Regenerative Agriculture and Sustainable Livelihood for Vulnerable Ecosystems (RESOLVE)

Baseline Survey Report

Gaibandha, Bangladesh

2011

Regenerative Agriculture and Sustainable Livelihood for Vulnerable Ecosystems (RESOLVE)

Area: Gaibandha, Bangladesh

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The report titled "Baseline Survey on Regenerative Agriculture and Sustainable Livelihood for Vulnerable Ecosystems (RESOLVE)" is an assessment of present situation of living condition of people of different village of Sundorjong Upazila. **This report is an output of RESOLVE project, implemented by GKS, GUK, SDS and Unnayan Onneshan with financial support from Oxfam Novib.** The report is prepared by Unnayan Onneshan Social policy unit with the assistance from GUK and Oxfam Novib. We further thank A. Z. M. Saleh of Unnayan Onneshan for editing language and formatting the report.

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1. INTRODUCTION

Climate change has increased the frequency and severity of extreme events in Bangladesh such as cyclone, floods, hailstorms, droughts and salinity intrusion that threatens various sectors of the economy. Geographically, the northern and central regions of Bangladesh are flood plain, formed through siltation carried by three mighty rivers namely Padma, Jamuna, Brahmaputra from upstream. Historically, the regions are inundated every year and local ecosystems are influenced by periodic flooding. In spite of people's sufferings due to the impact of these floods, they make the cultivable lands fertile through siltation and thereby shape the life and economy of those areas. However, climate change has modified the scenario. Different climate change impacts such as recurring but unpredictable extent of floods, increasing river bank erosion, early/late drought in dry season, increased salinity as a result of back water effect, downing ground water level have been contributing to add to the vulnerability of the people living in these regions. Despite these well observed climate change impacts, the regions continue to receive insufficient attention from the government. Contextual analysis suggests that unless urgent actions are taken, climate change will undermine efforts to ensure the food security of the regions.

Case studies across the world confirm the truth that 'business as usual' approach is not sufficient to support vulnerable rural communities in addressing unprecedented climate change related food security challenges. There is an urgent need for adopting a strategy that could mutually ensure food security while decreasing vulnerabilities to climate change impacts. The RESOLVE project is innovative in its approach by applying and demonstrating an ecosystem approach during its implementation. Other than segregating action, the project will use an integrated approach that includes field intervention, capacity building, and advocacy initiatives; with strong cross-cutting concerns for gender equity and of raising the voices of the most vulnerable households. It will improve the resilience to current climate variability and future climate change of food insecure households by developing and supporting cost-effective strategies at both household and community levels; and advocating for policies and measures at the local, national and regional levels, that will improve food security in the context of climate change.

The project, RESOLVE stands for Regenerative Agriculture and Sustainable Livelihoods for Vulnerable Ecosystems. It has been designed to achieve the goal of making communities more resilient to climate shocks while ensuring food security through a combination of intervention strategies: direct poverty reduction through practicing adaptive agriculture techniques and technologies; diversifying livelihoods (on-farm, off-farm and non-farm) of the rural poor; working with grassroots and civil society; conducting research and evidenced-based lobby and advocacy at various strategic levels (national, regional and global); managing knowledge and innovative techniques; and maintaining and/or creating linkages to foster cross learning among different stakeholders (see Figure 1 for the project's conceptual framework).

RESOLVE is aimed at implementing a pilot project in climate vulnerable and poverty stricken Sirajganj, Gaibandha, Shariatpur and Rajshahi districts for a duration of 2 years (2011-2012), which will follow another two programme phases of 3 years each; phase 1 (2013-2015) and phase 2 (2016-2018). The model will be replicated and scaled up in different locations in the same agro ecological zones (AEZs) or districts in phase 1 and in other AEZs (districts) in phase 2. Since a graduation cycle of a household generally takes 3-5 years, therefore each new phase will start by replication and/or scaling up keeping continuation with existing beneficiaries through a phase out strategy.

The design of interventions under the project is based on a vulnerability analysis incorporating the climate change impacts, which predict how the welfare of livelihood groups may change in the future. As such, action will be localised in 'climatic hot spots' in Bangladesh where not only people's vulnerability will be compounded but also their livelihoods will be addressed which are currently being eroded due to climate change impacts. In Bangladesh, the climatic hot spots have been identified by country level research through assessing the extent to which communities will be geographically exposed to specific change (using agro-ecological zoning mapping) and their capacity to adapt to the impacts (using poverty map and analysis). Since most of the people living in climatic hot spots are dependent on agriculture, it is pertinent to set project objectives by giving priority to adaptation in agriculture that will ensure food security.

Considering experiences on local context, four Non-Government Development Organizations and one research organization grouped together to implement the project. Having long-standing experience in the selected areas, these organisations will implement proposed activities; Gana Unnayan Kendra (GUK) in Gaibandha, Gono Kalyan Sangstha (GKS) in Sirajgonj, and Shariatpur Development Society (SDS) in Shariatpur and Unnayan Onneshan will provide technical support to the implementing organizations.

A baseline survey is a prerequisite for informed decision making. Without having a clear picture of socio-ecological context the project areas, intervention strategies may not be able to produce the desired output. Moreover a measurable and verifiable system has to be developed to ensure transparency and accountability in activities so that the survey could play an important role. Through baseline survey, existing socio-economic condition of the right holders could be explored and after a project cycle these information will help to measure their progress towards moving from existing Condition A to expected Condition B; and also the effectiveness of the intervention strategies. In this sense baseline survey report is the reference point for monitoring and evaluation.

As a starting point of RESOLVE activity, a baseline survey was conducted in Goshai Upazila in Shariatpur, where SDS will implement RESOLVE activities. Overall goal of the study was to prepare a socio-economic profile of right holders based on existing situation. Moreover, another 100 households were also surveyed in order to prepare a reference point to measure the progress of the right holders compare to those who are out of RESOLVE intervention.

2. THE APPROACH AND METHODS OF THE STUDY

To conduct the baseline survey, the study followed multidisciplinary approaches. A semi structured questionnaire was developed considering socio-economic condition of the area based upon secondary literature and consultation with key stakeholders. The questionnaire then tested in the field to review its performance whether the questionnaire is comprehensive enough to collect required data or need any inclusion or exclusion. A number of observations were suggested by field data collectors from the field test and the questionnaire was finalized by taking their account into suggestion. Other than household survey, the study also used BCAS feasibility study on the RESOLVE working areas as reference point. Couple of Focus Group Discussions (FGDs) were carried to assess local people's awareness regarding climate change impacts and their attempts to confront those. The study surveyed 400 households by using the questionnaire, out of which 300 households are right holders (in RESOLVE the target group are termed as right holders based on the understanding that they are climate victim but not responsible for causing climate change. Therefore, development towards a prosperous life is their right) and rest 100 household taken from outside RESOLVE intervention.

2.1 Selection of Project area and Right Holders

The proposed project selects the Tistha and Brahmaputra river basin and riverine char lands of the northern portion of Bangladesh, which mainly corresponds to Gaibandha district. RESOLVE (a two year pilot project) will be implemented in Khapachia and Shreepur union of Sundargonj Upazila, Gaibandha district. These unions have been selected due their widespread vulnerability from climate related disasters such as flood, river erosion, drought, dense fog, cold wave etc. Moreover, most of the people of these unions are engaged in climate sensitive sectors like agriculture and fishing; and belongs to two distinct agro-ecological zones namely AEZ 2(whole) and AEZ 7 (partly). Different climate change impacts impart differently to the crop seasons. For instance, Kharif season is mostly affected by floods; whereas moisture stress, drought and irregular rainfall are major threat for Robi season. Moreover, flood destroys lives and livelihoods apart from damaging crops.

Table 1: Climate change impacts and constraints of the target group

Erratic Behaviour of Rainfall					
Agriculture Crop/ Animal	**Climate variability**	**Influence to Natural event**	**Problems**	**Perceived needs**	**Constraints of the target group**
Aus **(April-May)**	Erratic Behaviour of **Rainfall** **Less / heavy**	Prolonged hot and dry season	-Seedling date change -Late Transplantation -Pest attack increase -Poor crop growth	-Require information about suitable Adaptation Technology for farmer which will easily understandable for them.	- Appropriate Adaptation information & technology is not yet take place in community level - Target group has no easy access in sub district agriculture extension office and there are not available enough adaptation information
Aus		Flood	-Submerged seed bed -Late Transplantation - Poor crop -Even season loss		
Boro rice	**Excess rainfall**	Sudden Flood	-Submerged Crop field & crop damage		
Aman rice **(T-Aman)**	**Excess rainfall**	Flood	-Submerged seed bed -Late Transplantation - Poor crop/ plants -Even season loss		

T- Aman	**Less rain/ late rain**	Season dry	-Late Transplantation/ crop establishment - Poor crop/ plant growth		
Livestock	Erratic Behaviour on **Rainfall Less / heavy**	Prolonged hot and dry season/ Flood	- Freshwater scarcity - Disease infestation - Damage grassland - Fodder scarcity - Lack of safe shelter	- Demanding of financial support for reform and develop surface water sources - Demanding regular vaccination chain for livestock - Demanding technology for utilize surface water - Scope to land use change for grass - Demanding safe shelter for livestock shelter	- Lack of financial opportunity from currently working rural finance institutions - Inadequate initiatives government department - Vaccination access is not easy and faraway from rural village - Lack of financial opportunity from currently working rural finance institutions - Lack of grass planting technologies & information - Lack of financial opportunity from currently working rural finance institutions

