

Char Development and Settlement Project Phase IV Bangladesh

Technical Report No. 21

Partner NGO Project Completion Report

December 2018

Government of Bangladesh / IFAD / Government of the Netherlands

Implementing Government Agencies:

- Bangladesh Water Development Board (BWDB)
- Ministry of Land (MoL)
- Local Government Engineering Department (LGED)
- Department of Public Health Engineering (DPHE)
- Department of Agriculture Extension (DAE)
- Forest Department (FD) and NGOs

Technical Assistance:

- BETS
- Euroconsult Mott MacDonald
- Socioconsult

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INTRODUCTION

The Meghna estuary forms the central and most dynamic part of the coastal zone of Bangladesh. It is being shaped by a very complex set of interactions between physical processes. Factors that are particularly important in determining the outcome in terms of *accretion and erosion* are the sediment load, its transport and its distribution; the discharge of water and the water levels; and tidal forces and estuarine circulation. On average, around 1.1 billion tons of sediment is carried down by the Ganges-Brahmaputra-Meghna river system, one of the largest sediment loads in any river system in the world. About one fifth of the sediment load is retained in the estuary, forming the raw material of the land accretion process. Surveys, based on satellite pictures, have shown that each year there is a net accretion of around 20 km²: newly formed land of about 52 km² minus eroded land of around 32 km². The accretion seems to be accelerating over the past decade. The accretion dominates around islands south and south-east of the Noakhali mainland, and south-west of Bhola. The average yearly erosion of 32 km² means that, with an assumed density of 800 people per km², each year approximately 26,000 people (about 4,500 households) will lose their land in the estuary. Many of them will move to newly emerged lands.

The project aims to support the livelihoods of settlers in recently emerged chars. When a new char becomes fit for cultivation, the river-eroded families from adjacent areas start migrating into the newly formed land for shelter and livelihood. A power broker, in many cases with ancestral links to newly accreted char land, tends to extend support and patronage to settlers. This type of autonomous settlement leads to a situation in which the official process of land settlement cannot start with a clean slate. Settlers are already present in new chars with active control over land before the official process has even started. Powerful people, commonly known as *jotdars*, and the settlers controlled by them, occupy the land. The immigration is illegal, because the land is under control of the Forest Department (for a period of 20 years after the start of the first forestation activities). The illegal immigrants and occupiers of land ruthlessly begin with felling trees, constructing thatched houses on raised mounds and digging ponds for drinking water and a little fish culture. The Forest Department is just not able to protect the plantations because it lacks the manpower and it faces influential opponents with political connections. Armed gangs (*bahinis*) are the local strong arm of the *jotdars*. They often impose a regime of fear and terror on the settlers, often violating basic human rights. They extract large amounts of money from the settlers in exchange for the control over and use of a piece of land and for "protection". No institutions are present, except *Samaj* (local communities), and mosque- and *madrassa* committees.

CDSP-I launched its activities in the coastal char area in early 1994 and it continued up to 1999, CDSP-II project started in 2000 and ended after running for five years in June 2005 including an extension of one and a half years. CDSP-III started in 2005 and ended after five years in 2010 than in February 2011 CDSP-IV started with a 6 year duration. All of the phases of the project have a couple of NGOs as development partners for the Livelihood sub-component. In the present phase CDSP-IV selected four partner NGOs; these are BRAC, Sagorika Samaj Unnayan Songstha (SSUS), Dwip Unnayan Songstha (DUS) and Society for Development Initiatives (SDI). The Government of Bangladesh, the Government of the Netherlands and

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International Fund for Agriculture Development (IFAD) funded the project. This project is implemented by six Government Agencies: Bangladesh Water Development Board (BWDB), Ministry of Land (Mol), Local Government and Engineering Department (LGED), Department of Forest (FD), Department of Agriculture Extension (DAE) Department of Public Health Engineering (DPHE). Partner NGOs are responsible for implementation of Social and Livelihood Support (SLS) components and the CDSP Technical Assistance team started the formal SLS activities through four partner NGOs from 1st December 2011. Embassy of Kingdom of the Netherlands (EKN) funded the PNGO part as a grant with a time period March 2011 to February 2017.

In January 2012 physical activities have been started along with four partner NGOs in the project area in five coastal chars: Char Ziauddin (Subarna char), Char Nangulia (part of Subarna char and part of Hatiya), Noler char (Hatiya), Caring char (Hatiya), and Urir char (part of Sandwip-Chittagong and part of Companiganj-Noakhali). A Working Paper of guidelines for the implementation of PNGO activities has been developed. Initially the six sub-components were: 1) Health and Family Planning 2) Micro-credit and Capacity Development 3) Climate Change and Disaster Management 4) Water and Sanitation 5) Legal and Human Rights and 6) Homestead Agriculture and Value Chain Development. However according to local needs, two more sub-components have been incorporated in 2014: 7) Fisheries and 8) Poultry and Livestock. As originally agreed with the donor PNGOs, activities would have been phased out after February 2017 but the priority five sub components were continued up to December, 2017.

Project TA and PNGO staff

TA Staff

Deputy Team Leader (NGO & Livelihood)	01
NGO Sector Specialist	07

NGO Coordinating Office Staff

NGO Director	04
NGO Coordinator	04
Area Manager	04
Accountant	04
Office Assistant	04

NGO Branch Office Staff

Branch Manager	13
Accountant	13
Assistant Accountant / Office Assistant	11
Credit Officer	58
LHR Coordinator	13
WatSan Coordinator	13
Agriculture Coordinator	13
Paramedics	13
HFPF	39
Fisheries Coordinator	06
Poultry & Livestock Coordinator	06
Support Staff	18

Base line survey findings

CDSP-IV conducted a survey through partner NGOs to find out the socio-economic status of the inhabitants. According to the survey report, the total number of household (HH) is 28,000 with a population of 155,000. This population is increasing rapidly due to high migration flow and high fertility rate. The education rate is very low compared to the main land or any other char in the area. The number of persons who passed primary education is 10,541, JSC is 1,541, and SSC and above is 664. The education rate of 9.41% is much lower than the national education rate (65%).

Only 234,000 trees are in the project area (these trees are very immature). These trees are usually of timber and fruit types. There are only 525 Deep Tube Wells (DTW) including 140 sunk by CDSP III in the whole project area. The crisis of drinking and water for household use is very acute. Most of the ponds and ditches get dry in the dry season. According to the survey information, only 1,659 sanitary latrines are there in the project area and that constitutes about 6.5% of the total households. There are no health services and only 735 physically severely disabled persons in the area. Most of the people built their houses with bamboo and straw and the percentage of these is 78.4% indicating the poor economic status of the people. In terms of family planning, a total of 23,879 eligible couples, 5,330 non-eligible couples and 6,728 method users was found in 13 PNGO branches.

Table 1: Char wise area coverage and population

Name of char	Area in Hectares	Households	Population	Family size
Nangulia	8,990	12,000	67,000	5.58
Noler	2,690	6,000	33,000	5.50
Caring	6,850	6,000	33,000	5.50
Char Ziauddin	1,943	2,000	11,000	5.50
Urir	10,300	2,000	11,000	5.50
Total	30,773	28,000	155,000	5.52

Sub-component wise activities and findings are given in the following chapters.

1. HEALTH AND FAMILY PANNING

Goal: To ensure health for all project participants and available family planning services by the end of the project.

Objectives:

- ❖ To Create mass awareness through health education among the project area people
- ❖ To reduce of common diseases
- ❖ To reduce population growth
- ❖ To protect the pregnant women from tetanus and children from seven fatal diseases
- ❖ To ensure safe delivery and reduce maternal and child mortality
- ❖ To improve health condition of project area people

Major programmes:

- ❖ Health and nutrition education
- ❖ Sanitation and safe water education
- ❖ Family planning
- ❖ Immunization
- ❖ Pregnancy related care
- ❖ Safe delivery
- ❖ Basic curative service

Field activities to implement the program

- a) Health Forum b) Counselling c) House visit d) TBA supervision e) Method user follow up f) Contraceptive distribution g) ORS distribution h) Micro nutrient distribution i) De-worming tablet distribution j) Orientation to beneficiary k) Training, Meeting and Awareness l) Reporting

Target plan

- ❖ To provide education on rules of health and education to 80% of the target population
- ❖ To ensure proper use of sanitary latrines by 100% of the population
- ❖ To ensure the use of safe water for drinking / other household purposes by 90% population
- ❖ To increase the contraceptive users to 60%
- ❖ To improve the nutritional intake to 60%
- ❖ To reduce the infant mortality rate by 50%
- ❖ To ensure safe delivery to 90%
- ❖ To reduce maternal mortality by 50% and birth rate by 50%
- ❖ To improve public health by 50%
- ❖ To increase the immunization rate to 60% and TT receiver rate to 60%
- ❖ To reduce common diseases by 80% and treatment cost by 60%

Rationale

Family planning services: Pre-project situation

There were no organized family planning services from either government or NGOs. Some family planning methods including condom, oral pill and injection are available in a few medicine shops, but these shopkeepers do not have any training on contraceptive service delivery and are unable to meet the demand for information and education about family planning methods. As a result, many of their clients are very irregular in follow up. Moreover, char dwellers have to pay higher prices: injectable contraceptive costs Tk. 30 to Tk. 50 per injection, while elsewhere in Bangladesh these are free of charge from government facilities and at NGO clinics, or cost Tk. 5 to Tk. 30 from private doctors.

Condom, oral pill and injectable contraceptives are short acting methods which need continuous motivation, communications, and a highly consistent service delivery system. Reliance on short acting methods means that it is difficult to maintain and improve the contraceptive prevalence rate. Long acting methods (e.g. contraceptive implants) and permanent methods (tubectomy and vasectomy) are not available in the chars.

Talking to families, it is felt that there is tremendous unmet demand for family planning related information. People are not aware about different methods of family planning, where and how they may have it, what the common health effects of different methods are and how to deal with them. There were no trained providers and publicity for family planning (posters, billboards or signs). Moreover, the socio-economic realities on the chars (poverty, lack of consistent employment and low status of women) aggravate the situation and contribute to the high birth rate.

Child health situation:

Because of the high population growth rate, there are a large number of young children in the chars. Consultations with health agents in the three chars and other stakeholders revealed:

a) Immunization: The government immunization programme (EPI) did not exist or seldom reached these chars. So children are not immunized except a few, who are fortunate to have (often incomplete) immunization in other places. National immunization days are not observed so far in this area. Polio eradication activities have not yet started. National programs for distribution of vitamin A capsules or anti-helminth preparations do not operate. Causes of under-five child mortality: all stakeholders agree that drowning is the number one cause of under-five child mortality in the chars. There is competition between pneumonia and diarrhea to be the second or third causes of under-five mortality in the chars. It is felt that the rate of under-five child mortality in the chars is at least twice the rate of other parts of Bangladesh.

b) Common illness of childhood: Although the most common cause of child mortality is drowning, there is no morbidity related to drowning. Children usually walk bare footed and so worm infestation is very common. This is to be expected as studies show that worm infestation rates in the riverine regions are much higher than the other parts of Bangladesh. Health providers also reported dysentery, pneumonia, and diarrhea as the other common diseases that children suffer from in the chars.

- c) Child nutrition situation:** Visits to families apparently reveal that child under nutrition is a major challenge in the chars, and the rate of child malnutrition appears to be at least 50% more than the national rate. Poverty and lack of education are two factors aggravating the problem. Children are too dependent on only rice as a source of food, and do not have sufficient protein and fat in their diets, resulting in deficiencies of macro-nutrients. Moreover, vegetables and fruit are not grown adequately in the chars and are also not easy to buy. As such micro nutrient deficiency is also a big problem in the region. Chronic infections and worm infestation aggravate the nutrition problem, especially anemia.
- d)** The optimal strategy for infant and young child feeding (IYCF) is exclusive breastfeeding in the first six months of life followed by feeding from family pot with continuing breastfeeding up to two years or beyond. IYCF is recognized as the most cost effective and feasible child survival tool. Although breastfeeding is universally initiated in the chars, very soon most mothers end up with mixed feeding. This often results in infants getting infested with gut parasites causing diarrhea and damaging their digestive tracts.

- e) Child health providers:** Families in the chars initially try traditional home methods, spiritual healing and herbal remedies for childhood illness. According to their perceptions of the symptoms or at seriousness of illness, they move to mainstream medicines. The char medicine shopkeepers are the main health providers at this point. Many factors determine when, how and where a family will seek care in a health crisis. This includes their economic status (especially availability of cash at home), perception about the particular illness, presence of key decision makers at home, availability of care-givers in the family, distance from a potential provider, road conditions and the transport situation, time of events, and ultimately the confidence in the quality of care of the target providers.

The char health providers do not have any formal or sub-formal training in child health. They are aware about the importance of immunization and ORS but are not informed about the use of vitamin A capsule, management of acute respiratory tract infection in children (ARI), integrated management of childhood illness (IMCI) or how to help mothers for successful breastfeeding.

- f) Maternal health situation:** Antenatal care is not at all available in the chars. Very few mothers receive any care during pregnancy. The local health providers (male medicine shopkeepers) are not trained or oriented towards pregnancy care.
- g) Safe delivery services:** Almost all (about 95%) of deliveries are at home. Usually untrained *dais* (a traditional birth attendant) and senior relatives carry out deliveries. In a few cases local health practitioners are called, but even then, usually can only give directions to the *dais* or relatives from a distance and do not see the patient. There are only a few examples where women were referred to higher centers outside of the chars (district or Upazilla towns) to deal with delivery complications. Because of the lack of communications and delay in seeking care, in most of the cases there was infant or maternal mortality and morbidity associated with these referrals. Availability of Emergency Obstetric Care (EOC) is a key factor in reducing maternal mortality. In the chars there is no provision of EOC at all. In this

situation, there might be high incidence of maternal and neonatal mortality and morbidity, which may go unnoticed.

- h) A number of maternal deaths were reported during the field investigation, but it is very difficult to comment on the magnitude of maternal deaths from this limited investigation. But, looking at the “process indicators” of emergency obstetric care it can be hypothesized that maternal mortality is much higher in the char population. Postpartum hemorrhage (PPH) seems to be the main causes of maternal mortality and morbidity in the chars as it is in the mainland. There are specific measures to such mortality, including active management of the third stage of labor. This could be delivered through char health providers, but no local health provider was aware of this. Misoprostol may be promoted through trained birth attendants to reduce the PPH problem.
- i) **Postnatal care:** Hardly any mothers in the chars are provided with postnatal care. Existing health providers are not at all oriented about the scope of postnatal care.
- j) **Other reproductive health issues:** Reproductive tract infection (RTI) is a very common problem among the women of reproductive age in the chars. According to some respondents about 80% of women suffer from this problem. These infections are sexually transmitted and need to be addressed in a holistic way. In most households, men seasonally migrate to big towns for work, which makes them and their families vulnerable to infections. The families in the chars are in need of information and support to prevent and manage the problem, but no specific communication efforts exist in this area, and health providers are also not oriented about the problem.
- k) **Sexually transmitted diseases:** the population is unaware of the risk of HIV/AIDS and other sexually transmitted infections, but the incidence of jaundice was reported. Condoms are available in about half of the medicine shops visited but talking to the shopkeepers it was understood that condom was a slow item to sell. This is an important concern with regard to safer sexual behavior. For a population with very high rate of migration, condom promotion could be an important measure.
- l) Local providers are not at all aware about adolescent reproductive health issues, especially the concerns of adolescent girls. This may lead to long term reproductive morbidities for future mothers.
- m) **Other health issues:** About the other issues in the chars, health providers reported high blood pressure as an emerging concern among the adult population. Although diabetes is not recognized as an important problem, asthma is prevalent.
- n) It seems that the quality of medicine on sale in shops is below standard. Substandard or questionable companies supply most products. The reason for this may be that health providers (shopkeepers) are not paid any fees for consultations, so they sell the medicines of substandard companies where profit margin is larger than for drugs from reputable suppliers. It may also be the case that products from companies of good standing are not

available to them. The lack of consultation fees may relate to the poverty of the patients, but it is also common in other parts of the country that unqualified doctors do not charge any fees for consultations.

Human resources development activities:

Staff recruitment

Project was launched from 1st December 2011 and contract agreement completed with Partner NGOs by 19th November 2011. To start the operational activities of the project, PNGOs started recruitment of staff personnel from mid December 2011 and completed all the recruitment by February 2012. In Health and Family Planning sub-component the requirement of staff was one Medical Assistant and three Health and Family Planning Facilitators (HFPPs), in each branch. PNGOs recruited 13 Medical Assistants and 39 HFPP for all the branch offices. 195 beneficiaries were selected for training on pregnancy related care. The following table shows the staff strength during project period.

Particulars	BRAC	SSUS	DUS	SDI	Total
Medical Assistant	6	3	2	2	13
HFPP	18	9	6	6	39
TBA	90	45	30	30	195
Total	114	57	38	38	247

Basic training for HFPP: Training was organized to develop the capacity of the staff. Training and refresher sessions were conducted both for staff and beneficiaries. 39 HFPP received 15 day long basic training on Health and Family Planning. The residential training was conducted in Noakhali Rural Action Society (N-RAS) training centre in Maijdee, Noakhali. 9 from BRAC, 18 from SSUS, 6 each from DUS and SDI participated in the training.

TBA training: In the pre-project area there was a lack of services in pregnancy related care. Untrained traditional birth attendants usually attend the delivery cases and the rate of maternal mortality, infant mortality and child mortality was high. In addition, there were lot of hazards and complications during pregnancy period in the project area. To combat the situation, beneficiaries were selected for training on pregnancy related care.



A total of 195 TBA and 250 beneficiaries were given residential technical training and after completion of training delivery kits and bags were distributed to them. HFPF and Medical Assistant supervised and monitored their activities and rectified if there was any gap of knowledge. In addition, there is an arrangement of refresher training for TBA once at the end of every month.

Particulars	BRAC	SSUS	DUS	SDI	Total
Beneficiary selection for TBA training	115	60	40	35	250
TBA trained	90	45	30	30	195

Gender and social awareness:

The people of the project area have been deprived of all sorts of services from the Government and NGOs in the pre-project period. Literacy rate in the area was much below the national average. There are problems with women’s mobility, decision making, utilization of earned money, savings creation, food intake,



participation in different training, meeting, workshops etc. It is necessary to tackle these and encourage enrollment in different local institutions, reduction of early marriage, dowry, divorce, polygamy, violence against women etc. To overcome the situation both among the staff and beneficiaries, to make a congenial as well gender friendly environment in the project area, the TA team has organized training on gender diversity for the staff members, 39 HFPF and 13 Medical Assistants. The duration of the training was 7 days.

Training on disease diagnosis control and management: PNGOs recruited medical assistants who already followed a four-year medical diploma course from MATS. They are primarily responsible for attending patients and providing curative services. The activities are implemented in 13 offices through static and mobile clinics. Patients are treated on the spot and receive counselling during treatment. For upgrading the medical assistants have been provided refresher capacity development courses and training on disease diagnosis; control and management is provided by specialised doctors. 13 Medical Assistants from all branches attended the training, which was three days long.

Training on injection pushing and management: In the project there were some clients in family planning who used to receive contraceptive injections from the local medicine seller.

Each injection cost Tk. 60-100. But it was too risky as most of the medicine sellers are not well trained. So, training on injection pushing and management was essential for Health and Family Planning Facilitators and Medical Assistants. The module of the training was prepared by the specialized doctors and a certificate was awarded to the trainees after completion. All 39 HFPP and 13 medical assistants received the training.

