Good Practices For Community Resilience

DFID Department for International Development

PRACTICAL ACTION
Technology challenging poverty

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for
Community Resilience

Mainstreaming Livelihood-Centred Approaches to Disaster Management Project

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Contents

Figures and Tables

Case studies

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While this publication, *good practices for community resilience* highlights activities undertaken with and by communities, the role of local authorities and service providers cannot be ignored. Without the good will, support and professionalism of both elected and unelected local officials, little could have been achieved. Communities do not exist in isolation, but are dependent on interactions with and inputs from institutions and organisations outside of their immediate geographical location. District, Upazila and Union Officials have all played a role in influencing the course of the activities undertaken in their respective locations. Their professional knowledge and skills have provided a reservoir of experience on which the project staff and partners have drawn. The linkages to livestock, agriculture, fisheries, public health and other officers described in this article, bear witness to the essential role that local service providers fulfil. Their expertise and ongoing support has been a vital component of the project. The sustainability of many of the livelihood initiatives depends on the strength of these linkages forged over the last three years. The involvement of local Disaster Management Committees in the project from the outset has increased their awareness of the role of secure and resilient livelihoods in reducing local vulnerability to disasters.

If one clear message can be drawn from this project it is that communities living in fragile, hazard prone environments are not helpless victims waiting to be rescued after the impact of floods, droughts or other calamitous events. They are poor, their poverty being reflected in their lack of resources and knowledge. Their livelihood options are extremely limited. Being helped to analyse their particular situation, the hazards they face, and their vulnerabilities and capacities stimulates them to identify opportunities to improve their situation. Given opportunities, their enthusiasm, ingenuity and dedication ensure positive outcomes. Very few beneficiaries selected for training or skill development fail to use their new skills to improve their well being.

Particularly impressive is the level of volunteerism encountered and the strength and commitment of the community-based organisations (CBOs) formed in the target communities. Their role in guiding the development and implementation of community based development plans which incorporate disaster risk reduction and contingency plans encourages cohesion and contributes to the sustainability of community based disaster management (CBDM).

Finally the role of the Practical Action Bangladesh DRR team must be acknowledged. The quality of the achievements described is the result of the tireless efforts of the Senior Project Officers, Md. Amzad Hossen, Selim Uddin Ahmed and Md. Zainal Abedien, the Coordinator Barkat Ullah and Program Assistant Nasir Uddin Ahmad under the guidance of both the previous (Mizanur Rahman) and current Project Managers (Farida Shahnaz). They have worked tirelessly to achieve maximum impact with limited financial resources. They should be proud of what they have achieved.

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Piet van den Ende
International Project Manager
Practical Action-UK

Foreword

PA Bangladesh has been working on reducing vulnerability particularly to disasters, food insecurity and livelihoods as part of its strategy to reduce poverty in Bangladesh since the last decade.

The five year multi country project entitled "Mainstreaming Livelihood-centred Approaches to Disaster Management" funded by the department for International development (DFID) Conflict and Humanitarian fund (CHF). The project is being implemented in Bangladesh, Nepal, Sri Lanka, Zimbabwe and Peru with the active participation of local partners. The project area in Bangladesh includes a total of five Unions of Gaibandha Sadar Upazila (Kamarjani Union) under Gaibangha District, Sariakandi Upazila (Sadar and Narchi Unions) under Bogra District and Kazipur Upazila (Sadar and Maizbari Unions) under Sirajganj District. All three Upazilas are in the floodplain and situated on the western bank of the mighty river Jamuna. The project locations are vulnerable to recurrent river flooding and river erosion. A large number of the population, inhabiting the project location are vulnerable to the repeated (almost every year) and frequent (some times twice in a year) flooding and erosion in addition to their pre-existing economic and social vulnerabilities. The project focuses on two main components; community level activities which reduce the impact of particular hazards by increasing livelihood opportunities, reducing vulnerability and increasing resilience and preparedness; and linking these community-based experiences with local, district and national institutions through advocacy and capacity building in order to influence policy. The project targets several of the Priorities for Action identified in the Hyogo Framework.

