	A	34827030	Hossainpur Drainage Canal SP	FMDI	304	Re-excavation of drainage canal with lined vertical section: L=1km, W=2m, D=1.8m	One regulator at the downstream	None	4,937
5	Itna	Raituti	A	34833021	Suair-Pachassia SP	FMDI	624	Re-excavation of khal: L=2.5km, W=15m, D=2m; New construction of embankment: L=5km, W=3m, H=2.5m (there is no need of embankment along the Eastern side of the project boundary)	Two regulators at the Southern and Western khals on the embankment	None	18,139
6	Karimganj	Gundhar	A	34842150	Singua River (Fazil Khali to Chulli) SP	DIWC	623	Re-excavation of Singua river: L=10km, W=8m, D=2m; New construction of embankment: L=20km, W=2m, H=2m	None	None	16,856
7	Katiadi	Jalalpur	A	34845020	Arial Khan River Embankment SP	FM	655	New construction of embankment: L=5km, W=4.3m, H=2.7m	One gated drainage outlet at Fakir Bari	None	11,720
8	Kishoreganj Sadar	Baulai	A	34849070	Dhubajora - Paniumra - Phul Mogra - Bor Mogra - Machua Beel SP	DIWC	952	Re-excavation of Dhubajora beel - Paniumra beel khal: L=1km, W=3.7m, D=1.5m; Re-excavation of Paniumra beel - Phul Mogra beel khal: L=1.5 km, W=3m, D=1.8m; Re-excavation of Phul Mogra beel → Bor Mogra beel → Machau beel → Proposed regulator: L=0.5km, W=3m, D=1.8m	One regulator on khal from Machua beel → Narsundda river	None	11,730
9	Kuliar Char	Ramdi	A	34854020	Kalkara Beel SP	DI	184	Re-excavation of khal from Khalkara beel to Bordon khal: L=2.5km, W=8.3m, D=1.7m	None	None	1,456
10	Mithamain	Boirati	A	34859050	Char Khat Khal - Baher Char Village extending up to Taleb Ali's House Embankment SP	FM	902	Construction of new embankment: L=5.5km, W=2.5m, H=1.5m	Three gated drainage outlets	None	14,051
11	Nikli	Singpur	A	34876160	Mirkhali Khal SP	FM	353	None	One regulator on Mirkali khal upstream for naviagation	None	3,600
12	Pakundia	Egarasindur	A	34879050	Holholia Khal SP	FMDI WC	793	Re-excavation of Holholia khal: L=4km, W=7.6m, D=1.5m	One regulator on east of Bilbhara beel near existing LGED bridge; Repair one BWDB regulator at downsream of Holholia khal	Motkhola - Boiragir Char Embankment Project	9,066
13	Tarail	Dhala	A	34892040	Sekandar Nagar SP	FMDI WC	642	New construction of embankment: L=5km, W=4.8m, H=3.0m; Re-excavation of Fuleswari (3.5km) and eastern (1.5km) khals: L=5km, W=6m, D=1.5m	Two regulators: one on Fuleswari khal and another on eastern khal	None	18,481

Table 5.1 List of Potential Subproject for SSWRDP in Kishoreganj District (2/4)

Sr. No.	Upazila	Proposed Union	Priority	SP_ID	Title	Type	Gross Area (ha)	Expected Work Volume		BWDB Project	Investment Cost (Tk. '000)
								Earth Work	Structure		
14	Austagram	Kastail	B	34802030	Pedulia - Zia Khal SP	DIWC	677	Re-excavation of Pedulia - Zia khal: L=4km, W=10m, D=1.3m	None	None	1,962
15	Austagram	Austagram Sadar	B	34802041	Pathairbanda - Narsing Purbabad - Barahaor Khal SP	WC	540	Re-excavation of Khal: L=8km, W=11m, D=4m (for navigation)	None	None	17,180
16	Bajitpur	Gazir Char	B	34806060	Ghagotia Khal SP	WC	217	Re-excavation of Ghagotia khal: L=2km, W=19m, D=2.2m; Re-excavation of Ichamoti beel: A=3.1ha, D=2.2m	None	None	5,252
17	Bajitpur	Dilalpur	B	34806070	Nagner Khal SP	WC	333	Re-excavation of Nagner khal: L=2km, W=48m, D=1.5m	None	None	4,761