Practical training on food processing and cooking: The Health and Family Planning Programme has been making the beneficiaries aware through various technologies. Health forum, court yard session, orientation, training etc. are the means to make them aware. HFPP are also making the beneficiary aware on food and nutrition using two flip charts and personal contacts at the time of house visit. Despite all the effort to develop nutrition intake among the beneficiaries and saving of micro-nutrients as well as food value, it was observed that due to traditional food processing and cooking systems a huge quantity of nutrients is lost. People in the project area are taking more food, vegetables, and fish but due to their cooking system they are not getting the optimum result from the same. Considering the situation TA team decided to organize training on food processing and cooking system to protect as well save the nutrients of food. The training was given to all HFPP and MA in two batches and the materials for cooking were provided to all the PNGOs.

Orientation to local elite: To create awareness among the local influential persons on the health and family planning program and various health issues, a daylong orientation was organized for the local elite (imams, school teachers, UP chairmen and members, etc), who are involved in implementing the project activities. MA and HFPPs conduct the orientation as per CDSP IV guide line. After discussion of issues in the session, the facilitators make a work plan jointly and take responsibility to execute the result of the discussion. Subsequently the participants took the responsibility to disseminate the messages among others. In total 2,342 participants received the orientation during the project period. In addition, several sharing meetings were conducted with Civil Surgeon, Deputy Director of Family Planning Noakhali. CDSP-IV interventions, achievements and future plans were discussed with them.

Orientation to village doctors: Village doctors used to provide services to the people in the pre-project period. It seems that the quality of medicine on sale in shops was unknown due to various reasons. Hence to improve the quality of village doctors and ensure the supply of quality medicine the project organized one day orientations. In total 52 village doctors participated in the orientation and later the project has also ensured quality medicine supply from reputed companies through PNGOs.

Publications

Flip chart on food and nutrition: HFPP has to perform a health forum with each NGO group once a month. The arrangement is to develop the capacity of beneficiaries and make them aware of health and family planning issues. To support this, the project published a flip chart on food and nutrition containing messages, pictures and nutritional content of different foods and provided 100 flip charts to NGO staff as dissemination tools for beneficiaries.

Flip chart on danger signs of women during delivery and neonatal care: The project also published a flip chart on danger signals in pregnant women and care of neonates, which bears messages, pictures and information on places the patients will get services. The project provided 72 flip charts to NGO staff to facilitate dissemination to the beneficiaries.

Flipchart on health and social issues: The project also published another flip chart on health, family planning and social issues. There are 15 issues on health and family planning and 9 social issues. HFPF uses this flip chart at time of health forum in the group. The flip chart bears pictures along with messages. The team provided 100 flip charts to NGOs staff.

Static clinic: One of the components of health and family planning program is curative services to the beneficiaries. Patients are treated in the indoor and outdoor static and mobile clinics. Medical Assistants conducted static and mobile clinics three days in a week. It may be noted that the Medical Assistants are the only registered doctors for the beneficiaries in the project area. In total 8,877 clinics were held.

Mobile clinic: To cover all the HH and ensure treatment as well curative services for all the beneficiaries, mobile clinics are conducted three days in a week in different Samaj of the area.

If the Samaj is large in size, then more than one spot is in one Samaj. Usually Medical Assistants attend the patients and prescribe for them and a total of 8,069 clinic days were held during the project period.



Patient treatment: In the clinic both static and mobile patients are treated, prescribed and provided with medicine at cost price. In total 178,514 patients were treated. Medical Assistants usually refer the patients which they cannot diagnose or for whom they are unable to give proper treatment, to the doctors of Upazilla and district general hospitals. In the project area 2,879 patients were referred so far.

Treatment of pregnant women: In the project, MA, TBA and HFPFs were providing pregnancy related care. MAs usually check-up the pregnant women both in the static and mobile clinics. Generally, the TBA facilitates bringing the pregnant women to the clinics. In addition, pregnant women also come to the clinic for check-up. Doctors and TBA are helping to diagnose early complications and undertake proper measures for remedy. In total 10,424 pregnant women were checked up.

Attend delivery cases: In Health and Family Planning Program pregnancy related care as well mother child health is implemented. As part of the activity Medical Assistants usually check up the pregnant women both in the static and mobile clinics. Generally, TBA brings the pregnant women to the clinics. In addition, pregnant women also come to the clinic for check up. Doctor and TBA are helping to diagnose early complications and take initiatives for proper measures for remedy. In the case of pregnancy, TBAs attend the normal cases but if there is any complication such as prolonged delivery, delayed release of placenta, excess bleeding, doctors are called and they provide treatment. In total 13,100 women in delivery were treated.



Counselling to local people: The medical assistants are not only providing treatment to the patients but also provide messages through counselling to the people in the area. Generally, they are performing the counselling in the afternoon session in the market place, and also in the clinics. They usually discuss and disseminate messages on family planning to increase the coverage. Their target people are generally the male section of the society, teachers of institutions and parents of eligible couples. In total 16,635 beneficiaries received messages through counselling.



Traditional Birth Attendants (TBA) visit: Generally, HFPF supervise Traditional Birth Attendants (TBA). They usually perform the action both in morning and afternoon sessions. In addition, Medical Assistants are supervising the TBA to develop their capacity both in pregnancy related care message dissemination and to handle the women properly and skilfully during delivery.



Circumcision: Usually the people in the project area have had circumcision of boys performed by local unskilled people. After intervention of the project, the people getting this performed by the Medical Assistant of the clinic. The activity is performed in the clinic in a hygienic way and there is a follow up by doctor to the client. Thus, there is very little chance of complication or any undue suffering of clients. In total, 903 baby boys were circumcised.



Measuring stunted infants: Nutrition is one of the components of the Health and Family Planning Programme in the Social and Livelihoods Support component. Malnutrition and stunting among the infants were a great concern to all stakeholders. Initially micronutrients were distributed among the 6 month to 5 year old infants. Homestead gardening was established to fulfil the nutrition requirement. To see the situation of stunted infants in the project area the project monitored the height and weight of 0-5 year infants for two years. Five infants in each PNGO branch were under observation. Collected and preserved data shows that the growth among the infants is satisfactory. In some cases, one indicator was stagnant for some months but not for the whole duration of observations. The data revealed that the stunting situation is decreasing gradually. A total of 90 babies were observed and data was preserved for analysis.

Wounded persons treated: In the clinic of the project there are surgical instruments, materials to treat a wounded person, minor stitching, circumcision etc. Generally, in the char area there are some collisions among the people in various disputes and people come to the clinic when they become a victim and have injuries. The doctors were able to provide primary treatment to 2,750 wounded persons.

Medicine purchase and sale to the patients without profit: From inception there was no provision of medicine support to the patients either free or at cost. A revolving fund was established; BRAC created a fund of Tk. 30,000 for each branch and the other three NGOs allocated Tk.10,000. Since then medicines are purchased from the reputed pharmaceutical companies with a big discount and the same is sold to the patients on cost without any profit. Thus, the quality of medicine and price was ensured and in total, Tk. 6,009,151 worth of medicine was sold.

Exploring patients' fee collection: For the sustainability of clinics in the project area after phasing out of the project, TA team and partner NGOs conducted 53 mass meetings in the area with all stakeholders and collected comments/opinions. Most of the participants wished to keep the doctors and agreed to pay Tk. 100-250 as fees. From December 2016 in a workshop chaired by the Civil Surgeon, Noakhali involving all concerned stakeholders it was decided to introduce Tk 50/ patient as a fee initially.

Health forum: The activity is an important tool to make participants aware through imparting health education on various issues. Each HFPF conducts 20 health forums in each month, including a forum is conducted in the credit group. Issues are selected earlier based on the

health and education status of the area, seasonal changes etc. In the health forum the HFPP creates awareness among the community on family planning, nutrition, hygiene, immunization, on pregnancy related care and on common diseases. In total 46,420 health forums were conducted by HFPP.

House visit: To develop knowledge on health and family planning issues many ways were adopted to disseminate the messages to the beneficiaries. One of the ways is house visit by HFPP. During the visit the HFPP intensively discusses with the female household head and with teenage girls in the family. They physically see the cleanliness, environmental aspects, condition of latrines and soap for washing, and condition of children. They provide necessary advice and suggestions if any unhygienic practice is found. Generally, a HFPP visits 5 households in a day and in total 152,110 houses were visited up to the end of the project.

TBA supervision: To develop the knowledge on pregnancy related care such as family planning, check-up, food and diet of pregnant women, cleanliness of pregnant women, work, rest, preparation of delivery, care of neonates, immunization of babies and pregnant women etc, the HFPP visits each TBA according to a schedule. TBA visits houses regularly, especially those of pregnant women and lactating mothers. Each TBA supervises and visits at least 150 households; during house visits the HFPP also discusses important issues and gives updates on knowledge and practice.

TBA refresher: TBAs receive basic training on pregnancy related care and there is a schedule of refresher training for them once in a month in the PNGO branch office. In the refresher training, data on delivery handling, number of new born baby, still birth, live birth etc. is collected for reporting purposes. At the same time the problems faced by the TBA and future plans are also discussed. The refresher is a day long programme.

Complication cases referred to hospital: In case of any complication doctors referred to the nearest hospitals and thus any complication during pregnancy is reduced and delivery becomes less risky. Most of the pregnancy is handled by TBAs in the project area, who have handled 13,100 so far.

Contraceptive distribution: Reduction of the birth rate in the project area is one of the objectives of the Health and Family Planning program. Medical Assistants and HFPP perform health forum, and visit the houses of the beneficiaries to convince eligible couples to use family planning methods to keep the size of their family at optimum level. 27,654 households were covered by family planning. 390,137 cycles of oral contraceptive pill supplied, 11,051 injections pushed. Hence the total number of contraceptive users is 21,867, which is 91% of the eligible couples.

User follow up: HFPP with the support of credit officer and TBA distribute contraceptive pill, condom etc. to the clients. They maintain a register with due signature by the receivers. In addition, HFPP and Medical Assistants are pushing injections. HFPP pay visits to the contraceptive user and see whether the contraceptives are being used properly, and whether there are any problems in using them; if so, they try to resolve the issues. Such visits improve the quality of work and ensure proper use of contraceptives.

Iron tablet distribution to pregnant and lactating mothers: There was a significant iron deficiency among the people especially pregnant women and lactating mothers. HFPF and Medical Assistants have planned to make the beneficiaries aware of the issue, and it was decided to provide iron tablet as a supplement. Both pregnant women and lactating mothers got the tablet for up to 6 months. Each person received 400 tablets in the 6 month period and in total 1,589,000 iron tablets were distributed in the project period.

ORS distribution: At pre-project there was an insignificant arrangement of safe drinking water in the project area, which resulted in diarrheal diseases being a common phenomenon. So, the project arranged to provide ORS distribution to all the household as a crash program. To reduce diarrhea the Health and Family Planning Facilitators were working for raising awareness on safe drinking water, cleanliness and taking the ORS for diarrheal diseases. In total 896,268 packets of ORS were distributed which covered the total population. By project completion, safe water coverage was complete and so ORS distribution was no longer necessary.

Micro nutrient distribution: The children of the project area were suffering severely from malnutrition. HFPF and MA made the people aware to reduce malnutrition and the project made arrangements to distribute micronutrients to infants of 6 month to 5 years of age to combat the situation. In total 466,427 packets of micronutrients were distributed. Subsequently the production of vegetables has been significantly increased in the homesteads and fields to fulfil the nutrient requirement as well. To make the children worm free a total of 717,316 de-worming tablets were distributed among the beneficiaries.

Orientation on nutritional food processing and cooking system:

The char dwellers usually cook their food using traditional methods; huge nutrient loss occurs. Most of the families do not prepare any food for pregnant and lactating mothers, or special food for babies. To make the people aware about loss and misuse of traditional food processing and cooking and to save nutrients especially for pregnant women, lactating mothers and babies, HFPFs are conducting orientation sessions in the field. A total of 179 orientation sessions were conducted in different Samaj.



Day observation: To raise mass awareness among the beneficiaries, day observation is one of the most important activities in the Health and Family Planning Program. To make the project area people aware of health and hygiene, the World Health Day (WHD) is observed in all 12 branches of PNGOs. A rally and discussion meetings are held on that day; people from all sections of society attend the occasions. A total of 64 events were performed in the project period.

Continued training and orientation on health: HFPF and Medical Assistants conducted training, orientation and refresher to develop capacity of beneficiaries, village doctor, TBA, local elite, teachers, students, member of local level institutions continuously for awareness building on various issues on health and hygiene etc.



Blood pressure measure: To avoid any health-related complication and for early diagnosis, HFPF was measuring blood pressure of the beneficiaries. They provided suggestions and referred to doctors if any complication is found. Each HFPF has a blood pressure measuring machine. In total blood pressure was measured for 53,343 beneficiaries.

Reporting: CDSP-IV TA team provided a template for monthly activity reports. HFPF and Medical Assistants complete the report separately. PNGOs submit the consolidated activity progress report in each month and quarterly progress report at the end of each quarter.

Outcome: Knowledge on health and family planning of staff and volunteers like Traditional Birth Attendants has been developed significantly, resulting in good establishment of the programme and eventually good practices among the beneficiaries of the CDSP project areas. Superstition regarding family planning methods has been reduced and use has gone up to 80% based on joint decisions taken by husband and wife. Maternal mortality rate in the project is also reduced significantly. Infection and complication due to traditional circumcision has been reduced as circumcision is performed by the Medical Assistants. Rate of immunization of 0-1 year old infants is increasing and at the same time tetanus has been reduced very significantly as the women are getting anti tetanus vaccine. Safe drinking water use is about 100%.

Innovative interventions: The improved food processing and cooking system is a new intervention in the project area and now women are interested in following the system which was learnt from practical sessions by project staff.

Sustainability of the program: Beneficiaries are well trained on various health and family planning issues. Most of them are practicing the knowledge they gained from the project staff and various training, meetings and forums. The availability of safe drinking water and sanitary latrines has been ensured by the project. The TA team conducted 48 mass meetings regarding the future cost of the treatment of patients. Most of the participants agreed to pay a fee for treatment of Tk. 100-250 after phase-out of the project.

PNGOs' microfinance program will continue and a team is conducting meetings and coordination with the Health and Family Planning Department which, through the Deputy Director, Family Planning, Civil Surgeon, and others has agreed to provide services after phase out. There are also possibilities of continuing services by PNGOs from their own fund on a limited scale.

Case study: Zohura Khatun

Age 38 years old. Husband Abu Bakar.

As a traditional birth attendant (TBA), she has been working in Hazi Idris Miah Bazar Somaj for a long time, but she worked without receiving TBA orientation from any specialized birth attendant. Before the CDSP-IV intervention, she has visited many pregnant women but could not provide them good advice to follow during their pregnancy. Consequently, they had to encounter many pregnancy complications. She has not counted, but many vulnerable pregnant women died for the lack of proper advice in their vulnerable moments. She, as a lady of little learning, could not provide appropriate advice or could not diagnose the symptoms or determine risks.

She did not know the importance of the first part of breastfeeding (colostrum) that is essential for babies to prevent sickness. Instead, she advised the lactating mothers to feed their babies 'honey' or some other liquids stuffs. As a result, most of the babies developed stomach sicknesses. Recently, a branch manager appointed her to be TBA in the project. The health and family planning staff of the CDSP-IV project organized a 15-day TBA orientation that covered all the critical situations relating to delivery and anti-natal care.

She has developed a dramatic qualitative change in her work now as she deals with the pregnant women in the project working area. Now she can interpret most of the signs of critical, vulnerable and risky situations during the pregnancy. Understanding the risky situations, she advises them to go to the local hospital where the baby can be delivered with safety and convenience, rescuing the mother and baby simultaneously. She says, *'The training has made me effective in protecting both the baby and mother.'* After the secure birth, she advises mothers to feed the first course of breast-milk (colostrum). Now the babies and mothers are keeping healthy all the time which was not the case in the past (before intervention of CDSP-IV). She is grateful to this project for the initiative taken for her.

2. MICRO- CREDIT AND CAPACITY DEVELOPMENT

Introduction:

The feasibility studies for CDSP-IV identified access to credit as a key requirement for improved livelihood and poverty reduction. Once infrastructure development in the CDSP-I, II and III areas was completed the major national Micro Finance Institutions (MFI) set up their operations and are now offering micro-finance services. However, it was worthwhile for CDSP- IV to make specific provision to support micro-finance for the following reasons:

- There is a need to empower woman char dwellers, to encourage group savings and to generate income through utilizing microcredit available from PNGOs.
- There is an immediate need for micro-finance that cannot wait until infrastructure is developed and MFIs set up their operations
- There are considerable advantages in linking micro-finance to support for livelihoods (training, demonstrations) and social support (health, hygiene, rights etc). Micro-finance groups meet regularly which is a good forum for providing technical training and social support. New technologies can be promoted together through a combination of training and loans for investment.
- Generation of income from micro-finance that makes people less dependent on donor funding and allows sustaining operations after the end of the project.
- Successful microfinance demands well organised and disciplined management.

Human resource and management set up in the program:

Each PNGO deployed one coordinator to supervise all activities in this sector. The higher management of the PNGOs and TA team provides technical and management support. In the branch level a manager, six credit officers, accountant and assistant accountant cum office assistant were deployed. Branch manager is responsible for all activities of social and livelihoods component. Six credit officers were assigned for group formation, loan disbursement, savings and loan instalment collection and other project activity and issues were discussed in the group meeting. Accountant is responsible for the microfinance related accounts, financial transaction at branch level and prepares the financial report for organization and TA team. Assistant accountant - cum office assistant is responsible for maintaining accounts, stock and preserving all the documents of the SLS component.

Base line survey:

The assigned staff of micro finance conducted base line surveys and collected data in the project area. The data collection covered all the households residing permanently in the area. The information was collected using a questionnaire jointly prepared by TA team and PNGOs, who organised an orientation to train the enumerators; a guide line was prepared to follow for each of question in the questionnaire.

Objectives of survey:

- To understand the scope for employment opportunities
- To understand the present socio-economic status of the area
- To understand whether it is possible to form and operate a group in the specific Samaj/ Village/Mohallah
- To investigate whether the aim of the programme would be reflected in the achievements of the area
- To support comparative analysis to find out the impact of the program

Each designated branch area is divided into 6 clusters and one credit officer was assigned for each, which contains a total number of 13-14 groups and about 350 to 400 households. All survey reports and data were preserved cluster wise.

Steps of survey

During survey time the following steps and techniques were followed as per guidelines:

- The survey has to start from one end of the Samaj/ village/ Mohallah
- Complete surveying the entire Samaj/ village/ Mohallah, and then go for the next one
- Provide serial number in the survey form for each household (HH)
- Get information directly from the family head of the household
- Follow-up the survey and provide feedback if necessary.

HH surveyed by the PNGOs

Estimated number of households was 28,000. After baseline survey by the PNGOs it was found to be 27,654 HH in five chars. A report was completed in 2013.

Formation of groups and criteria

The Group is the main institutional platform of organisation for poor people. This is the nucleus of the micro-finance program because member admission, savings mobilization, the entire loan proposal preparation, loan realization, income generating activities of micro-finance program, and social awareness activities would all be implemented through these groups. In the member admission form, survey serial number will be mentioned. Those who are not enlisted during survey should not be a member of the group but if necessary, can still be eligible for admission.