The practical application of a livelihoods approach to risk reduction work, while relatively new, can help to identify the extent and nature of the full range of peoples' livelihood assets and their vulnerability to hazards and other external forces. This makes it possible to identify entry points to protect the assets that are most at risk or most valuable in times of crisis. It gives insights into peoples' choice of strategies – why they live in fragile and potentially risky situations and how they cope in "normal" circumstances. Activities which strengthen livelihoods and increase resilience will reduce vulnerability.

The project interventions focus on livelihood and preparedness with equal emphasis. In terms of preparedness, the project is mobilizing 6000 house holds in three project locations with active assistance from 300 community volunteers, 300 youth volunteers, CBOs and various committees. Communities were made aware with messages on disasters, impacts and preparedness through these volunteers and committees. Participatory VCA, Contingency Plan has been completed, and a community based disaster management plan is under process. Training on preparedness, search, rescue, evacuation and first aid has been imparted. As part of preparedness, the project facilitated activities like raising homestead, latrine, tube wells above flood levels in a limited scale so other people of the community can emulate these activities as well. Rescue boats for evacuation during flood and river erosion are in place and fully functional.

The purpose behind the livelihoods work to ensure disaster risk reduction with the idea that the beneficiaries will use a part of their earnings for improvement of infrastructure, save money for crisis period, buy food during flood situation when there is no work, will not be dependent on relief (at least if the flood is not prolonged), will not take loan with high interest, will not sell advance labor for survival or sustaining during disaster period. On the other hand these savings or earnings can be used to buy food, and for sending children to school.

This document gives a narrative account of good practices of the project over the period of implementation (January 2006 to December 2008), identifies achievements, successes and lessons learned with respect to increasing the resilience of the communities towards reducing vulnerabilities.

I would like to acknowledge the hard work and contribution made by, firstly the current country program manager Farida Shahnaz,the previous program manager K M Mizanur Rahman and the field staff who include - Senior Project Officers Md. Amzad Hossen, Selim Uddin Ahmed, Md. Zainal Abedien, Barkat Ullah- Coordinator. Special thanks goes to Nasir Uddin Ahmad, Program Assistant for his relentless efforts for compiling the whole document and Pieter Van Den Ende, Project Manager, UK Practical Action for his guidance, editing support and continuous follow up to develop such a quality document. Lastly, I would like to thank the partner organizations for their support in the implementation of the activities and the various other contributions they have made to the project.

Veena Khaleque
Country Director
Practical Action-Bangladesh

Good Practices for Community Resilience

Abstract

The project, being implemented in several Unions of Bangladesh, demonstrates that increasing the resilience of poor communities' livelihoods reduces their vulnerability to disaster risks while contributing to poverty reduction. Evidence of the impact of this participatory approach is used to influence local government officials and policy makers to be more responsive to the needs of the poor. Liaison with District officials indicates their willingness to try to incorporate a livelihoods approach into local development and DRR planning. Other outcomes include strengthened community cohesion, an increased capacity to make informed decisions regarding their well-being and increased self-confidence amongst the poorest and most vulnerable families. This initiative describes significant achievements in disaster risk reduction made since the World Conference on Disaster Reduction (WCDR) in Kobe, January 2005 and in making progress towards implementing the Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities (HFA).

Hyogo Framework for Action 2005–2015:
On the occasion of the World Conference on Disaster Reduction (WCDR) in Kobe, Japan(January 2005) governments, UN agencies and civil society strongly called for moving from relief to concrete action in disaster risk reduction. Building on the recommendations of the WCDR the General Assembly Resolution (March 2005) on International Cooperation on Humanitarian Assistance in the Field of Natural Disasters, from Relief to Development calls upon all States to adopt, and requests the international community to continue to assist developing countries, appropriate measures to mitigate the effects of natural disasters and integrate disaster risk reduction strategies into development planning.

Project Background / Introduction

The "mainstreaming livelihood-centred approaches to disaster management" project is working with communities exposed to floods and river erosion and is being implemented in five Unions of Gaibangha Sadar Upazila (Kamarjani Union) under Gaibangha District, Sariakandi Upazila (Sadar and Narshi Unions) under Bogra District and Kazipur Upazila (Sadar and Maizbari Unions) under Sirajganj District in Bangladesh. All the three Upazilas are on the floodplain and situated on the western bank of the mighty Brahmaputra-Jamuna River.