Temperature fluctuations

Agriculture Crop/ Animal	Climate variability	Influence to Natural event	Problems	Perceived needs	Constraints of the target group
In Early AUS (May-June)	**High Temperature**	Prolong hot and dry season	-Injured plants at seed bed & in the field (Occasional high temperature)	-Require information about suitable Adaptation Technology for farmer which will easily understandable for them.	- Appropriate Adaptation information & technology is not yet take place in community level
Potato (Nov-Dec)	**High (>20°C) Temperature**	Short winter season	-Reduce the Tube number		
Wheat	**High (>20-25°C) Temperature**	Short winter season	-Increase Sterility -Reduce grain size - Reduce production		
Boro rice	**Low Temperature**	Cold	-Late seedling -Poor plantation growth		
Livestock	**High / Low Temperature**	Prolong hot and dry season/ cold spell	- hampering flowering and fruiting grass consequence fodder scarcity - Hamper reproductive behaviour	- Demanding to utilize surface water technology - Health services for reproductive health & behaviour of livestock	- No information & technology provide by current agriculture & development agencies - No information & technology provide by current agriculture & development agencies

Foggy weather

Agriculture Crop/ Animal	Climate variability	Influence to Natural event	Problems	Perceived need	Constraints of the target group
Potato	**Low Temperature for short duration**	Cold spell	-Disease scoring -Reduce production	-Require information about suitable Adaptation Technology for farmer which will easily understandable for them.	- Appropriate Adaptation information & technology is not yet take place in community level
Mango	**Low Temperature for short duration**	Cold spell	-Increase pest & Disease -Reduce production		
Livestock	**Low Temperature for short duration**	Cold spell	-Disease -fodder scarcity	- Health services	- Vaccination access is not easy and faraway from rural village

Socio- Economic Impacts of Climate Change					
Sectors	**Climate variability**	**Influence to Natural event**	**Problems**	**Perceived needs**	**Constraints of the target group**
Livelihoods	**Low Temperature for short duration /High**	Cold spell/ Prolong hot and dry season	**-Hard to work in the open field**	**Alternation IGA/ Sustainable livelihoods**	-No information & technology -Not enough skill -Income opportunity limited -Need diversified livelihood options
	Erratic Behaviour on **Rainfall Less / heavy**	Prolonged hot and dry season/ Flood	**-Hard to work in the open field**	**Alternation IGA/ Sustainable livelihoods**	-No information & technology -Not enough skill -Need diversified livelihood options
Health	**Low Temperature for short duration /High**	Cold spell/ Prolong hot and dry season	**-Cold related Disease -Diarrhoea**	**-Health service -Insurance -Health & Hygiene awareness**	- No information & technology - Not enough skill - Economic poverty
	Erratic Behaviour on **Rainfall Less / heavy**	Prolonged hot and dry season/ Flood	**-Heat stroke -Diarrhoea**	**-Health service -Insurance -Health & Hygiene awareness**	- No information & technology - Not enough skill - Economic poverty -
Community	**Low Temperature for short duration /High**	Cold spell/ Prolong hot and dry season	**-Asset lose -Increase poverty - Reduce** Resilience to disaster	-Need appropriate adaptation technology -Need diversified livelihood options	- No information & technology - Not enough skill - Economic poverty
	Erratic Behaviour on **Rainfall Less / heavy**	Prolonged hot and dry season/ Flood	**-Asset lose -Displaced -Social conflict -Increase poverty - Reduce** Resilience to disaster	-Need appropriate adaptation technology -Need diversified livelihood options	- No information & technology - Not enough skill -Economic poverty

2.2 Secondary Data

Secondary data on population, households etc. of villages under the Gosaiarhat upazila have been obtained from the published documents of Bangladesh Bureau of Statistics (BBS). The census report of 1991 and 2001, the Household Expenditure Survey (2007) as well as other relevant documents have been used to gather information on physical aspects, natural resources, agriculture and livestock, economic condition etc. from the Bangladesh District Gazetteers.

2.3 RESOLVE Villages

To implement RESOLVE, different villages under Sudorgonj upazila of Gaibandha District have been selected purposively considering their grave vulnerability to climate change and high occurrence of poor people. Total 400 households were surveyed in the baseline study, out of which 300 households are covered under RESOLVE and rest 100 households, who are not intervened by RESOLVE and will be used as reference point to measure the progress of the right holders compare to them.

2.4 Geographic and demographic profile of Sundorjong Upazila

Sundarganj Upazila (GAIBANDHA district) with an area of 426.52 sq. km, is bounded by PIRGACHHA, ULIPUR and CHILMARI upazilas on the north, GAIBANDHA SADAR and SADULLAPUR upazilas on the south, Chilmari and CHAR RAJIBPUR upazilas on the east, Pirgachha, MITHAPUKUR and Sadullapur upazilas on the west. Main rivers are Tista, Brahmaputra and Ghaghat. Noted depressions are Kalsar Beel, Kumlia Beel, Nalbari Beel and Haldi Doba Beel.

Sundarganj (Town) consists of two mouzas. The town became a municipality in 2003. The area of the town is 5 sq. km. It has a population of 9940; of which 51.84 percent is male 48.16 percent is female; population density per sq km is 1988. Literacy rate among the town people is 34.3 percent. Administration Sundarganj thana was established in 1875 and became an upazila 1983 consisting 15 union parishads, 110 mouzas and 178 villages.

Archaeological heritage and relics remnants of the house of the Bamandanga Zamindar and Dhakuabari Jami Mosque at Dharmapur, Marks of War of Liberation Mass grave 1 (eastside of the Upazila Administrative Building).

The total number of population is 360676 with 51.17 percent male, 49.83 percent female. 89.99 percent of the total population is Muslims, 9.30 percent is Hindu and 0.71 percent is devoted to other religions. There are 481 mosques, 69 temples and one sacred place considerable as religious institutions.

2.4.1 Literacy and educational institutions

Average literacy rate of the area is 24.1 percent; among which 31.9 percent are male and 16.5 percent are female. The area has 12 colleges, 66 secondary schools, 48 madrasas, 140 government primary schools, 79 non-government primary schools, 9 community schools and 37 satellite schools. Noted educational institutions of the region include Haripur BSM Government Primary School (1814), Khamar Moniram Government Primary School (1910), Belka MC High School (1918), Bamandanga MN High School (1917), Shibram Adarsha Government Primary School. Among the cultural organisations, the area possesses four cinema halls, 35 clubs, five libraries, 14 theatre groups and one children's organisation.

2.4.2 Communication facilities

Forty-six km of the total road of the area is carpeted while three km are semi carpeted 650 km road are still muddy. The area has eight km of railways and eight nautical miles of waterways. Traditional transports include Palanquin, horse carriage and bullock cart. These means of transport are either extinct or nearly to be extinct. Hats and bazars are 31, most noted of which are Mirganj, Shovaganj, Panchpir and Kathgara; fair 1 (Shovaganj Mela). Main exports Jute, onion, garlic. NGO activities operationally important NGOs are BRAC, ASA, CARE, Swabalambi Sangstha, Swanirvar Bangladesh, Muktir Path, Sonar Bangla, Adarsha Janakalyan Uddag. Health centres Upazila health complex 1, family planning centre 8, satellite clinic 7 and community clinic 55.

3. DEMOGRAPHIC FEATURES OF RESOLVE VILLAGES

Among 300 households 3percent female respondent and 97percent are male respondents. Here within 300 households 241 male headed families and 59 female headed families. On the other hand among 100 households 1percent respondent is male and 99percent female. Within our conducted households 93percent households head is male and 7percent is female.

Among 300 right holders, 97 percent is male and three percent is female respondents. Within the 300 households, there are 241 male headed families and 59 female headed families. Among 100 uncontrolled households on the other hand, 93 percent households are male headed and the rest is female headed. In addition, 99 percent is female and the rest of one percent is male respondents.

Table 2: Total Members of the Households

Total Members of the Right holder Group

Total Member of Household	Frequency	Total members	Valid Percent
1	17	17	5.7
2	31	62	10.3
3	56	168	18.7
4	86	344	28.7
5	56	280	18.7
6	31	186	10.3
7	12	84	4.0
8	8	64	2.7
9	3	27	1.0
Total	300	1232	100.0

Total Member of the Uncontrolled Group

Total member of households	Frequency	Total	Valid Percent
1	1	1	1.0
2	11	22	11.0
3	18	54	18.0
4	25	103	25.0
5	23	115	23.0
6	13	78	13.0
7	5	35	5.0
8	1	8	1.0
9	3	27	3.0
Total	100	443	100.0

Total population size of the right holders' family is 1239; out of which 49.19 percent is male 50.81 percent is female. In case of family composition; 5.7 percent households has only one family member, 10.3 percent has two, 18.7 percent has three, 28.7 percent households have four family members, 18.7 percent households have five, 10.3 percent has six, four percent households have seven family members, 2.7 percent households have eight family members and one percent has nine. However, baseline survey revealed that total 454 family members belongs to 100 uncontrolled households, within which a percent has only one member, 11 percent has two, 18 percent has three family members, 25 percent households have four family members, 23 percent households have five family members, 13 percent households have six, five percent has seven family members, one percent households have eight family members and three percent households have nine family members.