18	Bhairab	Kalikaprasad	B	34811010	Kalikaprasad Khal SP	FMDI WC	260	Re-excavation of Kalikaprasad khal from Biswa road to Imam bari: L=1.5km, W=9m, D=2.1m	One regulator at Imam bari bridge	None	5,809
19	Bhairab	Aganagar	B	34811040	Nalir Khal SP	DIWC	117	Re-excavation of Nalir Khal at two places: From Gokul Nagar bazar to Kodai Ghati (L=1km, W=15m, D=2.4m) and from Bagnamara to Meghna river (L=1km, W=15m, D=1.8m)	None	None	2,416
20	Hossainpur	Sahedal	B	34827050	Rohimpur - Chapra Beel SP	DIWC	427	Re-excavation of khal: L=2km, W=5m, D=1.5m	One regulator downstream of Rohimpur Chapra beel; two culverts	None	8,259
21	Itna	Mriga	B	34833120	Bamon Digha SP	FMDI WC	502	Re-excavation of khal: L=0.2km, W=8m, D=1.5m; Rehabilitation of embankment: L=9km, W=5m, H=2m; New construction of embankment: L=4km, W=3m, H=2m	One regulator at downstream of Bamon Digha beel on the embankment	None	15,621
22	Itna	Joysiddhi	B	34833130	Nali-Azur Beel SP	FMDI WC	556	Re-excavation of Nali - Azur beel khal: L=5km, W=8m, D=1.5m; Rehabilitation of embankment: L=6km, W=5m, H=2m	One regulator at downstream of Nali-Azur beel on the embankment	None	14,484
23	Karimganj	Kadir Jangal	B	34842030	Aamayna Bari - Pachahara Beel SP	DIWC	837	Re-excavation of khal: L=4km, W=5m, D=1.5m	Two regulators on the khal: one before confluence with Damini river and another downstream of Aamayna Bari beel	None	9,574
24	Karimganj	Noabad	B	34842070	Kumuria - Hugli Beel SP	DIWC	628	Re-excavation of khal (Kumuria - Fata beels): L=1km, W=4.5m, D=1.2m; Re-excavation of khal (Fata - Singua beels): L=2km, W=4.5m, D=1.2m; Re-excavation of khal (Singua - Jaldua beels): L=2km, W=4.5m, D=1.5m; Re-excavation of khal (Hugli - Noabad beels): L=2km, W=6m, D=1.5m; Re-excavation of khal (Noabad -Jaldua beels): L=1.5km, W=6m, D=1.5m	One regulator at downstream of Noabad beel	None	9,924
25	Karimganj	Dehunda	B	34842110	Khamar Dehunda Boro Beel SP	DIWC	143	Re-excavation of Kamar Dehunda beel khal: L=1.5km, W=6m, D=1.5m	One regulator at the downstream	None	4,186
26	Katiadi	Lohajuri	B	34845030	Char Kaunia Khal - Latia Badh Khal SP	FM	570	Rehabilitation of embankment: L=5km, W=3.6m, H=1.5m	Three regulators on the embankment: one at Char Kaunia khal, another at Latia Badh khal and the other is a pipe regulator at Jirarpur	None	9,426
27	Kishoreganj Sadar	Dana Patuli & Korsha Kariail	B	34849060	Khaikhodia Khal SP	DIWC	705	Re-excavation of Khaikhodia khal upstream: L=2.5km, W=6m, D=1.2m; Re-excavation of Khaikhodia khal downstream: L=3.5km, W=24m, D=1.5m; New excavation of khal from Shaloin beel to Singua river: L=1.4km, W=3m, D=1.5m	One regulator on Khaikhodia khal at the mouth of Singua river near Sonamuddi's house	None	12,807
28	Mithamain	Gopedighi	B	34859020	Ghorbhanga River SP	WC	729	Re-excavation of Ghorbhanga river: L=5km, W=8m, D=2.4m	None	None	7,238
29	Nikli	Karpasha	B	34876020	Shaharmul Imam Khal SP	WC	197	Re-excavation of Shaharmul Imam khal: L=3km, W=15m, D=1.8m	None	None	3,018

Table 5.1 List of Potential Subproject for SSWRDP in Kishoreganj District (3/4)

Sr. No.	Upazila	Proposed Union	Priority	SP_ID	Title	Type	Gross Area (ha)	Expected Work Volume		BWDB Project	Investment Cost (Tk. '000)