Almost every year millions of people are affected and lives and properties are lost to floods and river bank erosion, especially in the northern part of Bangladesh. 53% rural people live below the poverty line (BBS, HIES various years, World Bank, 2003, Poverty in Bangladesh Building on Progress.) and 10.65% have no land (BBS, Preliminary report on Agriculture Sample Survey 2005) and their number is increasing (In 1996 10.18% landless).

The annual flood means that even those who are able to cope and recover suffer the loss of their few assets, including their crops and their means of earning a living. They struggle to regain control of their livelihoods. The poorest, with few assets, are worst affected, each shock driving them further into poverty.

The Practical Action approach to disaster management is based on experience gained over several years in South Asia, Africa and Peru where it has been convincingly demonstrated that secure and sustainable livelihoods reduce both susceptibility to disasters and poverty. Poor communities have been facilitated to undertake activities which increase their resilience to the impact of hazards while strengthening their livelihood options using local knowledge, capacities and resourcefulness, coupled with innovative and appropriate technologies. Increasing the asset base and the diversity of livelihood options available increases the resilience of the poor.

The Brahmaputra-Jamuna River is one of the largest rivers in the world, with its basin covering areas in Tibet, China, India, Bhutan and Bangladesh. It originates in the Chemayung-Dung glacier, approximately at 31°30′N and 82°0′E. It has a long course through the dry and flat region of southern Tibet before it breaks through the Himalayas near the Namcha Barwa peak at about 7,755m. The total length of the river from its source in south-western Tibet to the mouth in the Bay of Bengal is about 2,850 km (including Padma and Meghna up to the mouth). Within Bangladesh territory, Brahmaputra-Jamuna is 276 km long, of which Brahmaputra is only 69 km.

In the plains of Assam the Brahmaputra is a mighty river and spreads into a vast expanse of water. It has numerous islands and changes its course very often. After traversing the Assam valley for 720 km, it sweeps round the Garo Hills, enters Bangladesh and flows southward for nearly 240 km before joining the Ganges and the Sea in the south. In Bangladesh the reach of this river is very small-up to the off-take of the Old Brahmaputra and its downstream portion after the off-take is known as the Jamuna.

During the monsoon the Brahmaputra discharges a large volume of water and at the same time brings in huge amounts of sediments. The width of the river varies from 3 km to 18 km but the average width is about 10 km. The width/depth ratios for individual channels of the Brahmaputra vary from 50:1 to 500:1. The gradient of the river in Bangladesh is 0.000077, decreasing to 0.00005 near the confluence with the Ganges. The river has a total suspended load discharge of about 725 million tons per annum.

The project, "Mainstreaming Livelihood-Centred Approaches to Disaster Management" is working towards reducing the vulnerability of poor rural communities living in exposed situations to the hazards they face. A livelihoods approach to disaster risk reduction puts people first and aims to understand and strengthen their livelihoods to ensure that they can better cope with and recover from shocks and hazards. It also looks at measures to ensure that people are prepared and can mitigate against hazard impacts. The overarching goal of this project is a reduction in disaster risks (DRR) which contributes towards sustainable development and poverty reduction.

A typical example of a vulnerable family.

A poor farming family gradually manages to acquire land and starts to have a decent source of food and income from their crops of rice and vegetables. Their three young children are getting two good meals each day. They are starting to feel that they are moving out of poverty. They know that their land is in a flood plain but they cannot access any institutions that will help them to build a protective wall which might prevent erosion – however at least the land is fertile and productive.

When sudden floods come one year most of their land, all of their crops and their poorly constructed home are washed away. They lose almost everything and are left destitute. The young children start to get sick because there is little food and no clean water. They will struggle to recover because they do not have savings, family support or other sources of income.

This family may have been moving out of poverty but they were still vulnerable. They were still exposed to shocks and stresses but more importantly their livelihood was still vulnerable in the following ways:

- They were dependent on a single source of food and income with no savings, and no alternative livelihood options.
- They were living in a vulnerable, low lying area, in a weakly constructed home.
- They had no social safety nets, such as wider family support, or other networks.
- They were not able to influence institutions to help them prepare for or recover from the flood.
- The children are particularly vulnerable because they are young and weaker than the adults.
- The couples do not have other skills to use to get an income.