Table 3: Distribution of family members by age and sex of the right holders

Household members by age	Members by sex	Ratio of male and Female	Total number	Percentage By sex	Total percentage	
Number of members between age 0-5	Number of male members between age 0-5	84	180	6.82	14.61	**49.19 percent Male member**
	Number of female members between age 0-5	96		7.79		
Number of members between age 6-14	Number of male members between age 6-14	144	290	11.69	23.54	
	Number of female members between age 6-14	146		11.85		
Number of members between age 15-59	Number of male members between age 15-59	345	703	28.00	57.06	**50.81 percent Female member**
	Number of female members between age 15-59	358		29.06		
Number of members age 60+ and above	Number of male members age 60+ and above	33	66	2.68	5.34	
	Number of female members age 60+ and above	33		2.68		
Total		**1232**	**1232**	**100**	**100**	

Table 4: Distribution of family members by age and sex of uncontrolled group

Household members by age	Members by sex	Ratio of male and Female	Total number	Percentage By sex	Total percentage	
Number of members between age 0-5	Number of male members between age 0-5	36	73	8.13	16.48	**50.57 percent male member**
	Number of female members between age 0-5	37		8.35		
Number of members between age 6-14	Number of male members between age 6-14	58	112	13.09	25.28	
	Number of female members between age 6-14	54		12.19		
Number of members between age 15-59	Number of male members between age 15-59	125	245	28.22	55.31	**49.43 percent Female Member**
	Number of female members between age 15-59	120		27.09		
Number of members age 60+ and above	Number of male members age 60+ and above	5	13	1.13	2.93	
	Number of female members age 60+ and above	8		1.80		
Total		**443**	**443**	**100**	**100**	

Table 5: Total Female member of the right holders

Number of female members	Frequency	Valid Percent
1.00	92	30.7
2.00	112	37.3
3.00	71	23.7
4.00	22	7.3
5.00	3	1.0
Total	**300**	**100.0**

In case of number of female member of right holders here from the study we see that there are 632 female members within 300 households, 30.7percent households have 1 female member, 37.3percent households have 2 female members, 23.7percent households have 3 female members, 7.3percent households have 4 female members and 1percent households have 5 female members. In case of uncontrolled households here we see that 31percent households have only on female member, 30percent households have 2 female, 29percent households have 3 female members 7percent households have 4 female members 2percent households have 5 female member and 1percent households have 9 female members. Here we see that within 100 households there are 225 female members.

4. OCCUPATIONAL STRUCTURE

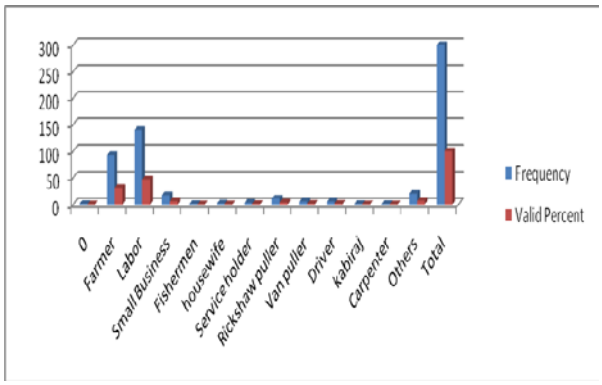
4.1 Primary Occupation

: From the baseline survey; it is found that 31 percent household heads of right holder's primary occupation is agriculture, 46.7 percent is wage labourers 5.7 percent small businessman, 0.3 percent does fishing, 0.7 percent housewife, one percent service holder, 3.7 percent is rickshaw puller, 1.7 percent is van puller, 1.7 percent is driver, 0.3 percent kobiraj, 0.3 percent carpenter and 6.7 percent is engaged in other activities as their main occupation.

Table 6: Distribution of Primary occupation of holders Uncontrolled Households

Uncontrolled Households	Frequency	Valid Percent
Farmer	21	21.0
Labor	50	50.0
Small Business	7	7.0
Fishermen	1	1.0
Service holder	2	2.0
Rickshaw puller	5	5.0
Van puller	1	1.0
Shopkeeper	1	1.0
Others	12	12.0
Total	**100**	**100.0**

Figure 1: Distribution of Primary occupation of the right holders



On the other hand, among the uncontrolled group; 21 percent households were found to be engaged in agriculture, 50 percent households are labourers, seven percent small business, one percent fishermen, two percent service provider, five percent rickshaw puller, one percent van puller, one percent shop keeper and 12 percent households are engaged in other activities.

4.2 Secondary Occupation

Majority of the right holders are only engaged in one occupation. However, some of the right holders change their occupation with the changing of seasonality. From the survey it is found

that 10.7 percent right holders use agriculture as their secondary occupation and 21.7 percent become day labourers based on seasonality, particularly in lean period (Table 7).

Table 7: Distribution of secondary occupation of right holders

Secondary Occupation	Frequency	Valid Percent
Non applicable	219	73.0
Farmer	20	6.7
Labor	33	11.0
Small Business	2	.7
Fishermen	1	.3
House Wife	3	1.0
Service Holder	10	3.3
Rickshaw Puller	4	1.3
Van puller	1	.3
Others	7	2.3
Total	**300**	**100.0**

In case of the uncontrolled group, 65 percent households found having a single occupation and 12 percent is found to have agriculture as their second occupation. 13 percent of the labour does fishing as a second occupation to bear their family expenses.

5. EDUCATION

Table 8: Distribution of family members' education according to age and sex within right holders group

Composition of educational qualification by age	Educational qualification by age and sex	Percent By sex	Total percentage
Number of members who are illiterate, age above 15	Number of male members who are illiterate, age above 15	11.00	20.48
	Number of female members who are illiterate, age above 15	9.48	
Number of members who can only sign, age above 15	Number of male members who can only sign, age above 15	11.27	28.44
	Number of female members who can only sign, age above 15	17.17	
Number of members who can only write & read, age above 15	Number of male members who can only write & read, age above 15	8.68	14.94
	Number of female members who can only write & read, age above 15	6.26	
Number of members who have education below class 5	Number of male members who have education below class 5	11.45	22.72
	Number of female members who have education below class 5	11.27	
Number of members who have education between class 5 and class 10	Number of male members who have education between class 5 and class 10	5.27	11.53
	Number of female members who have education between class 5 and class 10	6.26	
Number of members who have education SSC and above	Number of male members who have education SSC and above	1.16	1.92
	Number of female members who have education SSC and above	0.76	
	Total	**100.00**	**100.00**

Table 9: Distribution of family members' education according to age and sex within uncontrolled group

Composition of educational qualification by age	Educational qualification by age and sex	Percentage By sex	Total Percentage
Number of members who are illiterate, age above 15	Number of male members who are illiterate, age above 15	9.65	18.13
	Number of female members who are illiterate, age above 15	8.48	
Number of members who can only sign, age above 15	Number of male members who can only sign, age above 15	12.20	28.50
	Number of female members who can only sign, age above 15	16.30	
Number of members who can only write & read, age above 15	Number of male members who can only write & read, age above 15	6.43	14.18
	Number of female members who can only write & read, age above 15	7.75	
Number of members who have education below class 5	Number of male members who have education below class 5	14.28	25.81
	Number of female members who have education below class 5	11.53	
Number of members who have education between class 5 and class 10	Number of male members who have education between class 5 and class 10	4.56	11.80
	Number of female members who have education between class 5 and class 10	7.24	
Number of members who have education SSC and above	Number of male members who have education SSC and above	1.34	1.88
	Number of female members who have education SSC and above	0.54	
	Total	**100.00**	**100.00**

5.1 Enrollment

Within 300 right holders households, 309 members were found enrolled in school out of which 51.13 percent are female 48.87 percent of them are male. This result shows evidence of advancing awareness regarding female education. On the other hand, total 107 members were found enrolled in uncontrolled group, within whom male 47.66 percent and female 52.34 percent.

Table 10: Enrollment status of right holders

	Total			Percent	Percent
Current enrollment in school or college	309	Male	151	48.87	100
		Female	158	51.13	

Table 11: Enrollment status of uncontrolled group

	Total			Percent	Percent
Current enrollment in school or college	107	Male	51	47.66	100
		Female	56	52.34	

Within 300 right holders households, 309 members were found as enrolled in schools out of which 51.13 percent is female 48.87 percent is are male. This result shows evidence of advancing awareness regarding female education. On the other hand, total 107 members were

found to have been enrolled from the uncontrolled group, within whom 47.66 percent is male and 52.34 percent is female.

5.2 Dropout

In the right holders household, dropout rate is 23.7 percent; whereas, the uncontrolled group has a dropout rate of 26 percent.

Table 12: Number of member Dropout from Right Holder

Any member dropped school	Frequency	Percent
Yes	71	23.7
No	229	76.3
Total	300	100.0

Table 13: Number of member Dropout from Uncontrolled Group

Dropped school	Frequency	Percent
Yes	26	26.0
No	74	74.0
Total	100	100.0

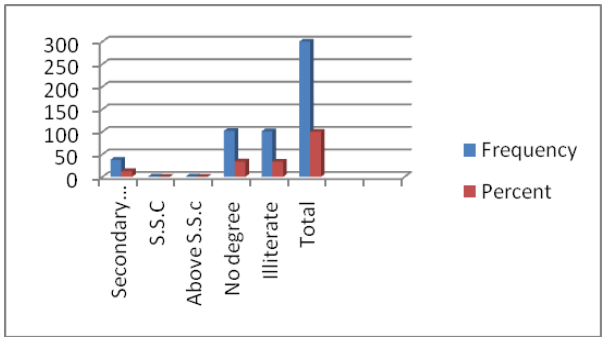
To identify reasons behind dropout, it is found that in the right holders group only 2.3 percent is dropped out of school to assist his/her family income through conducting earning activities, 15.3 percent for financial insolvency, 1.7 percent to assist in households chores, 0.3 percent for natural calamities and 3.3 percent for other reasons. In the uncontrolled group; five percent is dropped out to assist in family income come earning activities, 18 percent for financial insolvency, one percent for assisting in household's chores, one percent for natural calamities and two percent for other reasons within 100 households.