								Earth Work	Structure		
30	Nikli	Nikli	B	34876070	Sojoni Khal and Roda Khal SP	WC	371	Re-excavation of Roda khal: L=1.5km, W=20m, D=1.5m; Re-excavation of Sojoni khal: L=2km, W=60m, D=1.8m	None	None	8,709
31	Nikli	Nikli	B	34876140	Horchoki Beel SP	WC	384	Re-excavation of Horchoki beel: A=20ha, D=1.5m	None	None	9,474
32	Pakundia	Charfaradi & Pakundia	B	34879020	Narsunda Khal, Anwar Khali - Molongsha - Jugir Gang Khal SP	DIWC	876	Re-excavation of Narsunda khal: L=5km, W=9m, D=3m Re-excavation of Anwar Khali khal: L=5km, W=8m, D=1.8m	One regulator	Embankment, Regulator	14,036
33	Austagram	Deoghar	C	34802010	Noli Khal SP	WC	550	Re-excavation of Noli khal: L=2.5km, W=16.7m, D=2.7m New excavation of lined drainage canals (total): L=3km, W=1m, D=0.3m	None	Modkhola-B hairagir Char Sub-Project	10,344
34	Austagram	Deoghar	C	34802020	Boro Khal SP	WC	136	Re-excavation of Boro khal: L=1.5km, W=11.7m, D=2.7m	None	Modkhola-B hairagir Char Sub-Project	2,014
35	Austagram	Austagram Sadar	C	34802042	Beelbolli Beel SP	DIWC	699	Re-excavation of Beelbolli khal: L=1km, W=11m, D=3m Reexcavation of khal: L=0.8km, W=20m, D=3m	One regulator at downstream of Beelboli Khal before confluence with Kalni river	None	10,525
36	Austagram	Banglapara	C	34802050	Goja Khal and Jora - Charer Beel SP	FMDI C	240	Re-excavation of Goja khal: L=1.6km, W=15m, D=1.7m	One regulator at Char Protep	None	5,108
37	Bajitpur	Pirijpur	C	34806010	Rupar Khal SP	DI	81	Re-excavation of Rupar khal: L=1.5km, W=9m, D=1.8m	None	None	998
38	Bajitpur	Halimpur	C	34806020	Boiddonodir Khal SP	DIWC	168	Re-excavation of Boiddonodir khal: L=2km, W=4.6m, D=2.1m	One regulator on the road near to Chapadangar beel	None	4,628
39	Bajitpur	Hilachia & Sararchar	C	34806031	Tejkhali Khal, Agarpur Khal SP	WC	958	Re-excavation of Tejkhali khal (down stream): L=5km, W=15m, D=1.5m Re-excavation of Tejkhali khal (up stream): L=5km, W=8m, D=1.5m Re-excavation of Agarpur khal: L=4km, W=7m, D=1.5m	None	None	8,266
40	Bajitpur	Maijchar	C	34806090	Boro Khal SP	FMDI WC	301	Re-excavation of Boro khal: L=5km, W=15m, D=1.5m	One regulator on Boro khal over the embankment	Humaipur Haor Project	8,686
41	Bajitpur	Humaipur	C	34806100	Baruner Khal SP	WC	282	Re-excavation of Baruner khal: L=5km, W=6m, D=2.2m	One culvert on the cross-road from Baruner beel to Dholeswari river	Humaipur Haor Project	3,603
42	Bhairab	Shimulkandi	C	34811030	Kodalkati Khal SP	WC	501	Re-excavation of Kodalkati khal (L=4km, W=70m, D=1m)	None	None	9,032
43	Bhairab	Sadekpur	C	34811070	Bajmadorer Beel SP	DIWC	126	Re-excavation of Bajmadorer khal: L=1km, W=3m, D=1m	One regulator at downstream of Bajmadorer beel on Moutopi to Rasulpur Road (Bongoshor)	None	3,742
44	Hossainpur	Sahedal	C	34827040	Narasunda River (Kawna - Rampur - Char Pumdi) SP	DIWC	584	Re-excavation of Narasunda river: L=12km, W=15m, D=2m	None	None	13,643
45	Itna	Badla	C	34833022	Shizly Khal SP	FMDI	636	Re-excavation of Sizly khal: L=1km, W=10m, D=2m; Embankment rehabilitation: L=2km, W=5m, D=2m; New embankment construction: L=4km, W=3m, H=2m	2 regulators at the Southern side	None	14,897