Group formation steps

- Probable member list has been prepared from survey report
- Small group discussion
- Large group discussion
- Finally, group declaration and member admission at the branch office

Member selection criteria

The *selection criteria* for group member are as follows:

- Membership is open for females only
- One household one member
- Age 18 years and above for the able-bodied
- Special emphasis on female-headed households and widows

Group formation steps

For group formation the COs will go members' houses and should take the following steps.

Personal contact

The Credit Officer (CO) has to make personal contact and discuss the necessity of the group and obtain consent for admittance to the group.

Group discussion

The CO selects five potential members and discusses regarding the objective of group formation and activities of the project. Discussion is later held in large group consisting of 15-30 women.

Structure of the group

1. 25 members on an average in each group.
2. Every group must have a management committee comprising President, Secretary, Cashier; other small group leaders will be members of management committee.

Formalities of group declaration

During the group declaration, the respective CO must complete the following formalities and steps:

1. Fill up the admission form and collect signatures of the members and committee
2. Formation of the small group and selection of the small group leaders by the small group members
3. Formation of management committee by the group members
4. Distribute pass books to each member (members must pay money as per organization's rule for the pass book cost)
5. Collect admission fee from each member
6. Fixation of the place, time and day of weekly/fortnightly/ monthly meeting.

Group declaration

Group declaration is announced by the branch manager in presence of all members.

Group formed by the PNGOs

A total 26,373 members were enrolled in 984 groups up to December 2017, which is 95% of the households. Each NGO group has 27 members on average. Each group has a management committee (one president, one secretary, one cashier and two general members, a total of five members).

Savings collection

PNGOs are collecting savings from the enrolled members on a weekly basis in the group meeting at the rate of Tk 10-50. Some members are depositing more than 50. A total savings balance Tk. 111,000,000 (Eleven crore ten lakh) was collected up to December 2017. Average savings per member is Tk.4,208. If necessary, members can withdraw contribution money in case of emergency or crisis following the organization rules.

Loan disbursement

PNGOs are disbursing loans in line with beneficiaries' skills. A total of 91,146 loans were disbursed, amounting to Tk.1,687,500,000, among 24,788 borrowers (all of them received their first loan from the project). The average loan size in the reporting period was Tk. 18,500. The total member coverage by loans is 93%.

Insurance policy for beneficiaries

Every PNGO has an insurance policy. Such policy is a safeguard for the group member. If a group member/spouse dies, then she/he gets the benefit. This insurance policy is administered by the PNGO's own insurance policy, and the payment to the nominee in case of death of either the borrower or their spouse is Tk. 2,550. A total of 366 people have received Tk 933,300 during the project period.

Training provided to PNGOs staff

The PNGO provided the training as specified in the budget plan and organised orientation, and discussion on social issues and problems prevailing in the area. In order to generate income and maximize the livelihood of the beneficiaries and also arrange training to develop the capacity of the beneficiaries, the TA team has provided training to the PNGO staff: 13 branch managers, 13 assistant accountants and 78 credit officers.

Training provided to the beneficiaries

Women were generally not treated as equal with as men in the pre project period. The CDSP-IV area is characterised by a typical rural setting where most of the char dwellers are involved in poultry rearing, cow rearing vegetable cultivation, fishery etc. or are unemployed, as scope is limited. The women and girls of chars are mostly involved in household work and did not have much importance in the family affairs. To achieve the project's social and livelihood objectives, the PNGO group members have been trained by



PNGOs on both farm and non-farm Income Generating Activities (IGAs).

Farm IGA training provided to the beneficiaries for increasing their income at HH level through microfinance was provided by the PNGOs. The sectors and numbers trained are: poultry rearing 6,455, cow rearing 3,987, goat rearing 1,636, beef fattening 1,231, winter vegetable cultivation 1,501, summer vegetable cultivation 1,652, fish culture 5,440 (total 21,902).

Table 2: Sector wise IGA training

Name of training	Number of participants
Poultry rearing	6455
Cow rearing	3987
Goat rearing	1636
Beef fattening	1231
Winter vegetable cultivation	1501
Summer vegetable cultivation	1652
Fish culture	5440
Total	21902

Nonfarm IGA Training:

Tailoring is one of many non-farm IGAs on, which a total of 199 women project beneficiaries have been trained to help them to be able be earning members of their family. The effectiveness and impact of non-farm IGA-tailoring is empowering them as well as improving their social status.



The total of those receiving farm or non-farm IGA training was 22,101, or 80% of the group members.

Monitoring and supervision

The Microfinance Coordinator of the credit program is solely responsible for the performance and outcome of the programme. He/she pays the day to day visits to check the field activities, using a monitoring check list and taking necessary measure if there are any lapses or gaps in implementation. He also shares and informs senior level management so they can mitigate any problems in implementing the program, and maintains liaison with the TA team and other stake holders.

The TA team members are responsible for follow up and support for project related activities such as baseline survey, group formation, savings collection, sector wise loan disbursement, outsourced training (staff training), trainer selection, training place/venue for IGA training, module preparation, need assessment, beneficiaries training (farm IGA and nonfarm IGA), risk fund payments and documents and activities, making sure these are properly implemented in the field.

Reporting

All reports regarding the microfinance are furnished as required by the TA team and Palli Karma Shohayok Foundation (PKSF), by the staff and coordinator of PNGOs. The frequency of the reporting is monthly and quarterly and the narrative is per contract agreement between TA and PNGOs. In addition, further reports may be given as and when required by TA team.

Outcome of the microfinance program

So far 22,101 beneficiaries were trained on farm and non-farm IGA, which is 80% of the members. They are investing their microcredit funds in various income generating activities like poultry rearing, cow rearing, goat rearing, summer vegetable cultivation, winter vegetable cultivation, fish culture, beef fattening and agro-nursery-farming, including nursery development.

124 trained women tailors are operating tailoring houses in a profitable way. All of them became an earning member of their families. Their monthly income ranges between Tk 5,000 and Tk. 15,000. About 35% of the women tailors became master tailors and they are providing training to the girls and women with reasonable fees. 75 women are earning Tk 4,000-5,000 by making nicely designed caps, which are exported to Arabian and other countries.

110 women are involved in developing plant nurseries. These women are producing and selling seedlings, fruit saplings and medicinal plants to char dwellers. They are earning Tk 20,000-50,000 from their nursery business. Some of them have invested in secondary income generating activities like poultry farms, carrier-vehicles like "Nochimon" (local mechanized carrier), low lift pumps and paddy threshing machines.

Interventions

Special savings deposit scheme is a new intervention in char area. Most of the char dweller have no access to formal banking and are not able to invest their savings in proper places. PKSF funded NGOs (SSUS, DUS and SDI) in the char area have started three different schemes for investment - monthly deposit scheme, double deposit scheme and fixed deposit scheme.

Ways forward

Microfinance is the way to self-development for unprivileged people. PNGOs can make direct relationships with entrepreneurs, making sure that the money is not being misused. They select entrepreneurs and ensure training in relevant fields, after which they invest their money. As a result, social and livelihood development takes place and the repayment rate is secured.

Case study: Mrs. Hamida Begum.

Mrs. Hamida Begum (37 years), wife of Md. Belal, Saidpur Somaj, Char Nangulia, Hatiya, District Noakhali.

Migration: Her family has migrated from Char Laxmi Bangla Bazar, Subarna Char. They have taken a piece of land from the *bahini* and took shelter there 16 years ago.

Participation in group: Hamida joined CDSP IV's partner NGO (SDI) in 2011. She and her husband have joined five types of FLIs (WMG, FF, SFG, TUG and NGO). Hamida has received training on agriculture, fruit and vegetable production, poultry rearing, cow rearing, and leadership training, supported by CDSP IV.



Credit and capital: Hamida has taken a loan five times. Last loan amounted to BDT 50,000. She has invested her loan in farm management (paddy cultivation, sorjon method, pond preparation for fish culture and cow rearing).

Land settlement and titling: Hamida has got Khatian (registered title) of an area of 150 decimals with 50% for the wife and 50% for the husband. They are both very happy and grateful to CDSP IV for giving permanent settlement status. There was always uncertainty from a threat that the *bahini* can evict them. She is also very happy that now she has individual ownership of 75 decimal land (0.3 ha) which is very uncommon in the Bangladesh context.

"CDSP IV made me a landowner of 75 decimal, now I feel socially secured and recognized by the family and society. We are able to retain our land, and nobody can put illegal pressure on us, even the bahini, to evict us as because government has given us legal title. It makes a stronger bond between husband and wife and will reduce the frequent divorce by husbands which was frequently happening before in the coastal area. Moreover, we are secure in the production of crops for three seasons with 3-5 times more yield, after obtaining training and getting rid of the bahini which had forcefully taken our paddy and frequently demanded subscriptions. Pure drinking water and sanitary latrines reduced our diarrheal diseases. Now we live here with extreme happiness but erosion is knocking on the door, just 1-2 km away. So, we hope the authority will come forward to do some measures for protection"

In addition to training, she has also received some inputs like HYV and hybrid seeds of paddy, and vegetables, a pedal thresher and fertiliser. She has received a vermi compost plant for making fertilizer. While before the production of rice on her land maintained her family for three months only, now they can produce rice during three seasons on her land as well as vegetables in the homestead area. This year her family sold country bean seed worth Tk. 2,50,000, paddy worth Tk. 65,000, fish worth Tk 40,000 and vegetables worth Tk 200,000.

3. WATER AND SANITATION

Introduction:

Water and sanitation crisis affects both project coastal chars and adjacent areas and is a matter of water scarcity and water quality. Latrine usage by the community was very poor and the resulting diarrheal diseases were a major health problem, so many children were badly affected each year in coastal areas. Diarrheal diseases had close biological and socio-economic links to the problems of malnutrition, poor maternal health, high fertility and child survival. Water and Sanitation provision was very scarce in char areas and during certain seasons people living there found it difficult to obtain safe water for drinking and household purposes. So, the Department of Public Health Engineering (DPHE) and four PNGOs participated in the project, under the supervision and coordination of CDSP-IV. As a result, CDSP-IV has made commendable progress in supplying safe water and sanitary latrines to its people.



The project installed 1,541 Deep Tube Wells (DTWs); 1,541 repair tool boxes were distributed for DTW maintenance and the project also installed 26,909 single pit latrines: one to every household. A total of 3,064 participants obtained training DTW repair and maintenance work as well as sanitation and hygiene promotion. It may be noted here that a total of 525 DTWs were in the CDSP-IV area in the pre-project period; of these, 96 DTW were installed during CDSP III.

Goal of the Sub-component:

To ensure easy access to safe water supply and improved sanitation and hygiene facilities for sustainable management of water and sanitation in the project chars.

Objectives

- To contribute to the improvement of the public health issues of disadvantaged women, children and men in the coastal project chars
- To contribute to reducing morbidity and mortality caused by water and excreta-borne diseases
- To ensure adaptive learning and emphasise demand responsive activities to end open defecation.
- To promote sustainable behaviour changes related to safe water supply and sanitation facilities
- To strive to bring about sustainable management by the char community of safe water supply and sanitation facilities

Target beneficiaries

All the char dwellers are the target beneficiaries of the water and sanitation sub component and tube well user group (TUG) members are 100% female.

Strategy of implementation

The sub-component was implemented by the Government agency DPHE by providing a deep tube well (DTW) for every 15 to 18 households, taking into account of existing tube wells and households. For those who were economically capable of contributing there was a payment of Tk 4, 500 for each tube well; the contribution should never be provided by a single household, but the cost distributed among a local group according to capability. On the other hand, there is no provision of payment contribution for single pit latrine installation.

The PNGOs supported the DPHE along with TA team members by assisting the formation of tube well user groups (TUG) consisting of one woman member/family, site selection for DTW installation, contribution money collection and deposition to DPHE and by ensuring capacity building support is given to the beneficiaries. The project also provided one kit box for each caretaker family for small/minor O&M work.

The DPHE supplied one single pit sanitary latrine to every household (HH) in the project area and partner NGOs ensured the establishment of the latrine super structure.

Interventions performed under the sub-component are the following:

- Institution building; TUG formation
- Integration of hardware and software activities
- Gender balanced and equitable WatSan activities
- Coastal community management for sanitation and hygiene promotion
- Focus on demand responsive and decentralized services through partner NGOs
- Ensuring people's participation and cost sharing by char dwellers
- Ownership management to ensure sustainable support.
- Operation in line with the national policy for safe water supply and sanitation

Priorities for action on behaviour

Water and sanitation program activities are prioritized in the following six areas:

- i) Safe and clean water
- ii) Latrine use and faeces disposal
- iii) Environmental cleanliness
- iv) Hand washing
- v) Food hygiene
- vi) Diarrhea management.

Implementation by TA team and PNGOs

Technical Assistance team has ensured support DPHE for performing of project activities and has supervised and monitored the implementation of partner NGOs. Fund support to PNGOs has been provided through the TA team as per planned. At community level project activities

are done by the assigned PNGO with linkage with DPHE and with the support of the TA team. The concerned NGO Sector Specialist (NSS) of the TA team ensured support for the partner NGOs for effective implementation, reaching planned quantity and quality achievement, capacity building of staff and beneficiaries, supervision and monitoring etc.

Support mechanisms with the implementation agency DPHE

DPHE, CDSP-IV, and PNGOs organise meetings to resolve issues related to the sub-component. At the field level, the PNGOs interact always with DPHE and TA team about programme management and implementation and the XEN of DPHE is invited to NGO coordination meetings if needed.

Staff capacity building

The WatSan coordinator (NGO) is the key person of this sub-component for implementing water and sanitation related activities at the field level under the supervision of the NGO Coordinator. All the coordinators were trained in staff capacity building by the TA members, on DTW O&M and installation of sanitary latrines, and related care of these activities. The TA team organised frequent orientation and refresher courses for 13 staff four times to enhance their skill and capability to implement the sub-component through community mobilization initiatives and sustainable water and sanitation issue promotions.

NGO group orientation meeting

The NGO credit group is the main women's group sustained by concerned PNGOs and is used as a means of inception for the water and sanitation sub-component. The respective PNGO branch manager and WatSan coordinator disseminate the key issues of the WatSan sub-component. These have proven to be very effective and the WatSan coordinators have conducted 2,500 credit group meetings.



Tube-well user group (TUG)

To end the crisis and to ensure easy access to safe drinking water in the project area DPHE has been installing DTWs. Soon after installation, the maintenance work becomes essential to keep the DTW active and hygienic. A TUG is formed with 15-18 households adjacent and settled within 5 to 10 minutes walking distance of the selected site.

Members live in a surrounding area and are willing to contribute deposit money for the DTW installation. The objective of the group is to create a forum for discussion of shared community assets management and maintenance of the tube-wells. Two women members of each (TUG) group have been selected to train as caretakers for the DTW's small repair and maintenance activities. After establishing a consensus, a group is formed. In total 1,541 TUG have been formed.



DTW's contribution money collection

PNGOs collect beneficiaries' contribution money at the rate of Tk.4, 500 per tube-well. During the period Tk. 6,507,000 was collected and deposited to scheduled bank accounts of DPHE.

DTW installation and platform construction and maintenance

It is the responsibility of DHPE to install the DTW and to construct the platform. But the TUG checks the water colour and water pressure after installation of the DTW. They also clean the platform regularly.

Care Taker Families (CTF) are trained by PNGOs on DTW maintenance work; as a part of maintenance work caretaker families wash and clean the platform during the times of collecting water.



Platform repairing by CTF members

During long term use of the DTWs, the platforms develop cracks, plaster drops out and a hole is created at the point of water falling. In accordance with the proper utilization and sustainable use of the platforms, CTFs take effective measures to make early repairs to the platforms. If needed, TUG members sit collectively and collect money among beneficiaries.



Hygiene promotional activities

Community people use the latrine but they do not follow hygienic practices. Sometimes the promotional activities of hygiene depend on human behavior, which requires education, and depends on family status, living standard, social environment and quality of life etc. So, the partner NGOs tried to make the community aware through promotional activities.

The TUG and other related formal meeting

The TUG meeting is held bi-monthly or with an NGO group meeting and the discussion agenda is on safe water uses, sanitation and hygiene system improvements issues. The key issues of meeting enhance social empowerment and ensure community involvement in WatSan. A total of 9,874 monthly meetings were held with TUG members.



In addition, a total of 578 school sessions were held and 31,224 participants attend the meetings.

Innovations

Meeting with adolescent girls

Among adolescent girls, mentoring work on sanitation, hygiene and other health work is effective. This is a peer approach to methods of sanitation and hygiene promotion. The adolescents were trained on family planning and sexually transmittable diseases in these meetings, family planning and the disadvantage of early marriage. 3,105 adolescents were trained and work as mentors in the community.



Orientation of imam and teachers

A total of 11 Imam and teacher's workshops were held and 243 participants were trained and played an active role on the issues of water use, sanitation and hygiene promotion.



Support to DPHE for latrine site list preparation and submission

While DPHE started the construction of items for single pit latrines, the TA team informed the PNGO to prepare and submit the site list to the TA team office. On the basis of one household one member, the PNGO has prepared a site list for the final checking and approval of latrine distribution. TA team checked and verified the site lists with DPHE. 26,500 single pit latrine sites were prepared by partner NGOs.

Support sanitary latrine distribution and installation

After single pit latrine (ring and slab) production is completed the TA team is informed for distribution. TA team then informs the PNGO to make an arrangement for ring/slab distribution. NGOs prepare referral slips and distribute to the enlisted members. Through coordination with DPHE, PNGOs ensured distribution of 20,892 sets for latrine installation.

Community member or the household owner take steps to install the rings/slabs as soon as possible.



Ensured sanitary latrine super structure

After latrine installation steps have to be taken to prepare the superstructure or cover the latrine by fencing. Superstructure or cover of the latrine should be done to ensure women's safety during use. Without superstructure, latrine cannot be used. So far 20,643 superstructures were completed in the period.



In view of the project objective, initiatives and innovation were taken as follows:

a) Water collecting from DTWs b) Water carrying and safe storing c) Cleanliness of latrine, d) Safe water use in latrine, e) Sandal use at latrine, f) Hand washing after latrine use, g) Mother hand wash after child washing, h) Household use of safe water.

Activities to ensure sustainability

To ensure a successful and sustainable management outcome of the sub component, the following have been undertaken:

DTW follow up and monitoring: DTWs physical appearance, functioning condition, nut-bolt replacement, water leakage and fittings are monitored by WatSan coordinator; if any unusual condition steps are taken.

CTF activity monitoring: When CTF is active in care taking of DTWs, it would be well furnished, painted, with clean platform free from moss and algae, no meadow grass around or cracks in the platform. So monitoring feedback makes the caretaker active.

Latrine monitoring: Superstructure condition, hygienic use, surrounding area, water source, communication and maintenance etc. Findings make the beneficiaries aware and more efficient in latrine use.

Credit group and TUG monitoring: These groups were monitored to ensure easy access to safe water and 100% sanitation coverage.

Performance highlights

To ensure the access to safe water and sanitation for all, the projects provides a large number of DTWs and sanitary latrines. Most of the communities are made aware of the uses of safe water, sanitation and hygiene, and also of sanitary latrine environmental hygiene, in order to get free from common diseases.