5.3 Adult Education

In the right holders group, only 3.1 percent was found to have received adult education facilities. Alternatively, it is 1.5 percent in case of the uncontrolled group.

5.4 Female Education

Figure 2: Female education status of right holders group



Within the right holders, 13.7 percent can only sign and 23.3 percent is illitarate. In case of literate female; 39.7 percent has obtained primary education, 0.7 percent has received secondary education and one percent female passed SSC or higher education.

On the contarary, 17 percent illiterate female were identified in the uncontrolled households and 32 percent female were found with minimum education up to class five, who can both read and write their names, 26 percent can only sign, 23 percent has obtained secondary level and one percent female were found with SSC or higher education

Even though female illiteracy rate is higher both in the right holders and the uncontrolled group, but the current enrollment is satisfactory in both cases. It seems people of RESOLVE area are

aware about girls' education. However; 0.3 percent girls informed that they face difficulties. While in uncontrolled group, one percent faces obstacles like financial insolvency etc.

Table 14: Female education status of right holders group

The main obstacle	Frequency	Percent
Stalking	1	0.3
Religious restriction	2	0.7
Do not face any problem	298	99
Total	**300**	**100.0**

Table 15: Female Education Status of Uncontrolled group

Degree obtained by female member	Frequency	Percent
Primary level	32	32.0
Secondary level	23	23.0
S.S.C	1	1.0
Above S.S.C	1	1.0
No degree	26	26.0
Illiterate	17	17.0
Total	100	100.0

6. INCOME AND EXPENDITURE

6.1 Income

Most of the right holders are extremely poor and their annual income is below 30000 taka (USD 400).The baseline study revealed that 60.33 percent of the right holders' annual income is equal or below 30000 taka. However, 39.69 percent of the right holders were found with an income of more than 30000 taka (Table 6.1).

Table 16: Income information of right holders

Estimated yearly total income	Frequency	Percent
1000 to 10000	30	10.00
10001 to 20000	91	30.33
20001 to 35000	111	37.00
35001 to 41000	56	18.67
41001 to 72000	12	4.00
Total	**300**	**100.00**

Table 17: Income information of uncontrolled group

Estimated yearly income	Frequency	Percent
1800 to 20000 taka	26	26
21000 to 30000 taka	26	26
32000 to 45000 taka	43	43
48000 to 80000 taka	5	5
Total	**100**	**100.0**

On the other hand, within the uncontrolled group 52 percent was identified as extremely poor whose annual income is equal or less than 30000 taka and 48 percent households' income more than 30,000 taka annually (Table 6.2).

6.2 Expenditure

There is a huge discrepancy between the income and expenditure in the RESOLVE area. More than 60.33 percent of the right holders were found with an income of less than 30000 taka whereas 27.67 percent of the right holders' yearly expenditure is more than 30000 taka and it is less than 3000 taka in case of 72.33 percent. This is due to aid received from different government and NGO programmes. However, a reverse scenario is discovered in case of the uncontrolled group where 52 percent households were found whose annual expenditure is more than 30000 taka and 48 percent households' expenditure is less than 3000 taka.

Table 18: Expenditure status of right holders

Estimated yearly expenditure	Frequency	Percent
1000 to 10000	30	10.00
10001 to 25000	127	42.33
25001 to 40000	131	43.67
40001 to 60000	11	3.67
380000	1	0.33
Total	**300**	**100**

Table 19: Expenditure status of uncontrolled group

Estimated yearly expenditure	Frequency	Percent
Less than 15000 taka	10	10
17000 to 25000 taka	32	32
27000 to 37000 taka	36	36
38000 to 70000 taka	22	22
Total	100	100

6.3 Feeding Capability

Since the right holders are extremely poor, most of them cannot arrange food three times in day. The baseline data depicts that 1.7 percent of the total households' members can have a meal once each day (that is not square even), 69.7 percent households' members eat twice every day and only 28.7 percent households members eat three times each day. Feeding scenario is identical for the uncontrolled group as well. Within uncontrolled group, only 38 percent can eat three times a day and 62 percent households' family members eat twice a day.

Table 20: Feeding capability of right holders

How many time members eat each day	Frequency	Percent
One time	5	1.7
Two times	209	69.7
Three times	86	28.7
Total	300	100.0

Table 21: Feeding capability of uncontrolled group

Feeding Capability	Frequency	Percent
Three time	34	34.00
Two time	62	62.00
One time	4	4.00
Total	100	100.0

7. DESCRIPTION OF DWELLING

7.1 Ownership Pattern

Within 300 right holders, 52.7 percent has their own house and 47.3 percent lives in others' places. 75.3 percent house has only a single room, 21.3 percent house has two rooms and only three percent has three rooms. On the other hand, 32 percent of the uncontrolled group has their own house and 68 percent lives in others' places.

Table 22: Household ownership status of Right holders

Ownership of House	Frequency	Percent
Owned	213	71.0
Others	86	29
Total	300	100.0

Table 23: Households ownership status of Uncontrolled group

Ownership of house	Frequency	Percent
Owned	72	72.0
Others	28	28.0
Total	100	100.0

7.2 House Materials

100 percent of the right holders' household floor is made of mud. In case of roof; 98.7 percent is covered by tin 1.3 percent house roof is made by Straw/Golpata. Moreover; only 1.7 percent household's wall is made by mud, 9.7 percent is of bamboo, 0.7 percent is concrete, 27 percent is Straw/Golpata, 52 percent is tin, 0.3 percent is wood and 8.7 percent is made by others.

Similarly, 100 percent households' floor of the uncontrolled group is made of mud and roof is covered with tin. In case of material of wall here; five percent is made by bamboo, 36 percent by straw/Golpata, 50 percent is made up of corrugated tin and the rest nine percent household's house materials of wall is made by others materials. Most of the households (98.7 percent) of right holders are surrounded by mud and 1.3 percent is made of brick. While, 100 percent houses of the uncontrolled group is surrounded by mud.

7.3 Source of Light

Only 3.7 percent of the household of the right holders has access to electricity. 96 percent house them depends on Kerosene and 0.3 percent uses solar energy as for a source of light. On the other hand, five percent of the controlled group has access to electricity, 94 percent uses kerosene.

7.4 Cooking System

Almost all the houses of both the right holders and the uncontrolled group practice their culinary in open places. Within the right holders, only 21.3 percent has separate place for cooking. The scenario is identical for the uncontrolled group as well. In case of the uncontrolled group, 100 percent households use leaves/straws and 100 percent fuel is collected by female member and they are not paid anything for this.

7.5 Fuel System

Commonly female members of the family are responsible for collecting fuel for house and RESOLVE project area showed same pattern. Within the right holders group, 99 percent female is engaged in collecting fuel wood and to collect fuel, 0.6 percent households need 30 minutes, 23.3 percent needs 60 minutes, 14.7 percent households need 90 minutes and 61.3 percent households need 120 minutes to collect fuel for cooking.

Within uncontrolled group the scenario is identical. 13 percent of female was identified spending an hour or more in collecting fuel for their home and 10 percent spends 30 minutes to collect fuel wood.

8. WATER AND SANITATION

8.1 Drinking Water

Over the decades rural Bangladesh has been dependant on using tube well for drinking water. Similarly, almost all the right holders use tube well to meet up their demand of drinking water. However, not all the tube wells are placed adjacent to the right holder's household. Rather they have to walk few minutes to collect pure drinking water. From the survey it is revealed that only three percent households collect water from ponds/wells, 99 percent households collect from tube wells and 0.7 percent collects from others source. In case of time need to collect drinking water; 75 percent households need less than ten minutes and 25 percent needs 11 to 25 minutes. In case of water collection; 92.3 percent households' water is collected by male, four percent is done by female, 3.3 percent is collected by both and 0.3 percent households' water is collected by Children. In case of collection frequency, it is found that three percent households collect

once, 29 percent households collect twice, 65.7 percent households collect thrice, two percent households collect four times and 0.3 percent collects five times a day.

Alternatively, within the uncontrolled group 100 percent households collect drinking water from tube wells and for doing so 97 percent households need to spend less than six minutes and three percent households need to spend six to ten minutes. In case of how many times families collect drinking water, one percent family collects drinking water once, 28 percent household collects twice, 68 percent collects thrice and three percent households collect four times in day.

8.2 Cooking Water

Most of the households depend on rivers or ponds as sources of water for cooking. From the survey it is revealed that 0.7 percent of the total household collects cooking water from ponds/wells, 98.7 percent collects from tube wells and 0.6 percent does it from other sources. In case of collection time; it is found that 87 percent needs less than 15 minutes, 13 percent needs 15 to 30 minutes to collect water for cooking. In case of collection frequency, 4.7 percent households collect once a day, 89 percent collects twice, 5.7 percent collects three times a day and 6.3 percent households collect cooking water four times a day.