46	Itna	Badla	C	34833050	Saluar Khal SP	DIWC	649	Re-excavation of Saluar Khal: L=7.5km, W=16m, D=1.5m Rehabilitation of embankment: L=15km, W=3m, H=2m	None	None	15,927
47	Itna	Elongjuri	C	34833070	Naluya-Mukti Beel SP	FMDI WC	385	Re-excavation of khal: L=1.5km, W=10m, D=1.5m; Rehabilitation of embankment: L=8.5km, W=5m, H=1.5m; New construction of embankment: L=4.5km, W=2m, H=2m	One regulator at downstream of Mukti beel on the embankment and one check structure between beels	None	11,961
48	Itna	Elongjuri	C	34833080	Kaktangur SP	FMDI WC	416	Re-excavation of khal: L=2.3km, W=8m, D=2m; Rehabilitation of embankment: L=3km, W=5m, H=0.5m); New construction of embankment: L=6km, W=3m, H=1.5m	One regulator at downstream of bali beel on the embankment and one check structure between beels	None	13,221

Table 5.1 List of Potential Subproject for SSWRDP in Kishoreganj District (4/4)

Sr. No.	Upazila	Proposed Union	Priority	SP_ID	Title	Type	Gross Area (ha)	Expected Work Volume		BWDB Project	Investment Cost (Tk. '000)
								Earth Work	Structure		
49	Itna	Itna	C	34833090	Geol Khal SP	FMDI WC	249	Re-excavation of khal: L=1.5km, W=5m, D=2m; Rehabilitation of embankment: L=0.6km, W=5m, H=1.5m; New construction of embankment: L=0.4km, W=5m, H=1.5m	One regulator at downstream of Geol beel on the embankment	None	5,026
50	Itna	Joysiddhi	C	34833140	Dudbon - Duair Beel SP	FMDI WC	856	Re-excavation of Dudbon - Duair beel khals: L=1km, W=30m, D=1.5m; New construction of embankment: L=5km, W=3m, H=2m (there is no need of embankment along the Northern side of the project boundary)	Two regulators at the downstream of Dudbon and Duair beels before confluence with Boutai and Kalni rivers	None	16,876
51	Karimganj	Guzadia	C	34842010	Kala Huliya Beel SP	DIWC	132	Re-excavation of Kala Huliya khal: L=2km, W=5m, D=2m	One regulator on Kala Huliya khal before confluence with bethai river	None	3,761
52	Karimganj	Baragharia	C	34842080	Joka - Gudhar Khal SP	DIWC	824	Re-excavation of Joka - Gudhar khal: L=9km, W=6m, D=1.5m	Three regulators: one downstream of Joka beel; another between Tan and Nawa Singua beels; the other on Joka - Gudhar khal at downstream of confluence with Kayemarghuna beel	None	14,317
53	Karimganj	Niamatpur	C	34842120	Narasunda river (Sakhua Bridge to Nakasindi) SP	FMDI	855	Re-excavation of Narasunda river: L=10km, W=15m, D=1.5m; New construction of embankment: L=4km, W=5m, H=1.5m	None	None	22,410
54	Karimganj	Niamatpur & Sutar Para	C	34842130	Rohabaid - Charitolla Beel, Rajjani Khal SP	FMDI WC	1,106	Re-excavation of upstream of Rajjani khal: L=1.5km, W=6m, D=1m Re-excavation of Rajjani khal: L=5.5km, W=15m, D=2.4m	One regulator at downstream of Rohabaid Charitolla beel One regulator at downstream of Rajjani khal before confluence with Dhanu river	None	18,909
55	Karimganj	Sutar Para	C	34842160	Pangay Beel SP	FMDI WC	329	Re-excavation of Pangay khal: L=2.5km, W=18m, D=2.1m	One regulator before confluence with Dhanu river	None	7,107
56	Katiadi	Mosua	C	34845010	Sorbomongal - Meratola Khal and Betal Doba Khal SP	DI	1,033	Re-excavation of Sorbomongal Meratola Khal: L=6km, W=8.4m, D=1.8m with lining of 0.25 km along the left bank (North-East side) in the downstream	Upgrading of existing BWDB sluice gate by one new vent (bypass gate)	Ramdi - Digambordi Embankment Project	15,066