Table 03: Program Performance

No. of TUG formation	1,541	Staff capacity building training	13
No. of CTF selection	3,064	Imam and teacher involvement	243
Contribution money collected (Tk)	6,507,000	Adolescent involvement	237
No. of TUG formation in project Chars	1,436	Care Taker Families trained in project Chars	2,884
No. of TUG formation in neighboring Chars	96	Care Taker Families trained in other Chars	190
No of DTW installation	1,410	DTW repairing kit box supplied	1,532
DTW installation in neighboring Chars	85	Credit group orientation meeting	2,500
Platform repair and maintenance	760	Super structured established with cost	1,100
No. of single pit latrine installation	20,643	Easy access to safe water ensured	98%
No. of SPL superstructure ensured	20,643	Sanitation coverage	74%

Key success of the sub- component:

CDSP-IV, through its Water and Sanitation sub component, was able to ensure a basic minimum level of service for all the beneficiaries of the project area as follows:

Water supply service level: Ensured water point of DTW's for each household within 33 m distance of household premises and collection time reduced to within 20 minutes, ensured through the project.

Sanitation service level: Project ensured one household one latrine to reach basic minimum sanitation service level; every household got a separate hygienic latrine with appropriate fecal sludge management system and whole family may share a hygienic latrine.

Hygiene service level: Ensured the basic minimum service level for hygiene that is hand washing with soap and promotion of menstrual hygiene management.

Main streaming gender: Ensured involvement of women as generally the managers of Water and Sanitation and also the guardians of hygiene enforcement.

Outcome of the activities:

No open defecation, use of hygienic latrines by all, proper maintenance of latrines for continual use and improved hygienic practice are the factors of 100% sanitation. Water, sanitation and hygiene promotional activities, focus on household water treatment, safe storing of water, hand washing with soap at critical moments and hygienic disposal of human excreta.

The key indicators of behavioral outcomes for the Water and Sanitation sub-component are:

Major intervention	Outcome/ Indicators
Availability of safe drinking water	98 % of HHs has access to safe water available within average 50-60 m distance from DTWs installed by the project
Safe storage of water	93% HHs are used to storing water in safe storage containers
Access to basic sanitation service	74% of HHs has access to an improved sanitary facility
Use of soap or ashes in the latrine	79% of HHs has soap and water at a hand washing point inside latrine
Hand washing with soap at critical moments	75% of HHs with soap and water at a hand washing point commonly used by family members
Time spent for collection water	96% HHs can collect drinking water within 20 minutes.
Treatment of waste water	90% of domestic wastage water is treated through recommended process
Time spent for disposal of human excreta	80% of HHs spends less than 10 minutes on travel to public facilities fo hand washing with soap at critical moments.
Hand washing station used	77% of HHs with soap and water at a hand washing station commonly used by family members.
Changes due to safe water and sanitation	Significant reduction of water borne diseases like diarrhea, hepatitis, scabies etc.

Impact of improved WatSan

Access to preventive health services significantly reduces vulnerability of the poor households to illness-induced income erosion and expenditure crisis. Thus, reduction in fertility and improved health are important for poverty alleviation as well.

Contributes to human resource development

Healthy citizens are considered, as capital resource for a nation while people with ill-health are burden for that country. WatSan contributes to make the people healthy through a process of socialization that produces workable manpower and reduces unwanted treatment cost for a family and the country can give more attention to the development of its members.

Reduces women's burden and enhances their participation

Women are to collect water for drinking and other domestic purposes and they are to wait from dawn to dusk for defecation. Collecting water from a long distance and waiting for long for defecation affect seriously the physical and mental health of women. A safe water point, house hold latrine within their reach and adequate knowledge along with practices contribute to



reducing their burden and to their healthy survival. It helps to save time for women which they can use in productive and other social activities. Within 0-33 m distance the women are able to collect healthy drinking water. It helps women to earn money and learn new things in terms of capacity building in social and economic areas that contribute directly to women's empowerment

Contributes in family planning

Healthy children not only reduce the physical burden of women, they also help in always keeping mental peace among all family members. Improved mental health also promotes active participation of both male and female in the development activities. Assurance of child survival has been found as one of the important preconditions to birth control. Improved WatSan situation has contributed significantly to the reduction of child mortality and morbidity rates that directly result in population control.

Contribution to environmental development:

Managing of household solid and liquid wastes hygienically contributes to promoting a better environmental situation. Reuse of human excreta and household waste in economic activities, such as composting for fertilizer can also contribute to reducing use of chemical fertilisers.

Challenges and opportunities:

There are some factors that have negatively influenced the project activities to be implemented directly and indirectly in the polders. These are:

- **Non-functioning of DTW:** A small number of non-functioning DTW remain unused. TA team provides report to DPHE and also discusses in other forums. This has also led a delay in other program activities of these project areas.

- **Maintenance of DTW platform:** Some platforms have broken and gone out of order after a period of construction due to lack of usual maintenance work. This has led to a worse situation and contaminated water in use with a negative result in the community.
- **TUG management deteriorated:** After 2-3 yrs of DTW installation TUG did not function well due to lack of steps by management committee. As a result, DTW maintenance fee collection was disrupted.
- **Maintenance of sanitation facilities and focusing:** Although household owners are responsible for operation and maintenance of sanitation facilities, they were found to be generally not very active considering its priority. The blocked toilets were left unattended for several months due to lack of initiative from the household. In the coastal areas the sanitation facilities were not maintained properly and found to be not cleaned for a long time.
- **Sustaining hygiene behaviors at school level:** Non-availability of soap, water, unclean or unhygienic or inadequate number of toilets in chars has adversely impacted the access and use of sanitation and hygiene facilities and practice of hand washing with soap by children in schools in char areas. These factors have also impacted the attendance of girls and boys in schools as they had to go out of schools looking for other clean toilets for urination or defecation. Shortage of water during summer forced the school children to use stones or sticks as anal cleansing material and vandalized the water line at the hand washing facility.
- **Introduce local village committee:** It would be very helpful for community development at the coastal village to initiate the formation of village WatSan committees
- **Local NGO initiative:** Local NGOs in the project area will sustain their normal activities and the contribution of the local NGOs can run all the relevant project activities.

Lessons learned from the sub component

The key lessons, which emerged from discussions, are outlined below:

- Most NGOs accept need to fully involve all members of a community in the implementation of their activity.
- Greater priority has been attached to collaboration with the community work through the Tube well User Group (TUG), which ensured participation in meeting and training.
- On gender issues, some NGOs can offer very positive experiences in successfully involving women, particularly in community mobilization and hygiene education.
- The supply-driven approach in service delivery could not always meet the need of the low-income group.
- Demand driven approach for water supply delivery should be initiated for sustainability.
- Health impact is particularly difficult to assess and requires activity monitoring in sufficient detail.

Case Study: Women break the mould by taking up construction work

Parul Begum (aged 35) the wife of Mohammad Siraj and Nargis Begum (29), wife of Mohammad Nurujjaman, both live in Islampur on Noler char. Parul has three daughters and two sons, and Nargis has two daughters and one son. Previously, they used to live in Char Changa on Hatiya Island and have been living on Noler char since 2006. Both of them bought 160 decimals of land each for Tk.30,000 paid to one of the 'bahini' leaders. In 2012, they became members of a microcredit group set up by SSUS, one of the CDSP IV PNGOs. Both Parul and Nargis now have titles to their land.

In the 2015-2016 financial year they worked on the construction of a market at Thanar Haat by joining a Labour Contracting Society (LCS) organized by the Local Government Engineering Department (LGED), one of the implementing agencies of CDSP IV. The LCS was an all-woman group with 34 members. This team has received training from LGED. Parul was the president and Nargis was the secretary of the LCS group. They have worked to build latrines, drains and concrete roads inside the market, while a male LCS group constructed the market sheds.

The women's LCS group purchased bricks, sand, cement and other materials from Halim Market of Subarnurchar. Nargis and Parul, along with the other LCS members were paid a wage of Tk. 250 per day. To gain the required expertise the group employed two male masons, paying them a daily wage of Tk.300. After completing the work, each member of the group received Tk.34,000 as their share of the profit on the contract.



Nargis and Parul mixing concrete

Later Parul and Nargis are working on another LCS contract, this time with the Department of Public Health Engineering (DPHE). The LCS is making ring slabs for latrines. For this work they received one day of training from DPHE. They signed the contract with DPHE in October 2017, and the value of the contract is Tk. 500,000. They also employed two masons for this work, paying the senior mason Tk.600 per day and the other Tk. 500 per day. According to the contract, they will have to make 200 sets of ring slabs, each with six rings and two slabs. Initially they received Tk.400,000 as per the contract and are hoping to earn a profit of 10% from this work.

Parul is also a Traditional Birth Attendant (TBA) and was paid Tk.700 per month as monthly allowance from CDSP IV. She is a member of the Al-Amin Non-Government Primary School Committee as well. Nargis cultivates different types of vegetables. She has three cows, four goats, twenty-five ducks and fifteen chickens, along with two ponds where she raises fish. This year she has earned Tk.12,000 by selling three goats. Nargis has studied up to class eight. Recently, she has been working as a health facilitator in the Samriddhi project, with a monthly salary of Tk.3,250. Parul and Nargis thanked CDSP for employing them as LCS members and for engaging them to make ring slabs. They would like to get more work of this type, maybe on other chars.

4. LEGAL AND HUMAN RIGHTS

Introduction:

Background research in the project areas shows that settlers lack knowledge about property rights, especially about land right registration and mutation process etc. and generally about family laws, (marriage law, registration etc.). The settlers are in a vulnerable position regarding land ownership. Besides, women rights issues within the family and society need to be addressed. The main objective of this program component is to provide group members access to information about law, disseminating the law through legal literacy classes, raising awareness about legal rights, and empowering the poor, especially women, both legally and socially by encouraging them to take legal action when appropriate.

Staff training

Project staff were trained on Legal and Human Rights issues. The objective of the sub-component is to inform the group members and community about several critical laws, human rights issues through training and other awareness-raising activities. Apart from group members, male household members are trained on legal and human rights issues. The TA team organized one week long training programs for 26 personnel (one coordinator of LHR sub-component and one Branch Manager for each branch area) on these issues.



LHR promoter selection criteria and training

The following criteria were followed to select the LHR promoter:

- Permanent resident of project area
- Female
- Education passed classes VIII or IX
- Married
- Age between 18 – 45 years
- Willing to work in the community
- Socially accepted
- Able to spend time for course.

Promoters are selected from the beneficiary group or community and receive 15 days training organized by the TA team.

Seven basic laws were selected to be explained to the beneficiaries these are:

1. Muslim family marriage law
2. Hindu family marriage law
3. Muslim inheritance law
4. Hindu inheritance law
5. Land law
6. Criminal law
7. Bangladesh constitution law



Meetings with group members

The LHR coordinators conducted meetings with NGO group members. The purpose of the meetings is to make the people aware on LHR and social issues and the meeting was held after the credit group meeting is over. A total of 9,878 NGO group members attended the awareness discussion meetings.

Refresher training of LHR promoters

To develop the capacity of the promoters of the LHR program, two day refresher courses were conducted in the branch office. The content of the training concerns updated information and overall course conducting. The coordinators of LHR program facilitate the refresher trainings. A total of 3 batches of refresher training were held and in total 39 promoters attended the refresher courses.

International women day observation

To make the project area people aware of Legal and Human Rights, 'International Women's Day' was observed in all branches of the PNGOs. Normally a rally and a discussion meeting are held on the day. People from all walks of society attend the occasions. 68 events were observed in the project areas.



Child rights day observation

To make the project area people aware on the rights of children, Child Rights days were observed in all branches of PNGOs. Normally a rally and a discussion meeting are held on that day and people from all walks of life attend the occasions. Events were observed in all NGO branches in the coastal community and 62 events were observed.

Human Rights day observation

To make the project area people aware of Human Rights, 'Human Rights day' was observed in all branches of PNGOs. Normally a rally and a discussion meeting are held on the day. People from all walks of society attend the occasions. 62 events were observed in all branches in the project areas.



Orientation meetings with local social leaders

An orientation meeting for local stakeholders such as union Parishad members, Imams of mosque, marriage registers and other influential people in the community is annually organized to disseminate information on human rights and legal issues and to constructively engage them to minimize unlawful activities in the society and to develop a sustainable society. The orientation is provided to them at community level in the branch office. After the orientation an action plan is prepared, and follow-up is given by the LHR coordinators of the component. A total of 1,575 persons received orientation.

Training of beneficiaries on legal and human rights

To raise mass awareness among the PNGO group members is one of the objectives of the LHR program and the program adopted various activities to perform this. One of them is training to selective beneficiaries. 20% of the beneficiaries received training on legal and human rights on seven basic laws. This 20 % includes members of the group management committee, who act as a law implementation committee and disseminate the messages and take action against any violation of human rights. All the selected beneficiaries received training by participating in different events organized by PNGOs: the total recipients are 5,174.

Legal courses for beneficiaries

Courses on LHR are conducted by the LHR promoters in each group in the project. The duration of the course is 22 days. During the project period 533 courses on LHR issues were organized for 13,173 beneficiaries on legal rights so they could disseminate their learning in the community. For completing each course, the LHR promoter receives Tk. 2,000 (Tk. 1,500 from the project and Tk. 500 from beneficiary contribution; course participants contribute Tk. 20 each for the course).



Law implementation committee (LIC) meeting visit

After completion of each course of LHR in the group, a Law Implementation Committee is formed comprising 9 members, headed by the best performer in the LHR course. The

committee makes linkages with all local level institutions including Union Parishad and assists to implement the program and disseminate and collect information regarding early marriage, dowry, divorce etc. in the Samaj. Each committee conducts a meeting once in a month and discusses about the progress and updated information of social issues in the meeting. In total 4,536 meetings were held and 1,229 LIC committee meetings were followed up. Soon after hearing information of an event the committee members try to solve the problem with the local people. Thus, for example, they are prohibiting early marriages in the project area. LICs stopped 93 early marriages in the reporting period.

Marriage registration

The rate of marriage registration in the project area was very low compared to the mainland since people in the area are not well aware of the need to perform this. In our LHR program special emphasis is given to registration of marriages. The staff of the program collect the information and undertake necessary measures and it is observed that the rate of marriage registration is increasing gradually. In total, out of 3,516, 3,372 were registered with a Kazi (marriage register) office.

Outcome of the activities:

Due to successful implementation of planned activities under LHR sub-component of SLS component, child marriage and multiple marriages reduced significantly. 100% group members have become aware of the bad practice of dowry and illegal divorce and the rate of illegal divorce has significantly reduced by 70% compared with the pre-project situation. 96% of marriages occurred with registration and 60% of families have now taken joint decisions on any important familial issues. Through observing the days of human rights, women's rights and child rights the community is more aware and more aligned with society as well as the country.

Recommendations

- Expedite efforts towards elimination of all forms of discrimination against women
- Eliminate discriminatory provisions regarding marriage, divorce, inheritance, distribution of property and child custody and also consider the adoption of a uniform family code
- Ensure effectiveness in eliminating violence against women.
- Take urgent legislative measures to prohibit early and forced marriage, and other practices which are harmful to the well-being of women and girl children.
- Ensure that persons with disabilities have access to disability-friendly services and opportunities.

5. HOMESTEAD AGRICULTURE AND VALUE CHAIN DEVELOPMENT

Introduction

Bangladesh is predominantly an agricultural country. The food grain production has increased in recent years but despite these gains in total output, hunger and malnutrition remain a persistent problem in Bangladesh and the country has the highest child underweight rate in South Asia. Millions of children and women are suffering from one or more forms of malnutrition including low birth weight, stunting, underweight, vitamin A deficiency, iodine deficiencies disorder and anemia. Malnutrition is a serious public health problem in Bangladesh. It retards child growth, increases the risk and duration of illness, reduces work output, and slows social and mental development. Malnutrition among women of reproductive age increases the risk of mortality during labor and delivery and puts their newborn children at risk of long-term deficiencies. In char area this problem is very common. Improving nutritional status, including micronutrient status, can lead to increased productivity, increased child survival and growth and reduced maternal morbidity and mortality.

Home gardening activities are centered on women and can also increase the income of women, which may result in the better use of household resources and improved caring practices and empowerment. This empowerment of women also addresses a priority area of poverty alleviation and provides important socio-economic returns through lower health and welfare costs, lower fertility, and lower maternal and infant mortality rates. Thus, the simultaneous impact of home gardening programs in terms of giving women a voice and promoting their full participation in domestic life can make an important contribution to the overall development of communities.

Char Development Settlement Project (CDSP)-IV is implementing a Homestead Agriculture and Value Chain Development program to reduce malnutrition and to increase the income of households by agricultural production of beneficiaries through technology transfer, using training, demonstration plots and other activities which are described below. The program objectives are:

- to utilize maximum resources of the homestead for growing vegetables and fruits
- to promote new technologies as recommended by CDSP-IV around homesteads
- to enhance intake of vegetables and fruits for ensuring family nutrition
- to increase cash income and facilitate women empowerment
- to contribute in improving livelihood conditions of char dwellers
- to organize producers and market actors for a fair price

Rational of homestead agriculture and VCD

The Noakhali coastal region is prone to multiple natural threats such as cyclones, storm surges, tidal surges and floods and above all, climate change. Scarcity of drinking water, erosion, water logging, water and soil salinity have also slowed down social and economic development. Since people do not have ample employment opportunities round the year, their food security situation is vulnerable. The majority of the people in coastal areas are involved in crop cultivation and fishing and they remain frequently unemployed due to tidal flooding and other natural disasters. Poverty is linked to malnutrition, with the highest levels of malnutrition occurring in areas of extreme poverty. Within Bangladesh, char families are considered to be the most vulnerable to food insecurity, with households utilizing the majority of their income on food.

Diet diversification is arguably the most sustainable and affordable strategy to improve nutrition for the majority of the population-- particularly the poor. For poor households, vegetables and fruits are often the only source of micronutrients in the family diet. Homestead production of fruits and vegetables provides the household with direct access to important nutrients that may not be readily available or within their economic reach. Therefore, home gardening is a good means to improve household food security. Equally important, home gardening has been shown to be a source of additional income, because the household can sell a portion of the garden's produce. This additional income is generally utilized to purchase supplementary food items, further increasing the diversification of the family's diet. Home gardening is especially important in overcoming seasonal availability of foods and promoting household self-sufficiency.

Home gardening inputs

Access to the necessary inputs for gardening from a local, sustainable source is an important element for successful gardening. Home gardening, like any agricultural activity, requires a certain number of inputs, as for example providing seed, seedlings and saplings, fertilizer, a regular water supply, irrigation, training and technical support, environmentally friendly soil improvement techniques, pest control, fencing, and credit or capital as necessary etc.

Seed

Such inputs include seeds, in the project area there were none of them present for establishment of homestead garden. Households in this area were using local variety seed and produced very small amount of seasonal vegetables. Quality seed is one of the most critical inputs for home gardening and farmers of the char area produce most of their own seed. In general, farmers mainly produce seeds from traditional and limited varieties and these seeds tend to be of lower quality. The seed storage system at farmer level also deteriorates the seed germination. So, improving availability of improved varieties and ensuring availability of quality seed was a high priority.