Within uncontrolled group cooking water collection pattern differs a little from right holders group. The survey revealed that 100 percent households collect from tube wells and for these 97 percent households need to spend less than five minutes and three percent needs to spend six to ten minutes. In case of the collectors; 89 percent households' water is collected by male, two percent is collected by female, and five percent is collected by both and four percent by children. In case of collection frequency; two percent households collect once, 90 percent collects two times and three percent households collect thrice. Here 45 percent households face unavailability of water and 55 percent households do not face any. In case of unavailability of water; one percent households collect water from ponds, 43 percent from tube wells and two percent from other places.

8.3 Availability of Water

In case of both the right holders and the uncontrolled group, 43.7 percent households face unavailability of water supply and 56.3 percent do not face that. In case of unavailability of water; 1.3 percent households collect from ponds, 44 percent from tube wells and 3.7 percent from others sources.

8.4 Bathing and Washing Water Source

In case of the right holders group; 52 percent household's bathing and washing water source is rivers/ponds, 47.3 percent uses tube wells and 0.7 percent makes use of other sources. In case of the uncontrolled group; 93 percent household uses rivers/ponds for washing and bathing. Only four percent use tube well and two percent has access to municipality water for washing and bathing.

8.5 Sanitation System

8.5.1 Toilet

In case of the right holders group; 3.3 percent households have sanitary toilets, 30 percent households have hanging toilets, 62.3 percent households makes use of open places for defecation and 4.3 percent households adopt other means. From the study it is seen that 10.3 percent households do not have any toilets, 21.7 percent households only use their toilets and 68 percent households share toilets with other households. In case of distance between toilet and source of drinking water; it is found that 76 percent households distance less than 20 meters and 24 percent is within a distance of 20 to 50 meters between toilet and source of drinking water.

Table 24: Types of toilet used by right holders group

Type of toilet	Frequency	Percent
Sanitary	10	3.3
Hanging	90	30.0
Opens	187	62.3
Other	13	4.3
Total	**300**	**100.0**

Table 25: Types of toilet used by uncontrolled group

Type of toilet	Frequency	Percent
Hanging	38	38.0
Opens	57	57.0
Other	5	5.0
Total	**100**	**100.0**

On the contrary, within the uncontrolled group 38 percent households have hanging toilets, 57 percent makes use of open places and five percent toilet system is other. Here 60 percent households do not have any toilets and 49 percent households have one toilet for each family. In case of usage, 31 percent households use their own toilets and 69 percent households use toilets differently in different pace. In case of distance between toilet and source of drinking water it is found that 95 percent households have a distance of five to 25 meter and five percent households' toilet and drinking water source is within 26 to 50 meter.

8.5.2 Waste management

Due to the lack of both awareness and technical knowledge, waste management system is very poor in rural areas. From the survey it is revealed that 30.7 percent households garbage is put in open places, 0.7 percent puts in dustbin, 0.7 percent gives it to garbage collectors, 27.7 percent in rivers/ponds and 40.3 percent households' garbage is put in others place. However; seven percent households clean daily, four percent cleans once a week, 12 percent does it once in a month, 39.3 percent households clean half yearly, ten percent cleans once in a year and 34 percent households never clean their garbage.

Table 26: Garbage System of Right Holders

Garbage is put in	Frequency	Percent
Open place	92	30.7
Dustbin	2	.7
Garbage collector	2	.7
River/pond	83	27.7
Other	121	40.3
Total	**300**	**100.0**

Table 27: Garbage System of Uncontrolled Group

Garbage is put in	Frequency	Percent
Open place	16	16.0
River/pond	26	26.0
Other	58	58.0
Total	**100**	**100.0**

The baseline survey gives an impression of the right holders' poor technical knowledge and awareness on using garbage as organic fertilizer. It is found that only 52 percent households use

garbage as an organic fertilizer and 48 percent households even do not know how to convert garbage into organic fertilizer.

Table 28: Use of garbage as organic fertilizer by right holders

Use garbage as an organic fertilizer	Frequency	Percent
Yes	156	52.
No	144	48.0
Total	**300**	**100.0**

Table 29: Use of garbage as organic fertilizer by Uncontrolled Group

Garbage Use as Organic Fertilizer	Frequency	Percent
Yes	61	61.0
No	39	39.0
Total	**100**	**100.0**

In case of the uncontrolled group; 16 percent households put garbage in open places, 26 percent ditches garbage in rivers/ponds and 58 percent throws garbage in other places. In case of frequency of garbage cleaning; one percent does it daily, once a week in case of two percent. 31 percent never cleans garbage, 59 percent does it half yearly and seven percent households dispose yearly. However, it is found that 61 percent household use garbage as an organic fertilizer and rest 37 percent household never does that.

9. HEALTH

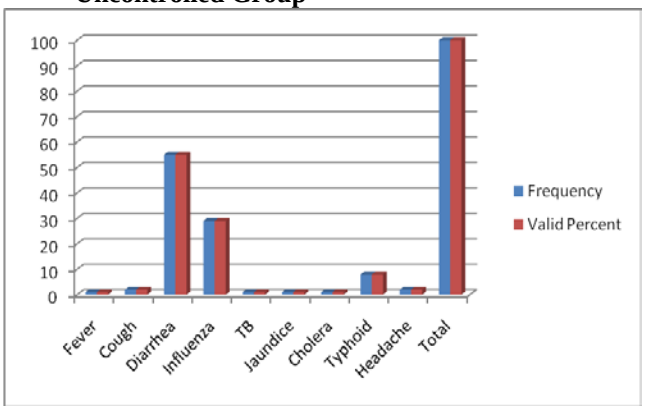
9.1 Disease

While considering health situation of the right holders; it is found that four percent family members frequently suffer from fever, 9.3 percent is seasonally affected by cough, 44.7 percent is affect by Diarrhea, 33 percent by Influenza, 2.3 percent by Typhoid and one percent each is respectively affected by TB, Jaundice and Cholera. 3.3 percent households' members are frequently affected by headache. In case of the uncontrolled group; one percent households' members are affected by fever, two percent by Cough, 55 percent by Diarrhea, 29 percent by Influenza, eight percent is affected by Typhoid, two percent by headache and one percent each is respectively affected by TB, Jaundice and Cholera.

Table 30: Diseases occurrence among right holders

Disease most frequently affect	Frequency	Percent
Fever	12	4.0
Cough	28	9.3
Diarrhea	134	44.7
Influenza	99	33.0
TB	3	1.0
Jaundice	3	1.0
Cholera	3	1.0
Typhoid	8	2.7
Headache	10	3.3
Total	300	100.0

Figure 2: Diseases Occurrence among Uncontrolled Group



In case of treatment method, highest percentage found (79 percent) to be using allopath in the right holders' family despite taking advice from unregistered village doctors, 4.3 percent is found to use Homeopathy and four percent takes Kabiraji. Another 12.7 percent makes use of herbal elements for treatment.

On the other hand; three percent households take Homoeopathy, 97 percent prefers Allopathic treatment, four percent uses Kabiraji and seven percent use herbal treatment within the uncontrolled group.

The scenario of access to formal medical facility is showing a worrying picture. 2.7 percent household of right holders group uses non-government or unregistered village doctor for treatment and 97.3 percent use others medical facilities. Likewise, 98 percent of uncontrolled group relied on non-government medical facilities for treatment 2 percent households use government facilities.

Access to formal medical facility is showing a worrying picture. 2.7 percent households of the right holders group use non-government or unregistered village doctors for treatment and 97.3 percent use others medical facilities. Likewise, 98 percent of the uncontrolled group relies on non-government medical facilities for treatment and two percent uses government facilities.

While investigating reasons for not using formal medical facilities, distance is found to be the most significant factor. The survey depicts that 41.43 percent households need 10 to 32 minutes, 55.67 percent households need 35 to 60 minutes and it is 70 to 120 minutes in case of three percent. In case of the uncontrolled group; 25 percent households need to spend less than 25 minutes and 75 percent households need 35 to 60 minutes to reach the nearest medical centre.

9.2 Immunization of Children

Table 31: Immunization status of children of right holders

Immunization of children	Frequency	Percent
Completed	172	57.3
Partially completed	19	6.3
Not given	5	1.7
Not applicable	104	34.7
Total	**300**	**100.0**

Table 32: Immunization status of children of Uncontrolled group

Immunization of children	Frequency	Percent
Completed	62	62.0
Partially completed	4	4.0
Not applicable	34	34.0
Total	**100**	**100.0**

The rate of children immunization has a satisfactory picture. Within the right holders group; 57.3 percent children (below five years) have completed immunization, 6.3 percent completed it partially and only 1.7 percent did not receive any. The uncontrolled group shows a nearly identical scenario. Almost all (92 percent) the children received either full or partial immunization.

9.3 Birth Control

In case of birth control; 48.3 percent households' female members adopt birth control method whereas 50 percent do not adopt any in the right holders group. Those who do not use any birth control method opined like this: 1.7 percent follows religious restriction, dislike of in-laws in case of seven percent and 13 percent does not make use of it due to other reasons. Moreover 16 percent is not aware of such methods.