57	Kishoreganj Sadar	Latibabad	C	34849021	Makua - Vashker Khali, Hutzra Ghati and Borai Ghati Khal SP	DI	440	Re-excavation of Makua - Vashker Khila khal: L=3.7km, W=6m, D=1.5m; Re-excavation of Hutzra Ghati khal: L=1.2km, W=6m, D=1.5m; Re-excavation of Borai Ghati khal: L=1.5km, W=6m, D=1.5m	One culvert on Huzra Ghati khal	None	2,873
58	Kuliar Char	Faridpur	C	34854050	Faridpur-Akanbaid Khal, Ali Nagar East Faridpur Embankment SP	FMDI	615	Re-excavation of Faridpur - Akanbaid khal: L=5km, W=7.5m, D=1.2m New construction of embankment: L=10km, W=4.3m, H=3.0m	One regulator on embankment at Akanbaid khal	Katkali Sluice Gate	20,313
59	Nikli	Karpasha	C	34876030	Mojliphur Kata Khal SP	WC	64	Re-excavation of Mojliphur Kata khal: L=2km, W=12m, D=1.8m	None	None	1,671
60	Nikli	Singpur	C	34876060	Jailbhanga - Ghagani Khal SP	DIWC	1,008	Re-excavation of Jailbhanga khal: L=4km, W=60m, D=1.8m; Re-excavation of Ghagani khal: L=1km, W=45m, D=1m	None	None	26,525
61	Nikli	Chattiarchar & Nikli	C	34876080	Doparpar - Shapmari Khal, Borolia Khal SP	WC	926	Re-excavation of Doparpar - Shapmari khal: L= 5km, W=30m, D=1.5m Re-excavation of Borolia khal: L=2km, W=12m, D=1.8m	None	None	9,310
62	Nikli	Chattiarchar	C	34876100	Cheenardir Khal SP	DIWC	247	Re-excavation of Cheenardir khal: L=2km, W=7m, D=1.8m	One regulator at downstream of Cheenardir khal	None	5,703
63	Nikli	Singpur	C	34876150	Lalpur Khal SP	FM	441	None	One regulator at Lalpur khal mouth for navigation	None	7,200
64	Pakundia	Charfaradi	C	34879040	Borsha Gati Khal SP	DIWC	811	Re-excavation of Borsha Gati khal: L=6km, W=6m, D=1.8m	None	None	2,967
65	Pakundia	Chandipasha	C	34879060	Biharir Khal SP	DIWC	261	Re-excavation of Biharir khal: L=3.5km, W=6m, D=2.1m	One regulator at Ghagra	None	5,724
66	Tarail	Tarail Sachail	C	34892020	Kaiknar Beel SP	FMDI WC	414	Rehabilitation of embankment: L=3km, W=3.7m, H=1.5m; Re-excavation of Nondipur and Rajjani khals: L=3km, W=9m, D=3m	Two regulators at mouth of Nondipur and Rajjani khals	None	12,393

Table 5.2 Major Development Possibilities of Agroecological Zones in Kishoreganj District

No	Region	Major Development Possibilities						
		Agriculture	Fishery	Livestock	Water resources	Infrastructure	Socio economy	Forestry/ Environment
3a	Floodplain Areas (AEZ-9: Old Brahmaputra & Jamuna river)	Rice based agriculture is the main economic output of the area and increased production is caused by inadequate pre-monsoon and post-monsoon drainage. On-going sediment deposition in the drainage system will result in increasing crop losses in dry season.	Open water and closed water fisheries	Aqua animal (Duck in T.Aman field).	Planned expansion and efficient use of tube-well irrigation Multipurpose development of surface water.	Improvement of road communication, housing and settlements, commercial, administrative and educational centers.	Planned population settlement. Backyard poultry and kitchen, gardening to improve family income. Village banking to promote saving habit.	Protection against water and air pollution. Strict compliance of land use policy. Expansion of trees through annual programs.