Technical assistance, demonstration and training

The project area beneficiaries lack technical know how to prepare bed or pit for better production of vegetables and have little technical knowledge about the management of saline soil. So, their vegetable production was hampered by salinity intrusion. Technical support is especially important when new gardening techniques are being promoted such as growing new or increased number of hybrid varieties and year-round vegetable production. Demonstration is a suitable process for agriculture technology dissemination to farmers. Training and other group activities around a central demonstration garden can serve to demonstrate different varieties, hybrids or other important gardening techniques such as quick compost, vermi compost, use of natural pesticides, year-round production technology, use of integrated pest management etc.

Nutrition education through training and gardening activity

At the same time as understanding the indigenous approach to gardening, an understanding of the cultural context and feeding practices and constraints will guide nutrition education to achieve sustainable behavioral changes. The garden or nursery can also be utilized as a focal point for nutrition education and marketing to promote increased consumption of micronutrient rich foods. In addition, messages about a diversity of other issues that influence nutrient absorption and overall health such as prevention of childhood illness, timing of meals/foods and other factors that inhibit nutrient absorption can be presented to households and discussed among mothers and household members.

Target beneficiary and implementation

The total households of the CDSP-IV area is about 28,000. All households are directly or indirectly benefited by training, demonstration, motivational tour, field day observation, regular follow up and technical support by PNGO staff and the Technical Assistance (TA) team through the group approach. All targeted beneficiaries are women.

Project output/Component	Target	Achievement
Output 1. Capacity development through farmers training on fruits and vegetables	13,520	13,520
Output 2. Community development and technology transfer by demonstration (High value crop demonstration)	7,824	7,824
Output 3. Technology dissemination by motivation tour and field days observation	47 and 270	47 and 270
Output 4. Community development and technology transfer by demonstration (Organic agriculture practice and high value crop demonstration)	120	121
Output 5. Technology transfer by vermi compost demonstration	1,487	1,487
Output 6. Horticulture nursery development	125	125

Impact on human assets

The main element of the project was development of the “human assets” of the target groups, enabling them to raise production and improve income. Adoption rates of hybrid variety cucumber, bitter gourd, snake gourd, ridge gourd, tomato, yard long bean, bottle gourd, radish, cauliflower, cabbage, watermelon, country bean and vermi compost fertilizer increased and cropping intensity increased.

Impact of physical assets

Roads and markets

The impact of the rehabilitation of rural roads and markets is clearly reflected in the daily lives in the project area. Maintenance costs were reduced, and thereby such investments became feasible and profitable. Movement of produce to markets was eased, thus enabling the small farmers to diversify into the production of high value, perishable vegetables. Increase in the demand for transport provided work for the landless. Land value increased and way-side small business flourished.

Staff training

All concerned six Agriculture Coordinators were trained to provide training on applied nutrition and adoption of modern technologies appropriate for coastal area. Training contents included high value and low value crops, importance and opportunity, objectives of homestead gardening, importance of vitamins, importance of homestead vegetables, intervention design, production process of vegetable, pest control, monitoring and evaluation, value chain development etc. Five days basic training course was planned and conducted by the TA team.

Farmer training on fruits and vegetables

Training and technical assistance are very important for technology dissemination and solving problems for homestead gardening. In the project period 13,520 farmers received training on fruits and vegetables. To conduct this training session two training modules have been developed. Training content was important, and all trained farmers received inputs (seeds, saplings, fertilizer) from the project.

Demonstration plots

Progressive farmers have been selected for demonstration plots to introduce new technology and dissemination to others. In the project period 7,824 farmers were given orientation on high value crop demonstration plots by introducing new technology adoptable in their homestead area (1,600 mixed fruit orchards and 5,678 plots with high value vegetable production).

Table 04: Crop and vegetable varieties introduced in the CDSP-IV area

Season	Name of crops	Name of introduced hybrid and HYV
Summer	Cucumber	Alin, Daisy, Alavi, Alavi green, Fungtong, Falan-2, Falan-339, Mahabir(HYV), Eva, Thailand 1, Shahajadi, Green line, Green bird, Laki -7
	Okra	Hisoft, Evergreen
	Kangkong	Gima kolmi
	Banana	Amrito sagor, Local Bangla kola
Winter	Tomato	Roma-VF(HYV), Ratan (HYV), Godagari super, BARI hybrid 5, Anokhi, ACI Super, Tripti-2, Apurbo
	Cabbage	Tropical 33,
	Cauliflower	Snow white
	Spinach	Badhua, Sufala palong-1
	Bottle gourd	Marsha super, BARI Lau 4
	Batishak	BARI Batishak 1
	Chili	Biddyut, Fire volcano
	Radish	Tasakistan, Bright white
	Water melon	Glory, Feng baw
	Coriander	Green leaf, Green aroma
Year round	Bitter gourd	Tia, Papia, Papia super, Munia, Bulbuli Machranga, Goge corolla, Mehoman (HYV)
	Sweet gourd	Sweet baby, Sweet gold, Sweet boy, Sweet diamond, Beauty, Local (HYV) Baromasi (HYV)
	Ridge gourd	Green star. Durjoy, Summer short
	Snake gourd	Cobra, Suprima, Rosni, Asha
	Yard long bean	Kagor notuky, 1070
	Red amaranth	Altapeti, Lalmia, Lilabati

Demonstration plots (IPM)

Project area farmers have been selected for demonstration plot to introduce Integrated Pest Management (IPM) dissemination for safe production by reduced application of insecticides, using organic pesticides. Farmers often use a huge amount of pesticide in their fields according to the suggestion of local pesticide traders and as a result soil fertility deteriorates and production costs increase day by day. Considering the soil health improvement and reducing the cost of production in the project area, a VCD component was introduced with fermented

plant juice and 121 farmers were orientated on integrated pest management in high value crop demonstration plots in their homestead areas.

Leafy vegetable

There are about 28,000 families living in 5 chars in the project area; some of them live only in a hut without homestead area and some households have a small homestead area. These homesteads are the most effective and dependent production units for food, family earning, fuel, timber etc. Research findings show that per capita vegetable consumption in Bangladesh is only 28g against the daily requirement of 200g to 250g. Rural consumption of leafy and non-leafy vegetables has remained more or less the same. This is far below the minimum daily consumption of



400g of vegetables and fruit recommended by FAO and the WHO. Home gardening is an integral part of food production. Fresh vegetables and fruit produced in the homestead can contribute more by providing increased opportunities for economic empowerment, household food security, and access to nutrition round the year and conservation of the natural agro-ecosystem. In view of this, 220 events of CDSP-IV model year round vegetable demonstrations have been established with activities of homestead fruit gardening.

Mixed fruits demonstration

Homestead food production contributes to improved household food security of young children and women in poor populations. In the project area were established 1,645 mixed fruit gardens and also 38,940 saplings of different species of fruit were distributed for household orchard development.



Dragon fruit

Dragon fruit belongs to the family Cactaceae and grows best in dry, tropical or subtropical climates where annual rainfall ranges from 500-1250 mm per year. Fruit is highly appreciated, the flesh is firm and crisp, with a delicately sweet and lingering flavor. The average fruit weight is 350g and storage ability is one to three months depending on temperature and humidity. Market price is very high in our country. The crop was introduced in the project area in 2015 and

55 dragon fruit orchards have been established with 495 dragon fruits sapling distributed to the farmers.



Rain water harvesting scheme

In the coastal area rabi season crop production is a major challenge and has constraints such as i) drought ii) scarcity of irrigation water iii) high soil salinity in dry period and iv) low water retention capacity of soil. To minimize the challenges and constraints, rain water harvesting is one of the newly introduced technologies in the area to preserve rain water during rainy season and irrigate around homestead area during dry season (January-April). The social and livelihood component established 44 rain water harvesting schemes as a pilot for dry season irrigation. Each scheme covers a 50-70 decimal area for pit crop vegetables such as cucumber, water melon, bottle gourd, bitter gourd etc. in Rabi season and early Kharif 1 season. Though it is one of the most appropriate technologies for coastal area, it needs more work to be done in future to gain a success.



Open rain water harvest



Closed RWH by lid

Vermi compost plant demonstration

High salinity during dry period (Rabi season) and low organic matter content in soil is another challenge for vegetable production in the area. To combat this challenge and to improve soil texture/structures vermi compost, quick compost and mulching have been introduced for better crop production. The application of organic fertilizer improves the texture, structure and

functional qualities of soil. It also increases microbial activity and the soil with this characteristic is very important for proper growth of plant and crop. Vermi compost and quick compost significantly decrease soil bulk density and salinity and increase total organic carbon. The soil also contains a high percentage of humus that can insulate plant roots from extreme temperatures, reduce fertilizer leaching, soil erosion and control weeds. As a result, it reduces production cost, returns good profit and improved soil health development, and also is easy for preparation by the farmers. To encourage organic farming and reduce cost of production 1,487 vermi compost plants were established in the project area.

Outcome and impact of vermi compost: Farmers reported faster rate of seed germination and rapid growth of seedlings and they are getting better production through use of vermi-compost

- Water holding capacity improves when vermicompost is used repeatedly in crop fields
- Use of vermi compost significantly reduces growth of weeds (nearly 50%)
- Less attack of pests and diseases due to use vermicompost
- Farmers are getting 30% to 40% more production due to use of vermicompost
- Use of vermicompost reduces salinity and this is very important for the soil in coastal char land where salinity is very high
- Taste of fruits and vegetables becomes very good
- If vermicompost is used for fruits and vegetables then these can be stored for 6 to 8 days and in case of chemical fertilizer, produces can be stored for maximum 3-4 days
- There are a higher number of fruits per plant and in vegetable crops, and it can become commercial by selling the excess worms.



Farmers are selling their excess worms to other farmers at Tk.1.0 -1.50/piece which provides another income source.

Motivation tours and organized field days Motivation tours and field days are another way to disseminate agricultural technology. In the project, 47 motivation tours and 270 field days were organized to encourage the farmers to grow good crops by exchanging experience from fellow farmers. Some new vegetable varieties and techniques were introduced in the project area such as cabbage, cauliflower, cucumber, and bitter gourd. Regarding a hybrid variety of this, it was found that the farmers harvested 3-4 times higher yields than with their existing traditional varieties, so farmers have shown their interest in cultivating hybrid varieties.

Active nursery: 125 Nurseries were developed in the project area of which 110 are actively involved with seedling/sapling production. Each nursery owner receives seven days residential training. Training contents were: selection of location, objectives, nursery materials, poly bag soil preparation, seed germination process, sapling management, marketing etc. A total of 1,804,783 saplings were produced up to December, 2017. 1,307,935 saplings were sold worth Tk.10, 079, 221.

Capacity building on value chain development (VCD)

Staff training

All concerned agriculture coordinators were trained in the VCD program. Training contents were: definition of value chain, understanding sub-sector and value chain, overview of value chain, value chain selection matrix, value chain analysis, market analysis, potential products, opportunities and constraints, competitiveness analysis, services analysis, role of middlemen, intervention design, monitoring and evaluation and enterprise management. A five day basic training course was organized and conducted by the TA team; the trainer was an International Development for Enterprise (IDE) expert. After receiving training the coordinators prepared an action plan for value chain activities

Value chain development

Initially CDSP IV SLS component was implementing a value chain development program to increase the income of the farmers through agricultural production and linkages with local retail and wholesale up markets. All the market actors are working together and identifying problems and opportunities for collective sales and purchase.

Involvement of DAE in VCD

During implementation of the program the project realized that the VCD program has to be involved with DAE for sustainability of increasing production in field crops; this opinion was supported by subsequent recommendation by IFAD supervision mission. Hence a value chain coordination committee has been formed headed by Project Director CDSP-IV (DAE part), PNGO representatives, and TA team to facilitate intensively the value chain program and properly implement the recommended activity.

Activities of DAE

➤ Demo (no)	140
➤ Training 1day	60 batch
➤ 4 days	12 batch
➤ Motivational tour	10 events
➤ Field day	5 events
➤ Workshop	4 events

Activities of PNGOs

➤ Training batch	130
➤ Input distribution farmers	2470
➤ Refreshers training batch	22
➤ Vermi compost plant establishment (no)	1487
➤ Field days	270 events
➤ Motivational tour	47 events
➤ Collection center committee (no)	11



Production potential of CDSP-IV area

1. **Vegetables:** Okra, Cucumber, Bitter gourd, Country bean/Country bean seeds, Yard long bean, Bottle gourd, Snake gourd, Tomato, Sweet gourd
2. **Oil crops:** Soybean, Ground nut
3. **Pulse crops:** Felon, Green gram (Khesari)
4. **Spices:** Green chili,
5. **Fruits:** Watermelon, Banana, Papaya
6. **Other:** Milk, Fish, Poultry (indigenous)

Priority product

Okra, Cucumber, Country bean, Country bean seeds, Tomato, Bitter gourd, Sweet gourd, Soybean, Green chili, Watermelon, Methi and local Banana

Country bean/country bean seed is a traditional and most common crop, found in all CDSP-IV project chars; farmers started introduction of this crop around homestead areas during the pre-project period. Seed contains 21-25% protein and 85% unsaturated available fat that indicates high nutritious value for humans. In the Periodic Agriculture Survey 2014, it was found that this crop is intensively produced in all chars and covers more than 2,000 ha. It became a commercial cash crop and farmers are marketing the products. They prepare a seed bed in June-August and it takes 4-5



months before harvesting the crop in December-February. Farmers are utilizing their land (road side, homestead area) for country bean production because of its intensive adoption in the coastal area. It has a special adaptable character that farmers can grow well without using any chemical fertilizer and less cultural practices. Average yield is 7-10 t/ha but a good harvest can be obtained if HYV and modern practices are followed. The average price of the seed is found

to be Tk 40-50/kg (in local market). Local Foriya (middle man) transport these country bean seeds to various markets of Dhaka, Comilla and Chittagong, and BD Food and other private companies export the product to foreign countries.

Cucumber is a traditional crop (Shosa) of coastal area usually grown in homestead area found in Char Nangulia and Urir Char with low yielding local varieties. After introduction of project intervention with hybrid varieties such as Alavi, Alin, and Greenline, farmers started producing during the summer (Kharif-I) by Sorjan method adopting Integrated Pest Management (sex pheromone) and harvesting 12-15 t/ha, which 3-4 times more yield than with the local variety. In the Periodic Agriculture Survey 2014, it



was found that it is intensively produced in Char Nangulia and Urir Chars and covered more than 1,000 ha. United Leasing Company has distributed Tk 15-18 million to support the farmers of Char Nangulia as agriculture loan for cultivation of Cucumber. It became a high value commercial crop for farmers with pre-marketing assurance of the product. They prepared seed beds for seeding in March-April and it takes about 35-40 days for harvesting the crop in the months of May-August. Almost all the farmers produced cucumber through Sorjan method by making small dykes and seeding in the pit. In the furrows sometimes they are practicing short duration fish culture. The average price is found Tk 20-25/Kg but is Tk 35-40 during Ramadan (in local market). They are marketing this Cucumber to Comilla, Dhaka and Chittagong.

Okra is one of the vegetables grown in char area adjacent to CDSP-IV where there is an established a value chain to market. It can be grown in winter and summer, and in winter its market value is higher than in summer. Farmers sell their production in the local market, so there is market price gap between local market and wholesale market. Char Ziauddin and Char Nangulia are suitable for winter okra cultivation. Hybrid variety Hisoft and other local improved varieties are used in the chars. Most of the households in both the



chars (2,680 HH) have suitable cultivable land for Okra production. All the stakeholders are trained up on value chain with emphasis to use HYV quality seed, production technology, harvesting techniques, sorting, grading, packaging, market analyses, market information, contract growing and link with wholesalers.

Tomato is one of the most recent promising crops for project chars and is widely practiced in Char Ziauddin, Char Nangulia and Noler Char. Some HYV and Hybrid varieties such as Roma VF, BARI tomato etc. are found suitable for adoption with prevailing salinity in these areas and are having a satisfactory yield. The farmers of the areas have already entered the existing value chain for their product.

Chili is a traditional spice of the area. Farmers are cultivating local varieties which are having salinity resistance characteristics. Mainly green chili is marketed in the area. With the declining trend of salinity DAE has been trying to replace this with some HYV and hybrid varieties for enhancing additional yield. So chili in the coastal chars may be another crop with potential in the existing cropping pattern.



Water melon is a high value crop which was successfully introduced into the CDSP previous phases where the farmers are producing it intensively as a high value commercial crop. A strong value chain has been established with a wide marketing network in Noakhali, Chittagong, Comilla, and Dhaka. Farmers are getting financial loan support from the wholesaler/aratdhar of Dhaka Kawran bazaar as pre-season loan. The loan amount can be adjusted during the harvesting time with minimum interest. Hence pre-season marketing is ensured with minimum investment by the poor farmers. So the watermelon is an upcoming high value crop for the project area farmers. By this time DAE has introduced watermelon in the area and it has proved to be a promising value chain crop for the area.



Sweet gourd: Sweet gourd is a high nutrient content popular vegetable. It is one of the suitable vegetables for char dwellers because it can be easily preserved in natural temperature and conditions. Char area people traditionally grow this vegetable in their homestead and cultivable fields. This variety was a low yielding local variety. After project intervention we introduced hybrid varieties such as Sweet Baby, Sweet Gold and Beauty, with farmers producing it during winter season. They adapted the conventional



method for pit preparation, use mulching in the pit, sex pheromone trap for pest management and are harvesting three times more yield than the local variety. Matured sweet gourd is suitable for storage, so farmers in the char area preserve sweet gourd for 1-4 months for better price later.

Formation of producers' groups

After receiving training, the trained agriculture coordinator with the help of branch staff selected growers and market actors. A total of 520 lead farmers were selected to start value chain activities because of their relative advantage over other producers in that they possess resources (land, tools etc.) that they can use to increase their production, have financial capacity, and have potential to engage with local and regional markets. Village-based groups were formed informally through the facilitation of staff at the beginning of the activity. Meetings were used to discuss the groups' purposes, the advantages of collectively buying inputs and selling products in bulk and plans on how they organize themselves for mutual benefit. Producer groups develop increased social capital.

Training/refresher training for growers and market actors

In the project area 520 growers and 120 market actors are selected. The growers and market actors receive a comprehensive orientation on program methodology as well training about value chain development. Then the market actors and growers selected the value chain products through participatory methods, considering market demand, growth potential and the potential number of targeted people who are engaged in production. After the value chains are selected, the group carried out in-depth analysis of different channels and



segments, constraints, opportunities and remedial measures. Producers are linked to the buyers, arotdar, suppliers, local technology provider, (Agriculture Coordinator) and government agricultural extension office, which provided them technology training. In order to increase producers' knowledge of input quality, the project disseminated information about the specifications for quality agricultural inputs. This includes information on the specific varieties or species of seeds, and other inputs that best suit geographic and seasonal variation. All the growers and market actors received refresher training for better performance and to incorporate new ideas into their future plan.

Selection of groups/producers

Agriculture Coordinator of NGOs with the support of branch staff selected growers and market actors; a total of 520 potential lead farmers were selected to start value chain activities. Village/samaj based groups were formed informally with the support of field staff. Discussion meetings were held, and the group members discussed the advantages of buying inputs and selling products in bulk collectively and made plans to organize themselves for their own benefit.

Strengthening the capacity of the growers for business relationships

The households receiving training are provided with productive assets and inputs through a loan from microfinance institutions. Systems are put into place for on-time market information (Collection Centre), and technical assistance on productivity and quality is mobilized through government agencies and the PNGOs' technical personnel.