Table 33: Birth control status of right holders

Receive birth control method	Frequency	Percent
Yes	145	48.3
No	150	50.0
Not applicable	5	1.7
Total	**300**	**100.0**

Table 34: Birth control status of Uncontrolled Group

Receive birth control	Frequency	Percent
Yes	49	49.0
No	47	47.0
Not applicable	4	4.0
Total	**100**	**100.0**

In regard to the uncontrolled group, 49 percent reproductively active women are using birth control methods. The reasons behind not adopting such methods are religious restriction (two percent), disregard of the in-laws (eight percent), and lack of awareness (20 percent). Nine percent does not take birth control methods for other reasons.

9.4 Maternal Health Facility

Maternal facility is inadequate in the RESOLVE project area. Only 1.7 percent of the right holders have received maternal health facilities during pregnancy and 93.3 percent relied on untrained midwife for pregnancy related matter.
The situation is slightly better in case of the uncontrolled group. Within the group, six percent has received formal maternal health facilities during pregnancy.

Table 35 : Maternal health facility

Maternal health facility access by right holders

Delivery done	Frequency	Percent
Midwife	80	26.6
Medically trained person	5	1.7
Other	189	63.0
Not applicable	26	8.7
Total	300	100.0

Receive birth control method	Frequency	Percent
Yes	145	48.3
No	150	50.0
Not applicable	5	1.7
Total	300	100.0

Maternal health facility access by uncontrolled Group

Delivery done	Frequency	Percent
Midwife	15	15.0
Medically trained person	6	6.0
Other	74	74.0
Not applicable	5	5.0
Total	100	100.0

Receive birth control	Frequency	Percent
Yes	49	49.0
No	47	47.0
Not applicable	4	4.0
Total	100	100.0

9.5 Vaccination During Pregnancy

Within right holders, 62 percent pregnant women have taken vaccination during pregnancy and 29 percent did not take any. On the other hand, 67 percent pregnant women of the uncontrolled group have taken vaccine during pregnancy and 26 percent did not take any.

10. AGRICULTURAL AND LAND DISTRIBUTION SYSTEM

Most of the right holders are either landless poor or have tiny amount of land, which is evident from survey result as well. From survey it id found that 35.3 percent households have the ownership of agricultural land and 64.7 percent household do not have any agricultural lands of their own. Alternatively, 38 percent household do not have any productive agriculture land 62 percent does not have any within the uncontrolled group.

Table 36 : Agriculture land ownership status

Land Ownership status of right holders			Land Ownership of Uncontrolled Group		
Ownership of agricultural land	**Frequency**	**Percent**	**Ownership of agricultural land**	**Frequency**	**Percent**
Yes	106	35.3	Yes	38	38.0
No	194	64.7	No	62	62.0
Total	**300**	**100.0**	**Total**	**100**	**100.0**

10.1 Size of Agriculture Land

Since most of the right holders are landless or small holders; therefore 14.33 percent households have less than 21 decimal agricultural lands, 14.33 percent households have 21 to 40 decimal and 6.67 percent households have 41 to 100 decimal agricultural lands. On the other hand; 15 percent households have less than 15 decimal, 16 percent has 20 to 50 decimal, two percent has 60 decimal, three percent households have 66 decimal and one percent households have 300 decimal agricultural lands within uncontrolled group.

10.2 Leased Land

Some of the farmers use leased land for agriculture production. Within the right holders and the uncontrolled group; only eight percent has leased agricultural lands.

10.3 Size of the Leased Land

The baseline survey revealed that four percent households have less than 21 decimal lands, four percent have 22 to 40 decimal leased lands and 1.3 percent households have 41 to 100 decimal. It is clearly evident from the data that most of the right holders either landless or smallholder farmer. On the other hand, six percent households have less than 13 decimal lands, one percent has 24 decimal and two percent has 33 decimal leased lands within the uncontrolled group.

10.4 Share Cropping

Within the right holders; 10.7 percent households do not have any answers for the question, 26.4 percent households have share cropping land 0.33 percent households have less than 21 decimal, 1.33 percent has 22 to 30 decimal and 8.67 percent has 31 to 66 decimal sharecropping agricultural lands. On the other hand, 20 percent households have share cropping land, 11 percent household have five to 20 decimal lands and six percent households have 33 to 50 decimal share cropping land within the uncontrolled group.

10.5 Ownership of Pond

Within the right holders, only 8.7 percent households have the ownership of ponds. Two percent does fishery, 3.67 percent does bathing and washing and four percent uses the ponds for other purposes. On the other hand; 14 percent households have ownership of pond within the uncontrolled group and purpose of pond here are fishery (seven percent), bathing and washing (two percent).

10.6 Poultry

Within the right holders; 64.3 percent has the ownership of poultry and 34.3 percent households are not applicable for this question. 61.33 percent households have less than 1001 taka and 61.33 percent households have 1001 to 5000 taka of all poultry. On the other hand; 67 percent households have the ownership of poultry and 39 percent households have less than 501 taka, 23 percent households have 550 to 1001 taka and five percent households have 1200 to 1700 taka in the uncontrolled group.

Table 37 : Ownership of Poultry

Ownership of Poultry for the right holders group			Ownership of Poultry for Uncontrolled Group		
Ownership of any poultry	**Frequency**	**Percent**	**Ownership of any poultry**	**Frequency**	**Percent**
Yes	193	64.3	Yes	67	67.0
No	107	35.7	No	33	33.0
Total	**300**	**100.0**	**Total**	**100**	**100.0**

10.7 Livestock

Livestock is considered as an important natural capital for rural people and a considerable income comes from it. However, most of the right holders do not have any livestock. From the survey it is found that only 27.3 percent households have domestic animals and here 12 percent households' estimated amount of money less than 10001 taka, 10.33 percent households have 10001 to 20000 taka and 6.33 percent households have 25000 to 80000 taka. Whereas within the uncontrolled group 30 percent households have the ownership of domestic animals and eight percent households have the amount less than 2001 taka, 15 percent households have 9000 taka to 20001 taka and five percent households have the amount 25000 to 100,000 taka.

Table 38 : Ownership of Livestock

Ownership of domestic animals for right holders group			Ownership of domestic animals for uncontrolled group		
Ownership of domestic animals	**Frequency**	**Percent**	**Ownership of domestic animals**	**Frequency**	**Percent**
Yes	82	27.3	Yes	30	30.0
No	218	72.7	No	70	70.0
Total	**300**	**100.0**	**Total**	**100**	**100.0**

10.8 Agricultural Activities

Table 39 : Status of engagement in agricultural activities

Right holders Group			Uncontrolled group		
Engaged in agricultural activities	**Frequency**	**Percent**	**Engaged in Agricultural activities**	**Frequency**	**Percent**
Yes	154	51.3	Yes	52	52.0
No	146	48.7	No	48	48.0
Total	**300**	**100.0**	**Total**	**100**	**100.0**

In the project area among the right holders, 51.3 percent households are engage in agricultural activities. On the other hand, 52 percent of the uncontrolled group is engaged in agriculture activities.

10.9 Cultivation Intensity

Among the right holders group; 11 percent households cultivate once, 40 percent households twice and one percent cultivates three times a year. Likewise, within the uncontrolled group, 35 percent practices double cropping and only 17 percent produce single crop in their land.

10.10 Productive Crop

Like any other parts of Bangladesh rice is also major crop for project villages. The survey revealed that, among right holders 48.7percent farmers grow rice in their field, .3percent jute, 4percent Maize, .3percent Vegetable and 2.3percent other. In case of Uncontrolled group, 50percent households answer is Paddy, 2percent Maize, 1percent Vegetable and 2percent households produce other crop.

10.11 Seed Used for Crop Production

The farmers is rural Bangladesh are used to grow crops from locally produced seeds. However, the trend is changing slowly and hybrid seeds are replacing the indigenous ones. Within the right holders it is found that; seven percent households use local, 31.7 percent households use high yielding verity, 0.3 percent uses both and 13.3 percent use hybrids. On the other hand, nine percent households use local ones, 36 percent households use high yielding variety and nine percent makes use of Hybrids seeds for crop production within the uncontrolled group. In case of seed preservation, it is found that only 8.3 percent farmers are preserving seeds for future use in the right holders group, whereas within the uncontrolled group the percentage is 15 percent.

10.12 Use of Agriculture Tools

Subsistence agriculture in rural Bangladesh is gradually shifting towards mechanized agriculture, which is manifested from the survey as well. It is found that in the right holders' group; 12.3 percent uses traditional agricultural tools, 29.7 percent uses modern agricultural appliances and 10.7 percent use both the traditional and modern ones. Within the uncontrolled group; 14 percent households use traditional ones, 27 percent uses modern ones and 11 percent households use both.

10.13 Source of Irrigation

Irrigation is an important issue for agriculture production. More particularly, irrigation is crucial for Boor production. Within right holders' group 3percent use surface water, 51.7percent households use ground water as a source of irrigation. However, in uncontrolled group 1percent household use surface water and 52percent households use ground water for Irrigation.

Irrigation is an important issue for agriculture production. More particularly, irrigation is crucial for Boor production. Within right holders group; three percent farmers use surface water and 51.7 percent uses ground water as a source of irrigation. In the uncontrolled group, however, one percent farmers' source of irrigation is surface water and 52 percent uses ground water.