3b	Deeply Flooded Areas	Flooded Areas. This areas are flooded for five to six months each year. The cropping pattern of this area could be Boro - fishery - T.Aman.	The area has a comparative advantage of fishery production in Open water.	Aqua animal (Duck in T.Aman field).	Expansion of dry season pump irrigation, fishery development and navigation.	Development or road and river communication. Improvement of housing and settlements, administrative, marketing and educational centers.	Planned population settlement. Development of skilled man power. Creation of alternative employment Village banking facilities and social amenities.	Protection against water pollution incentives for homesteads forestry. Development of compact village.
5	Haor Areas (AEZ-16: Middle Meghna River Flood Plain, AEZ-19: Old Meghna Estuarine Flood plain, and AEZ-21: Shlet Basin Haor Areas	Intensive irrigated boro cultivation. Also the profitable cropping pattern could be boro-fishery - T.Aman. Adaptive research for short duration boro (<140 days HYV boro) -Fishery-Late T.Aman (Aug-Dec duration).	Increasing fisheries productivity through Boro-fishery-T.Aman system	Increasing production of livestock. under Boro+Duck+T .Aman system	Expansion of dry season power pump irrigation. Fishery development.	Improvement of river communication. Development of housing, administrative, commercial and educational centers.	Planned population distribution. Improvement of marketing facilities. Improvement of social amenities, Creation alternative employment.	Development of cluster villages. Development of homestead forestry and horticulture.

Table 5.3 Promising Farming in Various Areas in Kishoreganj District

Zone	Characteristics	Promising Farming System
<u>Haor area</u>	Haor area is covered with deep water about 5-6 m in depth for 4-5 months during rainy seasons. The unusual natural conditions produce various specific characteristics in soil and cropping. Under these conditions types farming system are limited, but specific cultivation can be developed.	Several types are as follows: - Boro-fish (aquaculture) cultivation - Inter-linkage of resort development, environmental protection, rice/ crop production and fisheries needs to be developed. - Seed multiplication (Clean and isolated area)
<u>Lowland</u>	The lowland areas have regularly flooding and sedimentation. Two times rice cultivation can be performed, but flood damages often happened. Intensive fish culture is widely done.	In well managed lowlands an efficient farming system such as Boro-Aman-vegetables is performed. Water management and introduction of short-duration crops are important for successful cropping. 1) Improvement of farming system 2) Community seed production activities
Medium highland	The area is flood-free or slightly flooded but no sedimentation area. Triple cropping is practiced in the area: Boro-Aman-potato/ vegetables. Due to Boro-Aman crop rotation, soil-born diseases or laterization are limited.	Examples of development projects. (1) Triple paddy + potato cropping after flood-free condition by SSWRDSP-1, Kanmona-Haraboti WCS Subproject, Kalai, Joypurhat (2) Traditional potato farmers, Kishoreganj (3) Goat rearing by a rural woman of farm household.