Distribution of hand sprayer for organic pesticides uses

Women are encouraged to develop skills to prepare cheap homemade organic pesticides as for example neem based organic insecticide, soap mixture, mahogany seed extract, Bordeaux mixture etc. Homemade organic pesticides are used to spray for easy control of aphid, mite, white fly and other fungal diseases of vegetables. As a result, they can produce chemical free vegetables for their family consumption. Organic pesticides reduce the cost of vegetables production. Small size (2 liter) hand sprayers were distributed to tackle the vegetable growing challenge in the char area.



Establishment of collection point

The locations of the collection points are selected based on the needs of the business group. It is considered as a **marketing information centre**, whose purpose is to build linkages between the villagers and the wholesale centre, processors and major buyers. A total of 12 value chain product collection points are established in different locations of the project area. A priority list of collection points has been selected with the support of DAE - PNGO coordination committee. In addition, 6 collection points are being establishing by the MIDPCR project of LGED. For the market development point of view these collection points contribute to a great extent to all the stakeholders involved in the value chain.



Formation of "Collection Point Management Committee (CPMC)"

A CPMC is formed in and around each collection centre and looks after all activities related to value chain and management of the centre. A collection point management committee consists of eleven members. Regular meetings are being organized afterwards to encourage learning between business groups and encourage sharing of important contacts like input suppliers or

buyers. Their role is to keep close contact with buying agencies and provide marketing information to the village units.

Distribution of digital measuring balance and plastic basket case

Producers are cheated by local traders in measuring their products using handmade balance. A total of 13 sets of measuring balance with measuring unit for fair measurement of producer product and 260 numbers of plastic cases for carrying, sorting and grading of products have been distributed to Collection Point Management Committee (CPMC) and both market actors and producers are using those value chain materials in their respective areas.



Table 05: Year wise value chain and 'up market' product

		2013 (t)	2014 (t)	2015 (t)	2016 (t)	2017 (t)	Increase from 2013 to 2017 (%)	Up markets
1	Country bean seed	1611	2890	4509	6916	3015	187	Maijdee, Chowrasta, Chowmuhani, Nimsar, Comilla, Kawranbazar, Jatrabari, Dhaka, Riazuddin market, Chittagong, Mahipal, Feni
2	Country bean	2136	1899	2259	2693	5312	248	
3	Cucumber	2422	3639	6319	8858	5535	228	
4	Bitter gourd	1380	1675	1879	2189	3112	225	
5	Snake gourd	1294	1825	2158	2459	3090	238	
6	Ridge gourd	1067	1323	1622	1806	2013	188	
7	Tomato	1031	1268	1405	1429	500	48	
8	Yard long bean	1177	1676	2050	2664	3919	332	
9	Sweet gourd	1555	1806	1866	2046	2912	187	
10	Okra	1169	1515	1521	1670	1712	146	
11	Chilli	695	770.48	929	903	1102	158	
Total		15537	20291	26524	33633	32222	207	

Case Study: A progressive vegetable grower

Ozifa Khatun, aged 43, is a mother of five children and the wife of Abul Kalam. Her three elder daughters are married and only her youngest daughter and son now live at home. The family were originally from Panchayet village in Ochkhali Union, on Hatiya island, but lost all their land and house due to river erosion in 2001. After that they moved to Char Mohiuddin Bazar of Subarna Char, where her husband got a job making ring slabs for latrines. This was their only income and they had no land. In 2005, they settled at Idris Majhi samaj on char Ziauddin, and occupied land from *bahini*.

In 2011, CDSP-IV carried out a survey at the community level and in April 2012 Ozifa became a member of the project. At the time, they earned their livelihood by farming, but with poor quality land and in ignorance of modern agricultural methods, they could not get a good profit. Meanwhile, Abdul Kalam had a stroke and became permanently disabled. Ozifa had to spend much of their meagre income on his treatment, which left her financially vulnerable. She was wondering how to overcome this crisis and support her four member family.



Ozifa and her children weeding vegetables



Ozifa selling brinjal

Ozifa produces large numbers of seedlings of brinjal (aubergine) and tomato to sell to other farmers. This season sales of brinjal seedlings were Tk 30,000 and tomatoes Tk15,000. She has developed a good reputation in the area as a supplier of good quality seedlings. In the following year, she has earned a net profit of Tk.55,000 from vegetables and seedlings. Ozifa has achieved this success despite her disabled husband. Her son, who studies in class 5, and her daughter in class 2, help their mother in the field whenever they can. She also raises livestock and has a fish pond.

During this period of hardship, Ozifa once met the Agriculture Coordinator of CDSP IV. After hearing her problems, he advised her to plant high yielding seeds on a small area of land using modern agricultural techniques. She agreed to be nominated as a model farmer of the agricultural sub-component of project. DAE provided seeds of improved varieties of vegetables along with nets, fertilizers, vermicompost, pheromone traps, and a hand sprayer. Using the knowledge from her training, along with the inputs and the advice from the Agriculture Coordinator, Ozifa was able to earn a large profit from vegetables.



Case study: Vermi-compost

Fatema Begum, Occupation: Agriculture, Micro Finance group name: Gayer Badhu Mohila Somity. Date of admission: 2-5-2012. Village: Uttar Majlishpur, District: Noakhali.



Fatema came from main land Hatiya due to Meghna river erosion 14 years earlier and lives with three children along with her husband and mother-in-law. There was no road, bridge, culvert, cyclone shelter, embankment, educational institution, safe drinking water, sanitary latrine, transport facilities etc. Law and order situation was very bad and *bahini* ruled the coastal char. Their family income was monthly Tk 2,000-2,500 only and they led their lives from hand to mouth.

DUS, one of the partner NGOs of Char Development and Settlement Project (CDSP)-IV started work at Bhumihin Bazar, Noler Char from 2012 and Fatema Begum joined the MF group named Gayer Badhu Mohila Somity. She meets with the agriculture coordinator in a weekly meeting and has shown interest for establishing a vermi-compost plant. The Agriculture Coordinator visited her homestead and selected her for the demonstration which cost Tk. 1,000.00 only. She started with 2 rings and 500 worms and takes care as suggested by the Agriculture Coordinator. She collected about 750 kg vermi-compost fertilizer, using 550 kg in her home gardening area and she sold 200 kg vermi-compost to her neighbor. She also sells worms: 700 @ 1 Tk. per worm and in total earned Tk. 9,000 from the vermi-compost plant.

She is happy because her unproductive saline land has turned into productive land and she has reduced the chemical fertilizer needed for cultivation. She invested more money for extension of her vermi-compost plant; in following years she sold about 1,500 kg compost and 3,200 worms and earned TK 22,000 by which she renovated her house and spent on the education of their children. Now she has discovered a new source of income within her easy reach.

6. FISHERIES

Introduction:

Bangladesh is one of the richest countries of the world in respect of water resources. The republic has vast water bodies in the form of river, canal, estuary, haor, beel, lake and ponds. Bangladesh is fortunate to have 1,290,000 ponds and tanks covering an area is about 150,000 ha. These resources offer great opportunities for immediate development of the fisheries sector to meet the requirements of for valuable protein rich foods, also in the coastal areas.

Fisheries sector is second to agriculture in the overall national economy of Bangladesh. It plays an important role in the development of the economy, nutrition, employment generation, protein intake, poverty alleviation and foreign exchange earnings and also in the improvement of the socio-economic condition of poor people. It is generally agreed that 80% of the locally produced animal protein food supply in Bangladesh comes from fisheries sources.

Pond culture in Bangladesh is mainly major carp-oriented farming practice. Some exotic fish species such as silver carp, grass carp, common carp, and Thai Sarputi, and also tilapia have been introduced to our country for their aquaculture potential. Use of high yielding, fast growing fish with proper species combination and stocking density along with appropriate production technologies may help us to boost the fish production in CDSP-IV areas. And thus, practice of polyculture as well as monoculture as the scientific basis for the fish farmers is of great importance in these areas too.

CDSP IV started the Fisheries subcomponent in the project area in October 2014. Earlier RFLDC-Danida implemented the program and worked in CDSP area till 2012. But after phasing out of RFLDC, lack of services from government or non-government was reported by FLIs and project beneficiaries and they have been demanding such services from CDSP-IV. The IFAD supervision mission also recommended including fisheries activities in CDSP-IV areas at least on a minimum scale. Accordingly, the issue was discussed and approved in the PMC meetings of CDSP-IV. Thereafter, a short-term mission (Dr. Harvey Demain) on 'Development of the fisheries and livestock systems in the Chars of CDSP-IV.', was fielded (Mission report no. 7), which detailed the possible interventions on fisheries in CDSP-IV during remaining project time.

The TA team of CDSP-IV appointed one NGO Sector Specialist (NSS) for Fisheries in November 2014 having experience with RFLDC-Danida. In the meantime, concerned four PNGOs (Brac, SSUS, DUS and SDI) recruited six coordinators for fisheries program from 19th October 2014.

Baseline survey information

TA team prepared a survey questionnaire to conduct the baseline survey on the fisheries program. A simple guide line was also prepared as a supportive document to carryout survey by the concerned coordinator of PNGOs. The TA team compiled data and preserved it for future action.

Base line survey was conducted during July- December 2014 jointly by TA team members and PNGOs. The information has been provided below.

Table 06: Fisheries baseline data

Sl. No	Name of Char	Name of Branch	Perennial/Annual Pond		Seasonal Pond		Total Pond	Total Area (Dec.)
			No	Area (Dec.)	No	Area (Dec.)		
1	Char Nangulia	Hazi Idris Mia Bazar	666	9450	1318	5575	1984	15025
		Salim Bazar	999	16121	921	6917	1920	23038
		Jannata Bazar	876	14454	1648	10891	2524	25345
		Kaladur Bazar	705	11095	1269	9556	1974	20651
		Solaiman Bazar	159	3552	891	8438	1050	11990
Total			3405	54672	6047	41377	9452	96049
2	Noler char	Saddam Bazar	396	4558	1181	5351	1577	9909
		Alamin Bazar	739	12389	1134	7896	1873	20285
		Bhumihin Bazar	157	2221	1205	9152	1362	11373
Total			1292	19168	3520	22399	4812	41567
3	Caring char	Bathankhali Bazar	12	149	214	1167	226	1316
		Mujib Bazar	8	163	222	2555	230	2718
Total			20	312	436	3722	456	4034
4	Char Ziauddin	Char Jiauddin	448	5892	1148	6250	1596	12142
5	Urir char	Urir char	1091	21002	782	6843	1873	27845
Total			1539	26894	1930	13093	3469	39987
Grand Total			6256	101046	11933	80591	18189	181637

Synopsis of table

- Total water bodies (181,637 decimal) : 735 ha
- Total number of ponds in project area : 18,189
- Total number of perennial ponds : 6,256
- Total number of seasonal ponds : 11,933

So, considering the available water bodies there is an enormous potential for fish culture in the project area. From the baseline survey, it is found that maximum beneficiaries completely depend on natural fish food. Very few fish farmers use supplemental feed, but if they culture fish by using supplementary feed, the fish production will increase significantly which will contribute nationally.

Objectives of fisheries program:

- To cover maximum water bodies under improved fish culture
- To develop knowledge and delivery of modern technology by giving training
- To increase the fish production by using sustainable technology
- To improve livelihood and socio-economic status of char dwellers by fish farming
- To enhance protein consumption
- To ensure the availability of quality fish seed for fish farmers
- To reduce the fish diseases in the project area
- Overall to improve sustainability of fish culture management

Program implementation status

CDSP-IV implemented the fisheries program in the project area from October 2014 with technical support and services by the project for the char dwellers. The following activities were performed during the project period.

Pond Selection

There were 27,654 households in the project area. After completion of the baseline survey, Fisheries Coordinators (FC) selected 18,189 ponds (perennial 6,256 and seasonal 11,933), which cover 181,637 decimals (735 ha) of water bodies for fish culture in CDSP-IV areas

Initially work was started with the perennial (annual) farmers and seasonal farmers of selected households under the five chars (Char Nangulia, Noler Char, Urir Char, Caring Char and Char Ziauddin) and 12 branches of our four partner NGOs (PNGOs) such as **BRAC, SSUS, DUS and SDI** in the project area. But due to river erosion and land taken by the army only 11 branches are functioning till February 2017.

Staff development training for Fisheries Coordinators, PNGO

Six fisheries coordinators have been recruited by PNGOs in five chars. In January 2015 a training session on basic technical knowledge and management of fisheries program was organized by the TA team for the newly appointed staff to develop their skills. A detailed technical training module was developed and fisheries experts from the TA team contributed as resource persons in the training. The training course curriculum also includes practical sessions on different technical methods for better understanding and practical knowledge. The duration of training was eight days.

Training on fingerling production management and input distribution

There was no scope to collect quality fish seed for the beneficiaries; before the project, farmers has to collect their fish seed from the local *hariwala* with traditional unknown quality. Hence the TA team has arranged a three day long outsource training on “Fingerling Production Management” for fish nurserers. A total of 108 female beneficiaries were selected with specific criteria for the training program to develop the fish nurserers and three days residential training programs on “Fingerling Production Management” in 11 batches were conducted at Khasher Hat SSUS training centre in Noakhali during 2015/2016. Also 42 female farmers had two days training in the same subject at branch level; in total 150 farmers have been trained.

To develop the capacity of trainees about modern technology, nursery management, quality fingerling production and management were the main topics of the training. The curriculum also covered pond preparation, feed preparation from local available feed ingredients, stocking density of spawn, information on common diseases of fish fingerling and some common treatments. The training was facilitated by the NSS (fishery). The trained persons were a total of 110.4 kg of fish spawn (Rui, Katla, Silver carp, Bighead, Mrigal, Kalibous, Sarputi, Grass Carp) from a fish hatchery and placed fingerlings in 133 nursery ponds. Out of the total cost, 75% of the cost of the spawn was given as input support from the project and remaining 25% was borne by the nurserers.



Fingerling production by fish nurserers

A total of 133 fish nurserers have produced approximately 53 lakh fingerlings in their nursery ponds during the project period. They have sold total 35,85,672 fingerlings to 5,440 annual fish farmers including 1,080 model fish farmers in the project area and outside; total price was Tk. 53,31,460. As a whole they have met the requirement of quality fish fingerlings for the selected farmers in the project area. Each nurserer has earned profit from Tk 15,000 to Tk. 65,000.



NGO-wise fish nursery training

Activity	BRAC	SSUS	DUS	SDI	Total
Fingerling production management	70	32	25	23	150

IGA Training on fish culture management

About 6,000 female beneficiaries under 11 PNGOs, branches were selected on specific criteria for the training program on “Improved fish culture management” to develop the fish farmers. At the branch level, the project has provided 2 days training to 5,440 fish farmers under IGA budget on fish farming (perennial and seasonal farmers). The curriculum covered pond preparation, feed preparation from local available feed ingredients, stocking density of fingerling, information on common diseases of fish fingerling and some common treatments. The training was facilitated by the NSS (fishery) and fisheries coordinator. A detailed technical training module was also developed for fish farmers by NSS (Fishery) team.

Fish production by IGA farmers

5,440 fish farmers including 1,080 model farmers possessing total water bodies of 227.49 participated in the field. They released approximate 36 lakh fingerlings in their own ponds. Most farmers released tilapia and others released different types of fish. At the end, they have produced approximately 616.93 tonnes of fish with a total price of Tk.6,20,03,500.



NGO-wise IGA training status:

Activity	BRAC	SSUS	DUS	SDI	Total
Fish culture management	2,790	1,206	787	657	5,440

Training on improved fish culture management for model fish farmers and inputs distribution.

1,080 female beneficiaries under 11 branches were selected with specific criteria for the training program on “Improved fish culture management” to develop model fish farmers. They were selected from 5,440 trained IGA fish farmers with water bodies totaling 73.30 ha.



At the branch level, two days training was provided to the model fish farmers.

NGO-wise model fish farmers training status

Activity	BRAC	SSUS	DUS	SDI	Total
Improved fish culture management	490	240	180	170	1,080

Fish production by model fish farmers

The trained farmers have received 741,800 fingerlings, 1,800,000 mono sex tilapia and 28,100 kg fish feed as an input support from the project. Most farmers have released tilapia and others have released different types of fish such as Rui, Katla, Mrigal, Sarputi, silver carp, grass carp, bighead etc. and they have produced approximately 245.61 tonnes of fish with a total price of Tk. 28,250,150. They have also produced 148.6 t of tilapia with total price of Tk.14, 871, 428

Meeting with group members and household visit by fisheries coordinators

The six fisheries coordinators (one person for two branches) were conducting meetings with group members. The purpose of the meeting is to make people aware about improved fish culture system and other technical fisheries issues. The meetings are held after the end of credit group meetings. 3,120 group meetings were held for awareness building on fish culture and total 10,086 household were visited by fisheries coordinators.



Innovation technology

Mono sex tilapia and other quick growing fish species such as carp and grass carp are cultured under **Sorjan method of vegetable cultivation** which was introduced for integrated fish production in ditches with vegetable cultivation in Char Nangulia.

Outcome

The project is working with 100% women farmers. Previously char dwellers did not use fish feed in their ponds. They consumed fish only for family purposes and did not fingerling stocking by counting. Now about 60% farmers are using fish feed in their ponds and doing fish culture commercially. As a result, fish production has increased five times compared with the previous period. 50% of farmers have earned a significant additional family income from their own ponds. They have invested/spent their income money for extension of fish farming by establishing more fish nurseries and contributing to family health, children's education, have bought cows and engaged in other agricultural activities. Most of the surrounding farmers are visiting the project farmers' ponds to know about their success and to adopt their technology in their own ponds.

Case Study:

Mrs Rezia Begum, member, MF Group in Samaj-Rikshapara, Branch Salim Bazaar, BRAC CDSP-IV, Upazilla Hatiya, District Noakhali.

Rezia is 35 years old and has lived in Char Nangulia since 2003. She was involved in the MF group from February 2012 and was depositing Tk 10-20 regularly and at present her deposit money is Tk.13,500. At first, she received three days training on fish farming under IGA budget from the project through BRAC. After that



she received three more days training on “Fish Nursery.” She is a very hard worker. After receiving the training she has established a fish nursery in her 15 decimal pond. She released 500 g spawn into the ponds as an input with the project support as well as technical support.

Her production cost was Tk.5,700 and she sold 37,500 fingerlings to model fish farmers and others. She earned a total of Tk.60,500 (average Tk. 2.0/fingerling) from her nursery pond after meeting family needs, but did not fulfill her surrounding fish farmers demand fully. So, she has decided that she will extend her nursery pond area in future. She is a role model for other fish famers in that area.

Challenges in fishery sector

- Non-availability of Tilapia hatchery in project area to get quality fish spawn
- Quality fish fingerlings are not available
- Lack of technological knowledge of farmers about use of fish feed in their ponds
- Most of the ponds are shallow; as a result these became dry in most of the time during December- April
- Quality fish feed is not available

Exit plan of fisheries program

DUS will ensure sustainability through the ‘Enrich’ program supported by PKSF. SSUS and SDI will ensure it through the ‘Ujjibito’ program and BRAC will sustainability in the field through their credit officers.