10.14 Main Obstacles for Agriculture Production

10.14.1 Obstacles for Agricultural Production

Agriculture is a weather sensitive sector. Any changes in climate will eventually hamper agricultural production. Farmers of RESOLVE area are confronting to multiple stressors. However, flood is the dominating factor that has ambivalent affect. In one side it make land fertile through silt deposition, on the other hand cause destruction through washing out whole production. Among right holders group we have found quite a number flood victim and 91percent recognized flood as main obstacles for agriculture production. Only 1.7percent identified drought as major threat. Even though salinity ingression still remains to minimum level, however .3percent thought that salinity could be a major threat to agriculture in near future when 1.3percent face obstacles for River bank erosion and 5.7percent others. In case of Uncontrolled group main Obstacles for agricultural production in this area here 1percent households answer is Drought, 86percent Flood 13percent households obstacle is River bank erosion.

Agriculture is a weather sensitive sector. Even a slight change in climate eventually hampers the production. Farmers of the RESOLVE area are confronting multiple stressors. However, flood is the dominating factor that has an ambivalent affect. In one side it makes lands fertile through silt deposition; on the other hand cause destruction by inundating the whole production. Among the right holders group, it has been found that 91 percent considered flood as a major threat. 1.7 percent recognized drought and it is salinity for another 0.3 percent, 1.3 percent face obstacles for river bank erosion and 5.7 percent faces others as the hindrances for agricultural production. In case of the uncontrolled group one percent households' answer is drought, 86 percent answers flood and it is river bank erosion for another 13percent as main obstacles for agricultural production in this area.

10.14.2 Effect of Climate Change in Agriculture

Agricultural sector is very sensitive to climate change, where direct loss is incurred. Climate change posed multifaceted impacts on agriculture. In the right holders group; 6.7 percent farmers noticed change of verity of crops as an impact of climate change, whereas 38.7 percent identified reduction of agricultural productivity, 18.6 percent farmers argued change of crop calendar and 38.3 percent others as the major impacts of climate change. Most of the farmers (54 percent) of the uncontrolled group addressed reduction of production as the major impact of climate change, seven percent address change of variety of crop and 11 percent identified change of crop calendar as major climate change impact.

Table 40 : Effect of Climate change in Agriculture

Right Holder Group			Uncontrolled group		
Effect of climate change	**Frequency**	**Percent**	**Effect of climate change**	**Frequency**	**Percent**
Reduction of production	116	38.7	Reduction of production	54	54.0
Change of variety crops	20	6.7	Change of variety crops	7	7.0
Change of crop calendar	55	18.3	Change of crop calendar	11	11.0
Other	109	36.3	No answer	28	28.0
Total	**300**	**100.0**	**Total**	**100**	**100.0**

11. CLIMATE CHANGE AND NATURAL HAZARDS

Cent percent households of the right holders answered that they are affected by climate change; while 16.5 percent answered that they have heard about climate change but did not notice any effect of it. However, 35.5 percent respondents showed their ignorance about climate change. Knowledge regarding climate change among the uncontrolled group showed similar pattern. In this case, 65 percent addressed climate change as major threat to their lives and livelihood. On the other hand, 17 percent respondents answered that they have heard about climate change and did not notice any effect of it. Regrettably 33 percent respondents did not know anything about climate change.

11.1 Hazard Frequency

According to respondents among the right holders flood is the most frequent hazard faced by community and its 79.7 percent, whereas 19.7 percent respondents identified river bank erosion as major hazard that could incur great loss.

Table 41. Hazard frequency according to right holders and Uncontrolled group

Right holder Group			Uncontrolled group		
Calamities frequently occur	**Frequency**	**Percent**	**Calamities frequently occur**	**Frequency**	**Percent**
Flood	239	79.7	Flood	77	77.0
Riverbank erosion	59	19.7	Riverbank erosion	23	23.0
Other	2	.6	**Total**	**100**	**100.0**
Total	**300**	**100.0**			

On the other hand, 77 percent respondents identified flood as most frequent hazard and 23 percent identified riverbank erosion intrusion as major hazard within the uncontrolled group.

11.2 Impact on Livelihood

Within the right holders group 79.7 percent marked flood as the major problems affecting their livelihood and 19.7 percent households marked river bank erosion as the main problems hampering livelihood.

11.3 Relief and Recovery after Disaster

Even though Bangladesh has been cited as a model for disaster management worldwide, however the RESOLVE project area shows a disappointing scenario in case of receiving relief and recovery assistance after disaster. The survey revealed that only 26.7 percent of the households

get assistance out of which 25.3 percent receives assistance from government, three percent gets assistance from NGOs and the rest 3.7 percent has received assistance from both the sources. Alternatively, 27 percent households of the uncontrolled group did not receive cash assistance from any formal or informal organization after disasters.

11.4 Weather Forecasting System

The right holders are very vulnerable to disasters and weather forecasting is important for securing their livelihood from devastation. However, most of the right holders (79.7 percent) do not access to weather forecasting system. In case of the uncontrolled group, 67 percent respondents do not have access to weather forecasting system.

11.5 The Medium of Weather Forecasting

Among the right holders; 20.3 percent of respondents have access to weather forecasting. Among this percentage; 7.7 percent uses radio, 12.7 percent uses television, 0.7 percent makes use of mobile as a medium of weather forecasting. On the other hand, 12 percent respondents of the uncontrolled group use radio as medium of weather forecasting and 33 percent households are informed by television.

12. FINANCIAL SYSTEM

12.1 Savings

Within the right holders group, 22 percent saves money. In case of amount of savings; 9.33 percent households have the amount of savings less than 1001 taka, 9.66 percent have 1001 to 2500 taka and 3.33 percent household have the amount of savings 2501 to 10410 taka. In case of forms of savings; 1.3 percent's form of savings is in bank, 3.3 percent goes to cooperative, 13.7 percent is facilitated by NGOs, 0.3 percent case and one percent adopts other means of savings. Within the uncontrolled group, 30 percent households save money. Among them seven percent households have less than 1100 taka, 13 percent households have 1200 to 1500 taka, ten percent households have 1700 to 5000 taka and one percent households have 10000 taka as an amount of saving. In case of forms of savings; two percent saves in banks, four percent in cooperative, 23 percent is NGOs and two percent has other means.

12.2 Loan

The survey revealed that 70.3 percent households have to take loan for a number of reasons. The highest number (54.3 percent) is found in taking loan for purchasing food followed by treatment (10.7 percent), children's education (one percent) and the rest five percent takes loans for varied reasons. On the other hand, 67 percent households of the uncontrolled group take loan. Here 11 percent households borrow for treatment, 55 percent households borrow for purchasing food and two percent for their children.

12.3 Source of Loan

Table 42: Source of Loan

Source of borrowing	Frequency	Percent
Cooperative	13	4.33
Money lender	32	10.67
Relatives	15	5.00
Neighbor	148	49.33
Not applicable	92	30.67
Total	**300**	**100.0**

Micro credit has appeared as major source of capital for poor people in rural Bangladesh even if there are some controversies regarding its effectiveness. 4.33 percent of the borrower uses micro credit provider NGOs as a source of loan, 10.67 percent households borrow from money lenders, five percent households borrow from their relatives and 49.33 percent households borrow from their neighbours. In case of the uncontrolled group; four percent loan takers rely on micro credit provider NGOs for loan, ten percent from money lenders, five percent from relatives and 48 percent from neighbours.

12.4 Debt Situation

Since the right holders are poor, they are compelled to take loans to meet up their daily expenses. The survey explored that 52.3 percent of the right holders are in debt. Majority of the respondents of the uncontrolled group (44 percent) are also is indebted.

Among the right holders group; 29.33 percent households have the amount less than 5001 taka, 14.67 percent households have 5001 to 10000 taka, six percent households have 10001 to 20000 taka and 3.33 percent households have the amount of debt of 20001 to 60000 taka currently. On the other hand; 25 percent households have less than 5001 taka, 16 percent households have 6000 to 15000 taka and four percent households have 18000 to 50000 taka of debt at present within the uncontrolled group.

13. CAPACITY BUILDING TRAINING

Table 43: Capacity building training received by right holders

Get capacity building training	Frequency	Percent
Yes	8	2.7
No	292	97.3
Total	**300**	**100.0**

The right holders are identified with less capacitated in case of problem reasoning as well as solving. The right holders are not only illiterate but also out of the ambit of capacity building training offered by both government and NGOs. From the survey it is found that only 2.7 percent of the right holders' respondents has received capacity building training. On the Other hand, only eight percent of the uncontrolled group gets the training.