Table 5.4 Development Potential of Fish Production by Agroecological Zone in the District

No	Region	Potential of development fish production in SSWRD
3a	Floodplain Areas 8AEZ-9: Old Brahmaputra & Jamina river)	<p>Generally it is a partly suitable for fish culture. If water remains in ponds/ ditches/ khals/ rivers/ beels more than 1m depth and minimum 6-10 months, it may be possible to introduce low cost subsistence fish culture or income generating fish culture such as; Closed water bodies- pond and ditch etc.,, if the flood doesn't break the pond or ditch.</p> <ul style="list-style-type: none"> • Closed water bodies- pond and ditch <ul style="list-style-type: none"> ◦ Tilapia with <i>Pangas</i> poly culture, ◦ Integrated fish culture; major carps, grass carp or plankton feeder fish with chicken/duck and vegetable crop on the dike, ◦ Rice- com fish culture with duck, ◦ Poly fish culture ◦ Indigenous/natural fish (fish naturally enters the pond due to a flood) and stocking fish culture <p><u>To need investment large amount of finance</u></p> <ul style="list-style-type: none"> ◦ Integrated fish culture: fish with chicken/duck (poultry house on the pond or side) and vegetable crop on the dike, ◦ Fresh water shrimp poly culture (shrimp with fish, except carnivorous fish) ◦ Fresh water ornamental fish poly culture (golden fish, fancy carp etc.,) ◦ Indigenous/natural fish culture (for natural resource propagation) <ul style="list-style-type: none"> • Open water bodies- Khal/ beel/river <ul style="list-style-type: none"> ◦ Khal: pen or cage culture of <i>Pangas</i> or Major carps ◦ Beel fish culture (stocking cultured fingerling only or with natural fish) ◦ Khal ,beel and river: Indigenous/natural fish conservation and capture by Katas/ pen (making habitat and fishing ground ◦ Kuas in beel, khal (like small hole, pool, it becomes fish shelter in low level water) by some structure) and Kuas
3b	Deeply Flooded Area	<p>Generally it is not suitable for fish culture because here are flooded for five to six months each year. But if pond/ditch etc., can be defended from flood, it may be possible to introduce low cost seasonal fish culture such as;</p> <ul style="list-style-type: none"> • Closed water bodies- pond and ditch, etc.,. <ul style="list-style-type: none"> ◦ Integrated fish culture; major carps, grass carp or plankton