Recommendation

- More training on fish culture management is needed
- A fish and tilapia hatchery should be established through project / entrepreneurs
- More fish feed shops are needed in the project area
- More fish nurserers need to be established for quality fish fingerlings

7. POULTRY AND LIVESTOCK

Introduction

CDSP IV started the Poultry and Livestock subcomponent in the project area in October 2014. Earlier RFLDC-Danida implemented the program and worked in CDSP area until 2012. But after phasing out of RFLDC, lack of services from government or non-government was reported by beneficiaries and field level institutions. They have been demanding such services from CDSP-IV. The 2nd IFAD supervision mission recommended for including poultry and livestock services in CDSP-IV areas at least on a minimum scale. The TA team of CDSP-IV appointed one NGO Sector Specialist (NSS) for Poultry and Livestock on 23rd November 2014 having experience with RFLDC-Danida. In the meantime, concerned PNGOs recruited six coordinators for the poultry and livestock program from 19th October 2014 (each coordinator works for two NGO branches).

Poultry and Livestock rearing is one of the most important sources of livelihood for the settlers/farmers in the project area. Large and small ruminants are considered as an important barrier against risk. Livestock becomes a crucial part of household economy as a source of food and of financial as well as social security, while backyard rearing of poultry (chickens, ducks and pigeons) is an important source of subsistence. The average number of birds for each household is 10 chickens and 5 ducks (baseline survey, 2014). But livestock and poultry, productivity is affected by high mortality rate, especially among chicken and ducks. Typically, 50-70% of each clutch of baby chicks/ducklings was lost by disease (probably Newcastle/Ranikhet disease and duck plague) due to lack of vaccination service. CDSP-IV is implementing the poultry and livestock program to reduce the mortality rate and to increase household's income by rearing poultry and livestock with proper management and care.

Major objectives

- To reduce mortality of poultry population in the project area, start poultry vaccination programs for common poultry diseases
- Development of skilled poultry workers for vaccination at field level
- To decrease prevalence of infectious animal diseases, start livestock vaccination campaigns in the area
- To ensure proper veterinary support and treatment, development of trained local livestock professionals (Paravets) at field level
- Provide support to Poultry Workers (PW) and Paravets for vaccination programs and generate income through creation of revolving funds and regular procurement of inputs
- To reduce scarcity of fodder for livestock in dry seasons, provide training and inputs for cultivation of saline tolerant fodder grass at farmer's level
- Conduct a series of planning dialogues with district and Upazilla livestock officials, private animal health care companies and PNGOs
- Establish linkage between local Paravets and DLS for sustainable program activities after end of the project
- To improve knowledge, conduct credit group meeting discussion on improved rearing and management method for poultry and livestock, by PNGOs at field level

Baseline Survey (2014)

A survey questionnaire has been prepared to conduct the baseline survey on poultry and livestock program and compiled data and was preserved for use. Major findings from baseline survey are as follows:

Poultry rearing status

In the rural areas of Bangladesh, usually most of the households rear chickens and ducks using open system. All these birds are called domestic birds or poultry. Traditional poultry rearing gives supplementary income and an important source of protein from eggs and meat to the households without much additional investment.

The table shows that (without one SSUS branch in Caring Char) a total of 22,471 of the households (almost 100%) in the study area rear poultry. Survey reveals that the total number of domestic chickens is 237,553 and ducks is 122,082. The average number of domestic birds for each household is 10 chickens and 6 ducks. The number of households without any poultry vaccination program is 20,922 (93%) and only 7% of households received vaccination services from different sources.

Name of NGO:	Number of members (HH)	Table 07										
		Total number of poultry									Number of HH without poultry vaccination	%
		0-16 days Chickens	Older birds	Total number chicken	%	Average	Ducks	Average	%	Total poultry		
BRAC	9,760	43,623	48,326	91,949	62	9.4	56,317	5.8	38	148,266	9,053	93
SSUS	5,015	26,231	26,572	52,803	72	10.5	20,454	4.1	28	73,257	4,711	94
DUS	4,096	23,189	20,860	44,049	68	10.8	20,319	5	32	64,368	3,614	88
SDI	3,600	17,132	31,620	48,752	66	13.5	24,992	6.9	34	73,744	3,544	98
Total=	22,471	110,175	127,378	237,553	66	10.6	122,082	5.4	34	359,635	20,922	93

The way of poultry rearing was 98.6% in open system and 1.4% in semi scavenging system. About 98.7% of HH used locally available feed and 1.3% of HH used commercial poultry feed. Average yearly income (in TK) per household from meat (chicken and duck) was TK. 2,375 and from eggs was TK. 835.

Livestock rearing status

In rural areas, livestock are an essential part of all households. They plough the land, provide milk and meat and cow dung is the best known fertilizer/manure; it is also used as fuel for cooking; livestock reproduce fast and sell at a high price. Cattle hide is one of the major economic and export commodities of the country.

In the table the total number of cattle was 32,020, buffalo 7,527 and goat/sheep was 20,814 with an average number of three livestock per household. Around 78% of livestock holding families were outside the livestock vaccination program coverage.

Table 8: Livestock population in CSDP-IV area

Name of NGO:	Number of members (HH)	Total number of livestock											
		Goat/ sheep	Average	%	Cattle	Average	%	Buffalo	Average	%	Total Livestock	HH without vaccination program	%
BRAC	9,760	4,267	0.43	26	12,035	1.2	73	137	0.01	0.8	16,439	7,683	79
SSUS	5,015	1,808	0.36	23	5,914	1.2	76	19	0.003	0.2	7,741	3,882	77
DUS	4,096	1,122	0.27	17	5,377	1.3	82	41	0.01	0.6	6,540	3,106	76
SDI	3,600	13,617	3.78	46	8,694	2.4	29	7,330	2.04	24.7	29,641	2,877	80
Total	22,471	20,814	0.93	35	32,020	1.4	53	7527	0.33	12.5	60,361	17,548	78

Feed and fodder for poultry and livestock

Cattle subsist on grazing where they get natural grass. Normally cattle consume grass directly from the field (Durva grass) but some farmers adopt a cut and carry system of grass (local aquatic grass) for feeding to cattle. Straw is also used for feeding during the harvesting season. About 10% of households practice supplying some concentrate to their cattle. While the animal is in late stage of pregnancy and for milking cattle owners take special care for feeding animals by adding concentrate in the ration. Concentrate is included with rice bran, oilcake and salt in the food basket. All the cattle owners provide rice gruel for their cattle, administered with water and salt.

Goat/sheep subsist on grass, tree leaves and kitchen (vegetable) waste. In case of goats and sheep, concentrate is given during the lactating period. Cattle meet part of their total demand for water from ponds and in homes farmers try to provide tube well water to their cattle. Goats and sheep also take water while scavenging if they can. Besides scavenging, most householders give rice and rice bran, and cooking waste to the chickens and ducks. Ducks also get food similar to chickens with less rice and an additional item of crushed shells.

Livestock and poultry products

In project area livestock are kept in order to meet the demand for milk, meat, egg and dung as fertilizer and fuel. Although cropping intensity is increasing in the area, due to mechanization of cultivation, demand for livestock draft power is now less significant.

Cow owners are rearing cows with the aim of getting offspring and simultaneously milk, which they consume and earn by selling. They nourish calves to grow them into adults and sell and in case of female calves they keep them to maturity as milking cows.

Goat and sheep owners rear animals with the aim of increasing the number in the homestead through offspring production and maturing them to earn a substantial amount of money through selling to vendors/butchers/other farmers.

Chicken and duck holders consume and sell eggs and allow eggs to hatch for offspring production. They also earn from selling pullets, cockerels and ducklings and often use the income for emergency expenditure.

Breed and breed characteristics of livestock and poultry species

Cattle: The major indigenous (deshi) cattle is a small non-descriptive, *Bos indicus* type, their mature body weight is 125-200 kg. These are slow growing, late breeding animals; average age at first calving is 42 months and they have a lactation period of about 7 months, inter-calving period ranges from 16 to 38 months. Only 2.5% of HHs practiced artificial insemination for cattle breeding with improved breed characteristics in 2014. The majority of these used semen of Sahiwal and RCC (Red Chittagong Cattle) breeds which are more adaptable in the char areas.

Buffalo: Buffaloes in the coastal region are of river water type and indigenous variety. They like to swim in flowing water and are thus mostly found in river basins and chars. They are black in color but may have white spots on head and leg. In comparison to cattle, buffaloes are more disease resistant and they gain weight up to 400 - 450 kg; however with better management their weight reaches up to 800 kg.

River buffaloes are usually used for meat, milk and draft purpose. Milk production is better than that of Zebu cattle but in chars the majority of the buffalo remain free to roam in government, disputed or khas land without other nourishment and feeding. Mainly these buffaloes are owned by rich people of the mainland and they graze the natural grass land and drink river water which is often saline.

Thus, buffaloes in the char produce less milk and the average milk yield is about 1.5 to 2.0 liters per day with a lactation period of 7 to 8 months. Buffalo milk contains more fat (5 - 6%) and solids than cow's milk and is preferred by local people for making ghee and curd. There is scarcity of quality breed buffalo bulls in the project area.

Goat: The major breed of goat is the Black Bengal. The breed is famous for its high fecundity, tender meat and skin quality. The Black Bengal goat is well adapted to a hot humid climate and produces twins and triplets. The average live weight of adult goat is 16 to 18 kg. Goats are reared by marginal and poor farmers with children and women taking care and is considered an important activity in the existing integrated small holder farming system. The marginal farmers prefer goat rearing for it requires small capital investment, easy management, grazing on fallow land after crop harvest. The goats mature at an early age with short gestation period and generation interval. Goat meat fetches a higher price than beef and the milk is easily digestible by children and the old.

Sheep: Sheep found in the project area are coarse wool type, small in size at about 10-12 kg adult live weight and are well adapted to the saline environment. In some households they are preferred to goats for their selective browsing and considered easier to rear than goats. Marginal and poor farmers also prefer sheep rearing as with goats

Chicken: In the project area most of the households rear chickens. Generally, they live a scavenging existence (98.6% HHs practice this), and hardly ever received much supplementary feeding. The local "deshi" types of indigenous birds are small in body size at about 1.0-1.5 Kg and are well adapted to scavenging conditions, probably more resistant to prevalent common

diseases and are better able to protect themselves from predators. They are poor egg producers and lay 40-50 eggs in a year with a behavior of pronounced brooding.

Duck: Like chicken duck raising is widely practiced by the housewives in the area especially with deshi types, having large number of ditches that favors natural growth of fresh water snails and duck weed. The area is ideal for duck rising on a commercial basis but the number of these is not much because of shortage of natural feed during the dry months and common fatal diseases. The ducks are preferred by housewives living around the fresh water pools, as they produce 100-150 eggs per year, more meat and are resistant to many diseases that affect the chickens.

Table 9: Common livestock and poultry diseases found in project area

Species	Type of Bacterial disease	Viral disease	Parasitic/Fungal disease
Cattle	Anthrax, Black Quarter, Haemorrhagic septicemia, Entero-toxaemia,	Foot and Mouth Disease (FMD), Ephemeral fever	Paramphistomades, Fascioliasis, Nematodes, Ticks, Ringworm
Goat	Pneumonia, Anthrax	Goat pox, PPR	Fascioliasis, Haemonchosis,
Sheep	Entero toxaemia	Sheep pox	Fascioliasis, Haemonchosis, Trematodes
Chicken	Fowl cholera, Fowl typhoid	Newcastle Disease (Ranikhet), Fowl pox	Ascaris, Coccidiosis
Duck	Duck Cholera	Duck plague	Coccidiosis
Pigeon	Cholera, Salmonellosis	Newcastle Disease	Aspergillosis, Coccidiosis

Constraints of poultry and livestock production

- Knowledge gap in improved rearing methods
- High level of mortality caused by fatal diseases in poultry and livestock
- Limited access of vaccination and veterinary services in char areas
- Poor genetic quality of poultry and livestock
- Shortage of feed and fodder in dry seasons

Target beneficiaries: Target beneficiaries of program include 99.5% female and only 0.5% male as paravets.

Program implementation modalities: CDSP-IV implemented the poultry and livestock program in field level through the branch offices of four PNGOs. Manpower included:

- 6 Poultry and Livestock coordinators (PNGO staff, one for two branches)
- 12 developed and trained Paravets (voluntary)
- 60 developed and trained poultry workers (voluntary)

Poultry and livestock subcomponent interventions

- Basic technical training for poultry and livestock coordinators
- Poultry worker development training and input supply
- Paravets development training and inputs supply

- Poultry vaccination program
- Livestock vaccination program
- Fodder training of beneficiaries
- Refreshers for poultry workers
- Development of demonstration saline tolerant fodder plot.
- Demonstration model poultry rearers with Sonali breed chickens
- Technical support for cattle, poultry, goat rearers and beef fatteners
- Group meeting for awareness buildup
- Household visit for follow up program



Basic technical training for poultry and livestock coordinators (PNGO's staff)

In January 2015 a training session on basic technical knowledge and management of poultry and livestock rearing for PL coordinators (PNGO staff) was organized in the N-RAS training centre at Noakhali. A detailed technical training module was developed and livestock experts from DLS and TA team of CDSP contributed as resource persons in the training. The training course curriculum also includes practical sessions related to different technical methods for better understanding. The overall training duration was 8 days, after 5 days training on the poultry livestock program, 3 days training was conducted on fisheries.



Training on poultry worker development and input supply

To reduce poultry mortality and ensure poultry vaccination in the project area, a total of 60 female beneficiaries under 12 PNGO branches were selected for training. A three day long residential training program was conducted in three batches N-RAS and NRDS training centres at Noakhali in January–March, 2015. In addition to practical training in vaccinating live birds, the curriculum also covered feed preparation from local available feed ingredients, improved poultry housing system allowing improved ventilation and hygiene, broody hen management, improved nesting, early separation of chicks from broody hen to encourage more brooding cycles, information on common diseases of poultry and some common treatments, introduction to poultry vaccines and basic techniques about their mixing and administration, necessity of maintaining cold chain for vaccines, introduction to vaccine kit box and practical work on vaccinating live birds, so that poultry workers can supply and advise clients. At the end of the training program, 60 vaccination kit boxes were supplied as inputs to the poultry workers. This was based on a detailed technical training module developed for poultry workers by TA team.

Poultry worker (PW) refreshers training:

PNGOs with the support of TA team conducted one day refresher training for 60 PW bimonthly. The training sessions were covering both theoretical and practical work on live bird vaccination and other basic techniques. A discussion was conducted to share and solve common problems faced by poultry workers in the field during vaccination program. Refresher training has been provided to 507 beneficiaries to make them more skilled and motivated toward the program for generating income to improve their livelihood.



Training on para-vet development and input supply

To decrease the prevalence of common infectious diseases, ensure vaccination and veterinary support for livestock in project area, a 15 days residential basic technical training program for para vet development was organized by the TA team during November to December 2015 at NRDS training center, Noakhali. 12 persons were selected for the training program with the objectives of: developing basic knowledge about vaccination and primary veterinary treatment and common animal husbandry practice and gaining information on small and large ruminants and poultry. TA team has established linkages with the District livestock officer, Noakhali for setting up the basic curriculum for both theoretical and practical parts of the training with direct involvement of DLS resource persons.

In this training program theoretical sessions were conducted by the DLS. Practical outdoor sessions were conducted in Upazilla Veterinary hospitals; dairy farms were visited and vaccination programmes undertaken. After successful completion of the training program participants were awarded a certificate on primary treatment and vaccination of livestock authorized by District Livestock Officer, Noakhali. Para-vets also received a surgical bag as input. A detailed technical training module in Bangla was developed for para-vets by TA team.



Training on fodder cultivation and inputs supply

Shortage of green fodder during dry and rainy seasons is a major constraint in livestock rearing in the project area. This seasonal shortage of fodder can be largely mitigated through introduction of saline tolerant fodder varieties like Napier, German, Jamboo and other leguminous varieties like kheshari (grass pea) and cowpea by cattle farmers. To introduce and make people aware about fodder cultivation and management, a two day long training program was organized in the field and provided for 220 beneficiaries (20 persons per PNGO branch) who were also supplied with green grass seeds and fertilizers as inputs.



Poultry vaccination program

To improve productivity and reduce poultry mortality from common diseases, the project initiated a poultry vaccination program at field level from May 2015 which was implemented by the PNGOs. Trained poultry workers collect poultry vaccines from nearby PNGO branch offices as per local demands of vaccination with a minimum charge rate of Tk 2-3/bird. These vaccine programs are commonly organized in early morning and late evening to maintain cool temperature and availability of poultry birds at home due to the open rearing system. Poultry workers generally set a vaccination program for 10-15 HHs at a time to ensure maximum utilization of vaccines.



Sometimes they provided some common treatment for poultry after consultation with poultry livestock coordinators or paravets. During the project period a total of 40 programs were conducted and 415,742 poultry have been vaccinated against Ranikhet or Newcastle disease, Duck Plague, Fowl Cholera, Fowl Pox etc. 329,666 poultry were given BCRDV (baby chick ranikhet disease vaccine) and duck plague vaccines for the first time, which also indicates newly generated poultry flocks in the project area. The total use of vaccine is 91% which indicates the satisfactory use of vaccine.

Table 10: Poultry vaccination status

PNGO	Vaccination programmes	Eligible poultry	Vaccinated poultry	Vaccination percentage	1 st time vaccination
BRAC	1,771	171,490	148,337	86	138,791
SSUS	501	114,300	95,355	83	44,011
DUS	1,138	125,850	123,963	98	11,0312
SDI	116	43,602	48,087	83	36,552
Total	3,526	455,242	415,742	91	329,666

Livestock vaccination program and veterinary support

Livestock vaccination is an integral tool for preventing infectious diseases and maintaining herd health in livestock population. Vaccinations can improve livestock health resulting in decreased death loss and improved productivity. The project has started a livestock vaccination program organized by PNGOs at branch level by trained paravets. These vaccine programs are commonly organized as a mass vaccination in the local bazar or related open place where it is easy to gather livestock. Paravets collected vaccines from PNGO branch offices or Upazilla veterinary hospital according to local demand. Usually they charge a minimum rate of TK 10 per cow vaccinated as service charge. Paravets also offer primary treatments for livestock in the project area and are involved with veterinary medicine business with small dispensaries in local bazaars which ensure quality products are available in char areas.



They get an average of Tk. 6,000-10,000 as monthly income from primary treatment and medicine selling. A total number of 452 livestock vaccination programs were conducted in the project area and 41,540 livestock (cattle and buffalo) were vaccinated with 26,933 provided with primary treatment.

Meeting with group members

The coordinators conducted meetings with NGO group members to make people aware through discussion about improved rearing system, veterinary health care and other technical issues related to poultry and livestock. The meetings are held after the end of the credit group meeting. In total 2,401 group meetings were held for awareness building.

Technical and management support

To make the project area people aware about improved rearing system of livestock and homestead poultry which includes housing, feeding, vaccination and necessary veterinary care, marketing of livestock and poultry products, the concerned coordinators provided necessary advice, technical help and follow up care activities and other support to beneficiaries. They have provided technical and management support to 1,568 cattle rearers, 840 goat rearers, 1,529 homestead poultry rearers and 622 beef fatteners in the project area.



Innovative interventions

Demonstration on saline tolerant fodder plot

12 demonstration fodder production plots have been established for saline tolerant fodder cultivation. Major objectives of these demonstrations were extension of fodder cultivation activities among char dwellers, decreasing the shortage of green fodder for livestock in dry and rainy seasons and also supplying necessary fodder cutting as per beneficiaries need in the project area. In these demonstration plots sweet Jamboo and Napier grasses were cultivated which are saline tolerant and provide high yields. Also, three more demonstration fodder plots were established at CDSP-IV site offices premises.