14. MAJOR FINDINGS OF THE STUDY

Table 44: Major Findings of the study	
Indicators	**Current situation of the Indicators**
Population	Total population of the right holder's family is 1239. 49.19 percent of them are male and 50.81 percent are female. On the other hand the total member is 440 in the uncontrolled households, 49 percent of them are male and 51 percent are female.
Primary Occupation	From the baseline survey it is found that among 300 right holders 31 percent household's main occupation is farming, 46.7 percent labor, 5.7 percent small businessman, 0.3 percent fishermen, 0.7 percent housewife, 1 percent service holder, 3.7 percent Rickshaw Puller, 1.7 percent van puller, 1.7 percent driver, 0.3 percent kobiraj, 0.3 percent carpenter and 6.7 percent households are engage in other occupations as it their main occupation. In case of main occupations of the uncontrolled households, 21 percent households heads are farmer, 50 percent labourers, seven percent small businessman, one percent fishermen, two percent service provider, five percent rickshaw puller, one percent van puller, one percent shop keeper and 12 percent households are engage in other activities.
Secondary Occupation	Majority of the right holders are only engaged with a single occupation. However, 6.7 percent of them is engaged with farming, 11percent Labor, 0.7 percent small business, 0.3 percent fishermen, one percent household, 3.3 percent service holders, 1.3 percent rickshaw puller, 0.3 percent van puller and 2.3 percent households are engaged in others activities as their occupations. On the other hand, among the uncontrolled households, six percent households' heads are farmer, 12 percent labourer, one percent small business, one percent fishermen, two percent rickshaw puller and two percent households heads engage with other occupation
Enrollment	Within 300 right holders, 309 members were found enrolled in school out of which 51.13 percent are female 48.87 percent of them are male. This result shows evidence of advancing awareness regarding female education. On the other hand, total 107 members were found enrolled in the uncontrolled group, among them male 47.66 percent and female 52.34 percent.
Female Education	Within right holders, 13.7 percent household's female member can only sign and 23.3 percent households female member are illiterate. In case of literate female, 39.7 percent obtained primary education, 0.7 percent obtained secondary education and one percent female was found with SSC or higher education. On the contrary, 17 percent illiterate female were identified in uncontrolled households and 32 percent female were found with

	minimum education of class 5, who can read and write her name, 26 percent female member can only sign, 23 percent obtain secondary level and one percent female were found with SSC or higher education.
Income	Most of the right holders are extremely poor and their annual income is below 30000 taka (USD 400).The baseline study revealed that 60.33 percent right holders' annual is equal or below 30000 taka. However, 39.67 percent right holders were found whose income is more than 30000 taka annually. On the other hand, within uncontrolled group 52 percent were identified as extreme poor whose income is equal or less than 30000 taka and 48 percent households' income more than 30,000 taka annually.
Expenditure	There is a huge discrepancy between income and expenditure in the RESOLVE area. Even though more than 60.33 percent right holders were found with less than 30000 taka income but, 27.67 percent right holders yearly expenditure is more than 30000 taka and 72.33 percent expenditure less than 3000 taka. Most of the poor household receives aid from different government and NGO programmes. However, a reverse scenario discovered in the uncontrolled group where 52 percent households were found whose annual expenditure is more than 30000 taka and 48 percent households' expenditure less than 3000 taka.
Feeding Capability	Since the right holders are extremely poor, most of them cannot eat three times in day the baseline data depicts that 1.7 percent right holders can eat once and 69.7 percent can eat twice and only 28.7 percent can eat three times a day. Moreover, 71.4 percent household head is incapable to feed his/her family three times in a day by his/her income. Feeding scenario is identical in the uncontrolled group as well. Within the uncontrolled group only 38 percent can eat three times in a day. And 62 percent households' family members eat two times each day.
Ownership of House	Within 300 right holders, 71 percent households has his owned house, 29 percent households live others house. On the other hand 72 percent of the uncontrolled group has their own houses and 28 percent live others' places.
Source of Light	Only 3.7 percent of household of the right holders has accessibility to electricity and 96 percent house hold of them depend on Kerosene; and 0.3 percent uses solar energy as their source of light. In contrast, only five percent household of uncontrolled group has access to electricity and 95 percent of them use kerosene.

Fuel System	For cooking only 0.3 percent uses electricity, 98.7 percent households use leaves/straws and one percent households use woods/bamboo in the right holder group. In case of the uncontrolled group, 100 percent households use leaves/straws for cooking.
Water	In case of drinking water among right holders it is revealed that only three percent households collect water from ponds/wells, 99 percent households collect from tube wells and 0.7 percent household collects from others sources. Alternatively, within the uncontrolled group 100 percent households collect drinking water from tube wells. On the other hand 0.7 percent of the right holders collect water from ponds/wells, 98.7 percent from tube wells and 0.6 percent households from others. Among the uncontrolled group the survey revealed that 100 percent households collect from tube wells.
Sanitation systems	In case of the right holder group; 3.3 percent households have sanitary toilets, 30 percent uses hanging ones, and 62.3 percent uses open place for defecation and 4.3 percent has other toilet system. On the contrary, 38 percent households have hanging toilets, 57 percent household's toilet system is open place and five percent toilet system is other within the uncontrolled group.
Waste management	From the survey it is revealed in case of the right holders; 30.7 percent households' garbage is put in open places, 0.7 percent in dustbins, 0.7 percent puts those to garbage collectors, 27.7 percent ditches rivers/ponds and 40.3 percent households' garbage is put in others place. It is found that only 52 percent households use garbage as organic fertilizers and 48 percent households not use garbage as an organic fertilizer or even do not know how to convert garbage into organic fertilizer. In case of the uncontrolled group, 16 percent households put garbage in open places, 26 percent in rivers/ponds and 58 percent in other place. However, it is found that 61 percent household use garbage as an organic fertilizers and rest 37 percent never does so.
Diseases	While considering health situation of right holders, it is found that 4 percent households members most frequently suffer from fever, 9.3 percent seasonally affected by cough, 44.7 percent affected by Diarrhea, 33 percent affect by Influenza, 1 percent affected by TB, 1 percent by Jaundice, 1 percent by Cholera, 2.7 percent by Typhoid and 3.3 percent households members are most frequently affected by headache. In case of uncontrolled group, 1 percent households members affected by fever, 2 percent affected by Cough, 55 percent affected by Diarrhea, 29 percent affected by Influenza, 1 percent by TB, 1 percent by jaundice, 1 percent affected by Cholera, 8 percent households affected by Typhoid and 2 percent households affected by

	Headache.
Immunization of Children	The rate of children immunization depicts a satisfactory picture. Within right holders group 57.3 percent children (below five years) have completed immunization, 6.3 percent children completed partial immunization and only 1.7 percent children did not receive any. The uncontrolled group shows similar picture in case of immunization. Almost all (92 percent) children received full or partial immunization.
Birth control	In case of birth control; 48.3 percent households female members adopts birth control method, 50 percent households female members do not take birth control method in the right holders group. In regard to the uncontrolled group; 49 percent reproductively active women are using birth control methods, whereas two percent households female members do not take birth control methods for religious restriction, 8 percent is prohibited by in-laws, 20 percent is not aware of birth control methods and 9 percent does not take birth control methods for other reason.
Vaccination During Pregnancy	Within the right holders; 62 percent households female take vaccination during pregnancy, 29 percent does not take vaccination during pregnancy. On the other hand, 67 percent pregnant women of the uncontrolled group take vaccine during pregnancy and 26 percent does not take any.
Agricultural Land Ownership	Most of the right holders are either landless poor or have tiny amount of land, which is evident from survey result as well. From survey it is found that 35.3 percent households have the ownership of agricultural land and 64.7 percent households don't have the ownership of agricultural land. Alternatively, within the uncontrolled group 38 percent households have the ownership of agricultural land and 62 percent does not have any.
Agricultural activities	In the project area among the right holders 51.3 percent households engage in agricultural activities. On the other hand, 52 percent households of the uncontrolled group are engaged with agriculture activities.
Productive Crop	Like any other parts of Bangladesh rice is also major crop for project villages. The survey revealed that, among right holders 48.7 percent farmers grow rice in their field, 0.3 percent jute, four percent maize, 0.3 percent vegetable and 2.3 percent other. In case of the Uncontrolled group, 50 percent households' answer is paddy, two percent answers maize, one percent grows vegetable and two percent households produce other crops.
Seed use for agricultural production	The farmers is rural Bangladesh are used to grow crop from locally produced seeds. However, the trend is changing slowly and hybrid seeds are replacing indigenous seeds. Within the right holders it is found that, seven percent households use local, 31.7 percent households use high yielding verity, 0.3 percent

	households both and 13.3 percent uses hybrids. On the other hand, within the uncontrolled group; nine percent households use local, 36 percent households use high yielding variety and nine percent hybrids seeds for crop production.
Use of agricultural tools	Subsistence agriculture in rural Bangladesh is gradually shifting towards mechanized agriculture, which is manifested from the survey as well. It is found that, 12.3 percent households use traditional, 29.7 percent modern, 10.7 percent both types of tools. Within the uncontrolled group the share of modern and traditional tool use shows similar pattern.14 percent households use traditional, 27 percent uses modern ones and 11 percent households' use both for agricultural activities.
Obstacles of Agricultural Production	Among right holders group we have found quite a number flood victim and 91 percent recognized flood as main obstacles for agriculture production. Only 1.7 percent identified drought as major threat. Even though salinity ingression still remains to minimum level, however 0.3 percent thought that salinity could be a major threat to agriculture in near future when 1.3 percent face obstacles for river bank erosion and 5.7 percent others. In case of the uncontrolled group, main obstacles for agricultural production in this area are drought (one percent), flood (86 percent) and river bank erosion (13 percent).
Effect of climate change on agriculture	Among the right holders group, 6.7 percent farmers noticed change of verity of crops as an impact of climate change; whereas 38.7 percent identified reduction of agricultural productivity, 18.6 percent farmers argued change of crop calendar and 38.3 percent others as the major impact of climate change. Most of the farmers (54 percent) of the uncontrolled group addressed reduction of production as the major impact of climate change, seven percent address changed of variety of crop. On the other hand, 11 percent identified change of crop calendar as major climate change impact.
Climate change and Natural hazards	Most of the people from both the right holders and the uncontrolled group answered that they are affected by climate change. According to respondents among the right holders flood is the most frequent hazard faced by community and its 79.7 percent whereas 19.7 percent respondents identified river bank erosion as major hazard that could incur great loss. On the other hand, 77 percent respondents identified flood as most frequent hazard and 23 percent identified riverbank erosion as major hazards within the uncontrolled group.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