feeder fish with chicken/duck and vegetable crop on the dike, ◦ Rice- com fish culture with duck, ◦ Poly fish culture <p><u>To need investment large amount of finance</u></p> <ul style="list-style-type: none"> ◦ Integrated fish culture: fish with chicken/duck (poultry house on the pond or side) and vegetable crop on the dike, ◦ Indigenous/natural fish culture (for natural resource propagation) <ul style="list-style-type: none"> • Open water bodies- Khal/ beel/river <ul style="list-style-type: none"> ◦ Khal: pen or cage culture of Major carps ◦ Beel fish culture (stocking cultured fingerling only or with natural fish) ◦ Khal ,beel and river: Indigenous/natural fish conservation and capture by Katas/ pen (making habitat and fishing ground by some structure) ◦ Kuas in beel, khal (like small hole, pool, it becomes fish shelter in low level water) ◦ Floating cage culture
5	Haor Areas (AEZ-16: Middle Meghna River Flood Plain, AEZ-19: Old Meghna Estuarine Flood Plain, and AEZ-21: Shlet Basin Areas	<p>These areas are not suitable for fish culture because of heavy flooding and strong waves. But if pond/ditch etc., can be defended from flood, it may be possible to introduce low cost seasonal fish culture such as;</p> <ul style="list-style-type: none"> • Closed water bodies- pond and ditch etc.,. <ul style="list-style-type: none"> ◦ Integrated fish culture; major carps, grass carp or plankton feeder fish with chicken/duck and vegetable crop on the dike, ◦ Rice- com fish culture with duck, ◦ Poly fish culture <p>When an initial investment for fish culture is possible:</p> <ul style="list-style-type: none"> ◦ Integrated fish culture: fish with chicken/duck (poultry house on the pond or side) and vegetable crop on the dike, ◦ Indigenous/natural fish culture (for natural resource propagation) <ul style="list-style-type: none"> • Open water bodies- Beels, haor and river <ul style="list-style-type: none"> ◦ Beel fish culture (stocking cultured fingerling only or with natural fish) ◦ Beels and rivers: Indigenous/natural fish conservation and capture by Katas/ pen (making habitat and fishing ground by some structure) ◦ Kuas in beel, khal (like small hole, pool, it becomes fish shelter in low level water) ◦ Floating cage culture

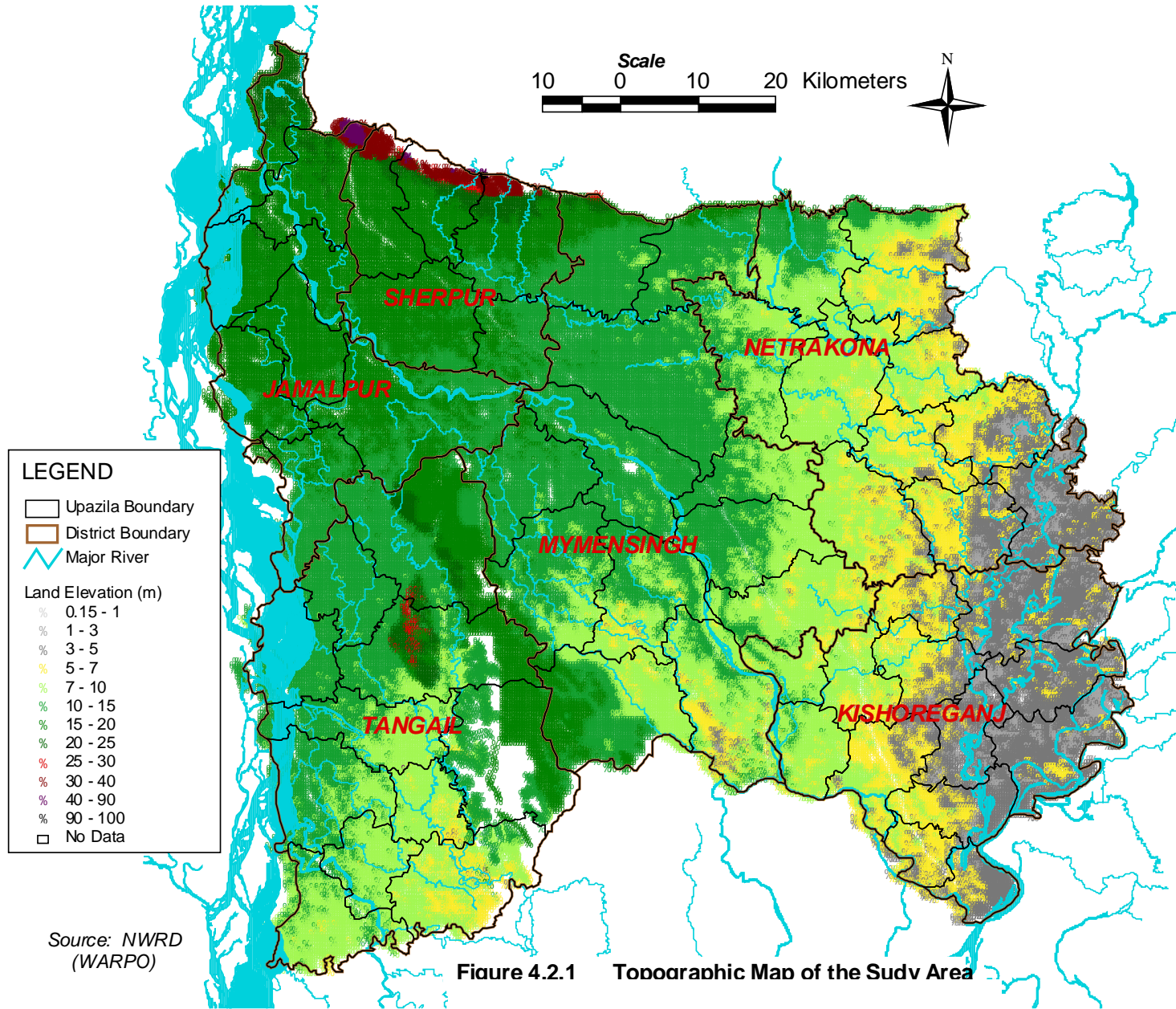


Fig. 2.1 Topographic Map of Kishoreganj District and the Study Area