Special trial program on Sonali crossbreed poultry rearing

As special trial program of 30 demonstrations on Sonali cross breed poultry rearing in semi intensive system were established. The average flock size of Sonali chicken is 15-20 per family. The Sonali is a cross-breed of Rhode Island Red (RIR) cocks and Fayoumi hens and has a similar phenotypic appearance to that of local chickens. Sonali birds are well adapted to the country's environmental conditions so require less care and attention than other breeds, making them easier for women and children to rear.



In the project area the Sonali birds were housed in a semi intensive system with netting and a small shelter made by wooden boards or bamboo and corrugated iron (tin). The semi intensive Sonali birds are fed homemade unbranded feed made by local ingredients like broken maize, rice polish, soybean, broken rice, broken lentils, dried fish etc. Green vegetable waste or kitchen waste is also supplied with fresh drinking water. All birds are getting vaccination and other veterinary support from PNGO branches as well as from project.

Physical assets and food security

In these costal char areas considering the estuarine environment, livestock production is considered as a strong element of risk aversion in farming system and a good large stock of livestock is considered as an important asset against financial distress. Livestock and poultry rearing offer a reliable source of cash income and also a source of protein for family nutrition. In total, 346,222 first time vaccinated new poultry indicated the extent of newly generated poultry in the char area which is gradually increasing and is meeting family nutrition demands. In case of livestock farming the expected increase in numbers of the livestock population will occur over a period of six years and expected to sustain itself during the final year of project implementation. Due to regular livestock vaccination campaign in project area fatal and infectious disease mortality is decreased significantly and this also ensures to some extent disease free animal meat and milk for local consumers.

Sustainability

The technical trained persons are: poultry workers and paravets working as volunteers. They are working by investing their own capital and get some income from their vaccination and treatment services. They also have good technical knowledge and experience of collecting vaccines from local DLS office. Some paravets have already established their own veterinary medicine shop in local bazars to expand their business. Two of them got trained on artificial insemination techniques also and are practicing successfully in the area.

Exit strategies

After phase out of the poultry and livestock program of CDSP-IV there are other PKSF funded programs which have been initiated by the local NGOs like “Uzzibito” of SSUS , “Somridhi” from DUS, “Buffalo development project” from SDI at Urir Char and Government project NATP-II, which provide necessary support in these area to improve the development of poultry and livestock. However, there is a challenge of insufficient access of DLS services in some areas.

Collaborative program with DLS

Department of Livestock Services (DLS) distributed emergency veterinary drugs and vaccines for poultry and livestock in the damaged CDSP-IV area after cyclone NADA in October 2016. District Livestock officer, Noakhali (Md. Ziaur Rahaman) visited program activities and distributed drugs and vaccines for poultry and livestock among beneficiaries in project area. He also has visited field livestock vaccination programs several times.



Risk and assumption

Regular vaccination against various infectious diseases in cattle seems very essential to keep good health among the livestock population. Also, a large amount of deworming is needed to decrease parasitic load in livestock for improved health condition. In the case of poultry, to check mortality it is essential to continue regular vaccination in the field area.

Special one day training on beef fattening techniques for project staff

To improve practical knowledge about beef fattening program a special one day training was organized by project on 7th July, 2015 for poultry and livestock coordinators at CDSP-IV site office Char Nangulia. Training sessions covered both theoretical and practical parts of the beef fattening program. The training was conducted by TA team and DLO, Noakhali was also involved as a resource person from DLS to make training more effective. This training was conducted so that PL coordinators could provide technical support and advice to beneficiaries on field beef fattening programs.



Product knowledge sharing with Pharmaceutical Company

A short sharing session was conducted in CDSP IV conference room at Sonapur, Noakhali with poultry and livestock coordinators so SQUARE Pharmaceutical Company could provide detailed information on the veterinary products details of their company. They also distributed some leaflets and small hand books on therapeutic treatments and drugs indicated by livestock diseases, published by their company. A technical person (DVM) conducted the whole session.



Coordination and meeting with DLS and TA team

A meeting was conducted between DLS staff and TA team before starting basic programs of poultry and livestock subcomponents in the project. Deputy Director Chittagong Division, District Livestock Officer, Noakhali and Upazilla Livestock officer Suborna Char attended the meeting with Deputy Team Leader (N&L), Social Forestry Adviser, NSS (poultry and livestock) of TA team. Through this meeting TA team provided a presentation regarding CDSP-IV and its poultry and livestock program activities in the coastal char area of Noakhali. DLS personnel have also assured the TA team to supply necessary vaccines and other extension support for poultry and livestock program of CDSP-IV.

Special leaflet published for disaster preparedness for poultry and livestock

One colorful leaflet has been developed and distributed to all stakeholders including char dwellers for awareness buildup during natural disasters like cyclone, flood etc. The key messages included in the leaflet are:

1. Disaster preparedness for domestic poultry and livestock.
2. Take early necessary measures to protect poultry and livestock during natural disaster to be safe from probable nutritional and economic loss.
3. Ensure bio security for poultry and livestock to reduce farming cost.
4. Necessary measures to be taken at the time of pre and post disaster situation.

জীব-নিরাপত্তা খরচ বাচায়

প্রাকৃতিক দুর্যোগকালীন সময়ে গবাদি প্রাণি ও হাঁস-মুরগির নিরাপত্তায় করণীয়

প্রাকৃতিক দুর্যোগ কি?
প্রাকৃতিক দুর্যোগ হলো প্রাকৃতিক ভাবে সৃষ্ট পরিস্থিতি যা মানুষ, গবাদি প্রাণি, হাঁস-মুরগি এবং তার পরিপার্শ্বিকতাকে ক্ষতিগ্রস্ত করে ও স্বাভাবিক জীবন ধারাকে বিপর্যস্ত করে তোলে। যা তাদের পক্ষে মোকাবেলা করা কষ্টসাধ্য এবং ক্ষেত্র বিশেষে অসম্ভব হয়ে পড়ে।

প্রাকৃতিক দুর্যোগের ধরনঃ
বন্যা, খরা, মূর্নিভূত, জলোচ্ছ্বাস, টর্নেডো, কালবৈশাখী, ভূমিকম্প, নদী ভাঙ্গন ইত্যাদি।

প্রাকৃতিক দুর্যোগ পূর্ব প্রস্তুতিঃ

- গবাদি প্রাণি ও হাঁস-মুরগিকে বিশেষ ধরনের চিহ্ন (পাকা রং) দ্বারা চিহ্নিত করতে হবে যাতে দুর্যোগ পরবর্তী সময়ে নিখোজ বা চুরি হওয়া প্রাণিকে সহজে খুঁজে পাওয়া যায়।
- যদি সম্ভব হয় গবাদি প্রাণি ও হাঁস-মুরগিকে নিকটস্থ কিল্লা, সাইক্লোন সেন্টার অথবা উঁচু বেড়ীর উপরে বেঁধে রাখতে হবে যাতে জোয়ারের পানিতে প্রাণিত না হয়।
- দুর্যোগকালীন সময়ে (অন্ততঃ ৩ দিন) গবাদি প্রাণির জন্য শুকনো খাবার যেমন- খড়, ভূমি এবং পরিষ্কার পানির ব্যবস্থা রাখতে হবে।
- যদি বাড়ীর ছোট গবাদি প্রাণি যেমন- ছাগল, ভেড়া বা হাঁস-মুরগিকে নিরাপদ স্থানে নিয়ে যাওয়া সম্ভব না হলে বাড়ীতেই উঁচু মাচা করে তাতে খাবারসহ সেতুলোকে বেঁধে রেখে যেতে হবে।

প্রাকৃতিক দুর্যোগ পরবর্তী করণীয়ঃ

- প্রথমে সকল গবাদি প্রাণি ও হাঁস-মুরগি গননা করতে হবে এবং হারানো বা মৃত প্রাণির সঠিক সংখ্যা নির্ণয় করতে হবে।
- গবাদি প্রাণি এবং হাঁস-মুরগির মৃত দেহ যত তাড়াতাড়ি সম্ভব মাটিতে ২-৩ ফিট গর্ত করে ভালভাবে চুন দিয়ে পুতে ফেলতে হবে।
- গবাদি প্রাণি ও হাঁস-মুরগিকে ভালভাবে পর্যবেক্ষণ করতে হবে যাতে তাদের গায়ে কোন রকম ক্ষত আছে কিনা এবং দ্রুত চিকিৎসা দিতে হবে।
- গবাদি প্রাণিতে নানা রকম ছোয়াকে রোগ সমূহ যেমনঃ নিউমোনিয়া, পী-পটা, তড়কা, পেপটোস্টাম্পাইরোসিস ইত্যাদি এর লক্ষণ আছে কিনা তা জানার জন্য নির্বিড় পর্যবেক্ষণে রাখতে হবে।
- গবাদি প্রাণি ও হাঁস-মুরগিকে নির্দিষ্ট সময়ে বিভিন্ন রোগের বিরুদ্ধে টিকা প্রদান করতে হবে।
- গবাদি প্রাণি ও হাঁস-মুরগিকে পরিষ্কার খাওয়ার পানি ও খাবার সরবরাহ করতে হবে। প্রয়োজনে বৃষ্টির পানি সতর্ক করে গবাদি প্রাণি ও হাঁস-মুরগিকে খাওয়াতে হবে।
- গবাদি প্রাণি ও হাঁস-মুরগির যে কোন স্বাস্থ্যগত সমস্যায় প্যারাভেট (পট্টা চিকিৎসক) অথবা রেজিস্টার্ড প্রাণি চিকিৎসক (ভেটেরিনারিয়ান) অথবা ভেটেরিনারী সার্জনের (উপজেলা প্রাণি চিকিৎসক) সাথে যোগাযোগ করতে হবে।

সচেতন হউন দুর্যোগে গবাদি প্রাণি ও হাঁস-মুরগির নিরাপত্তা নিশ্চিত করুন

জন সচেতনতায়
চর উন্নয়ন ও বসতি স্থাপন প্রকল্প - ৪

দুর্যোগে গবাদি প্রাণি ও হাঁস-মুরগির নিরাপত্তা নিশ্চিত করুন
অর্থনৈতিক ও গুটিগত ক্ষতি হতে নিরাপদ থাকুন

IFAD
Ministry of Agriculture

Outcome of the poultry and livestock program

Due to implementation of the poultry and livestock program, project area people have become more aware about improved rearing system of poultry and livestock, and about vaccination and treatment of animal diseases. About 70% of the HHs now have access to poultry and livestock vaccination and treatment service and the increasing number of treated livestock indicates easy access. Due to the vaccination program for poultry and livestock, reduced poultry mortality and prevalence of common diseases of poultry and livestock is visible in the project area.

Beneficiaries are getting necessary technical support and veterinary care for their poultry and livestock from skilled persons (Poultry Workers and Paravets). The numbers of poultry and livestock is increasing day by day. People's income from the sector is increasing and they can invest additional income in production, family expenses and education for their children. In addition, there is creation of livestock-based employment opportunity and improved family nutrition through increased consumption of milk, meat and eggs.

A linkage has been established between Para-vets and DLS which helps them to become more technically sound. Paravets are also involved with veterinary medicine business with small dispensaries in local bazaars which ensure quality veterinary products in char areas and it gives them Tk. 6,000 to 10,000 monthly income from primary treatment and medicine business.

Case Study: Bibi Joygun finds way to survive through goat and poultry rearing

Bibi Joygun was an inhabitant of Shahbazpur Upazilla of Bhola district. She has three sons and two daughters. Her husband left her due to another marriage issue. Due to river erosion she lost her house with all assets and then started living at Char Ziauddin, Shuborna char, Noakhali. She occupied one acre of land in Char Ziauddin and started living on this homestead, struggling with various type of natural disaster. She had to pass days in acute poverty and starvation with her children. When CDSP IV started development work on Char Ziauddin, Bibi Joygun was admitted to a microfinance group and started depositing her regular savings in Brac, Char Ziauddin branch.



She received training on improved rearing practices of goat under IGA training program; from group meetings she also knew about improved method of poultry, goat and cow rearing including better housing, feeding, and health management from poultry/livestock coordinator of Brac.

After receiving training, she bought two goats. She adopted the knowledge of goat rearing which she gained in the training provided under CDSP-IV. Now the number of goats has been increased from two goats to ten. She established slat system housing for goats and started to provide feed according to the requirements of the goats. She also vaccinated and de-wormed all goats following a schedule of vaccination and de-worming. Moreover, she received necessary veterinary treatment support from trained local paravets under poultry and livestock program of the project.

She has also 35 chickens and 25 ducks. She received necessary poultry vaccination service and treatment from trained poultry worker. *“Due to proper management, no goat was affected by any type of disease during last 1.5 years and no goat died at the same time”*, she informed. She also mentioned that the health condition of all goats and poultry is quite good. Goats have come into heat maintaining specific intervals and given birth to 2 to 3 kids per parturition. Now she is economically better than ever before and has improved her family nutrition also. Many of her neighbors have already started goat rearing observing her success. Bibi Joygun maintains close communication with the poultry and livestock coordinator, Brac-CDSP-IV. She hopes that the extension services provided by CDSP-IV can be continued in future so that she can run the goat farm properly.

8. CLIMATE CHANGE AND DISASTER MANAGEMENT

Introduction

People in Bangladesh have long historic experience of combating various natural hazards such as floods, cyclones, droughts, tidal surges, tornadoes, river erosion, and high arsenic content of ground water, water logging, increasing water and soil salinity. In recent times, the increasing intensity and magnitude of disasters due to climate change, have affected the life and livelihood of poor people even more.

The Char Development and Settlement Project has a major objective that is climate resilience through internal infrastructure for communication, markets, cyclone shelters, provision of portable water and hygienic sanitation. To support these objectives, Disaster Management and Climate Change program is implemented under the Social and Livelihood Support Component for building awareness; its activities are described below.

Staff training for development

Project staff were trained in climate change and disaster management issues, such as: type of disaster, signaling system, message forecasting, pre and post disaster preparedness, communication and linkage with Red Crescent and local government institutions, removing people and property from threatened locations, arrangements to send them to the nearest cyclone shelters and killas, facilitating timely and effective rescue, relief and rehabilitation community-based preparedness. The TA team organized one week training for 26 persons (one coordinator of disaster program and one branch manager from each NGO branch office) on these issues and on reporting activities.

Union disaster management committee

Government has a Union Disaster Management Committee in each Union and the CDSP IV project is situated in seven Unions. To enhance capacity, 13 auxiliary disaster committees were formed, one in each PNGO branch. Each auxiliary disaster management committee called a meeting with the local Red Crescent volunteers and made a formal relation with the Disaster Management Committee and other stake holders to arrange assistance at the time of disasters and to disseminate messages regarding disaster management and climate change issues.

Meeting with union disaster committees

To enhance the implementation process and to involve the union disaster committees, meetings are organized by PNGO's Disaster Coordinators with union disaster committees and other (e.g. Red Crescent) stakeholders. The participants in the meetings discussed various issues related to disaster and found ways to build cooperation with each other and coordinating activities. Action plans were prepared on issues discussed in the meetings and follow up given by coordinators.

Awareness meeting with NGO group

Disaster Management and Climate Change coordinators also conducted meetings with NGO credit groups to discuss issues like disaster preparedness, post disaster mitigation process, how to protect life, poultry, livestock, important documents such as land registration papers, etc. The necessity of using the cyclone shelter at the time of disaster, disaster signaling, precautionary

measures such as plinth raising, housing strengthening, plantation in the homestead were also raised. A total of 7,608 meetings were held during the project period.

Training on disaster preparedness to selective group members

To raise mass awareness in the project area, selected group members are trained on disaster mitigation and preparedness. The trained members disseminate information on the issues to the other people in the community. During the project period 3,397 beneficiaries attended the refresher training.

House strengthening activities

This has been implemented on a pilot basis. The objective is to strengthen a few houses, so that people will observe the result and replicate it for their own house. This strengthening activity was initially targeted in Caring char only, but later a few schemes were implemented in Noler char. 417 houses were strengthened.

Eligibility

- Permanent resident of the area
- Member of NGO group
- Status of the family is ultra-poor
- Economically not capable to raise house
- House built on low land compared to others
- Lower income family
- Woman and disabled headed household

Plinth rising program of house

A special initiative was taken to raise plinths for ultra-poor households, especially widows in the Caring char area, to protect the homestead from waves and flooding. The activity was implemented on a pilot basis. All houses were strengthened by using six RCC pillars for each house, bonded with a strong cross connection from pillar to pillar with rope. A total of 417 house plinths were completed during the period.



The same criteria were followed to select the beneficiaries.

International environment day and national disaster preparedness day

In order to raise awareness among the people, on the fixed days were observed. People from the community, teachers, students, leaders of different local level institutions are participating in the occasions. A rally and a discussion meeting are held and materials and saplings distributed to mark the days. 62 and 64 events respectively were observed.

Training on improved cooking system

To mitigate the crisis of fuel wood and to protect the house environment from pollution, this activity is implemented in the whole project area. Project provided training to 260 (F-240, M-20) persons on improved cooking systems and continued campaigning and motivation to increase the number of users gradually. A total of 724 cooking systems were initiated in all branches and 5,765 were established so far.



Billboard preparation for pictorial presentation

To disseminate easy understanding of the message on Disaster Management and Climate Change, 13 bill boards were prepared and put in places where many people are moving and watching.

Disaster signal flag hoisting

To provide communities with early warning of disaster, in each NGO branch three locations were selected by the management committees, where flags and other materials were stored. Disaster flag hoisting posts were used at danger signaling points. In total 117 locations for flag hoisting posts were established and other materials supplied.



Hand mike distribution

During precautionary danger signaling in natural disasters, hand microphones help the community to make effective preparations. At the time of disaster the concerned NGO Branch Manager collects information through mobile phone, and transmits the precautionary message to the 'disaster committee' as well as the community mosque. The committee and the 'Imam' of the mosque announce the message to the community through hand mike and loudspeaker. 12 sets of hand mikes have been supplied to PNGO offices so messages of disaster awareness reach the coastal communities so they can take shelter in time.

Outcome of the activities of disaster management

In all areas union disaster management committees were active during the pre- and post-disaster periods. During the cyclonic storm ROANU, in May 2016 and the cyclone MORA in May 2017 the volunteers of Union Disaster Management Committees actively participated in signal flag hoisting, miking the community with danger level signaling and mobilizing people to take shelter. As a result, about 6,500 people took shelter during ROANU and more than 8,500 during MORA in the nearest project cyclone shelter; thus, most of the people went to a safe place.

Table 11: Disaster Management Activities

Activity	Outcome
Capacity building of disaster responder	100% of disaster responder/ professionals have improved capacity at coastal community levels
Access to information dissemination before disaster	80% improved access to precautionary information dissemination and data on disasters
Disaster preparedness and risk reduction	80% included in a culture of disaster preparedness and risk reduction at community levels
Effective disaster communication network	90% establishment of an effective disaster communication network to provide speedy information during a disaster
Effective multi-hazard disaster preparedness	50% effective multi hazard disaster preparedness and response plans developed
Creation of enabling coastal workforce	60% creation of an enabling responsive coastal workforce for disaster risk management
Ensured use of cyclone shelter and management	80% of char dwellers are aware of disaster signaling, shelter uses and management issues