Project Methodology

As poor local communities are worst affected and likely to suffer most from the impact of stresses and hazards, Practical Action has focused on building the resilience of these communities. But community-based approaches tend to be small-scale, location-specific, and operate in isolation to wider national initiatives. They usually fail to be considered in wider development planning with the result that local level environmental, conflict and other hazards are not incorporated into national plans. These community-based approaches need to be scaled up and linked into wider national agendas and institutional structures and not viewed in isolation. While communities may be able to cope under normal circumstances, at times of extreme crisis they need access to external resources and expertise.

The project has two main components:

1. Community level activities which reduce the impact of particular hazards by increasing livelihood opportunities, increasing resilience, reducing vulnerability and promoting preparedness to deal with the hazard and its aftermath.
2. Linking community-based experiences with local, District and National level institutions through exposure, advocacy and capacity building. The impact of community activities are documented and used to promote the adoption of the livelihoods approach to disaster management in Government institutions.

Community level activities

Poor people living in exposed situations are not helpless victims waiting for inevitable disaster to strike. Flooding and erosion are annual on-going events for which people have evolved strategies to cope and recover. Avoiding disaster is part of their livelihood strategy, but all too often their coping strategies are inadequate and their livelihoods are overwhelmed by the strength and severity of the flood or the extent of the erosion. Community based disaster management (CBDM) must therefore take account of how people make their living and must involve the people themselves in identifying the constraints under which they live and the measures which can be implemented to reduce their vulnerability.

Community participation is thus the most important component of the project, ensuring commitment, ownership and sustainability of the activities undertaken. It is vital to ensure "buy-in" from all sections of communities, local authorities and service providers. The implementation of the project in partnership with local NGOs goes some way to ensure that impacts are sustained beyond the life-time of the project and that a reservoir of expertise is locally available.

The situation existing in the target communities was assessed using participatory vulnerability and capacity analysis (VCA or V2R), an analytical tool widely used in development. Communities are facilitated to identify local hazards, their strengths and weaknesses, their assets and deficiencies as well as activities which build on their existing coping strategies, resources and skills, to reduce their exposure to disaster risks while increasing their livelihood security. Based on the VCA findings, local development plans which incorporate risk reduction, increase resilience and the diversity and sustainability of livelihood strategies are formulated.

In all the targeted communities, people have come together voluntarily to form community based organisations (CBOs) who provide a lead for the identification and implementation of local development activities.

Community Based Disaster Preparedness

Community Based Disaster Preparedness

Disaster preparedness refers to measures taken to prepare for and reduce the effects of hazardous events which threaten to become a disaster. Preparedness activities are designed to, where possible, reduce social disruption and losses to existing assets while helping affected populations to respond to and cope with the consequences of a disaster. Although these activities can serve, in the absence of more permanent mitigation measures, to reduce the threat to loss of life and property, they are more effective when employed as a component of a comprehensive, overall disaster risk reduction plan.

Preparedness

Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

-by UN/ISDR in 2004 in cooperation with other experts in the field

The three Districts (Gaibandha, Bogra and Sirajgonj), in which the project is being implemented, are among the most disaster-prone areas in Bangladesh. Vulnerable people living along the riverbank regularly face devastating floods and severe river erosion. Inhabitants of these frequently flooded zones suffer from extreme poverty, poor health, nutrition and little education. They have little access to government services and information and their lack of economic opportunity, poor infrastructure and absence of organizational capacity further handicap their efforts to effectively deal with the impacts of recurrent disasters. The negative impact of natural disasters exacerbates their poverty and vulnerability. Furthermore, it is not only "big" disasters that destroy life and livelihoods; accumulated losses from a succession of small floods, droughts and gradual riverbank erosion can exceed the losses from big disasters and contribute significantly to increased vulnerability at the local level. These disasters attract little media attention and communities are often left on their own to cope with their aftermath.

While the coping strategies developed over generations have enabled people to survive, they are generally ill prepared in the face of repeated floods and ongoing erosion. Each year the annual flood spells disaster, resulting in the loss of land, crops, homesteads, assets and lives. Already poor, people are driven further into poverty and destitution by their lack of preparedness.

Community Based Disaster Preparedness (CBDP) recognizes that people in high risk areas have developed their own coping mechanisms and strategies to reduce the impacts of disasters. It is important to appreciate this local knowledge and to build on it in order to improve local capacities to withstand and respond to the impacts of disasters. The inhabitants of exposed communities are always the first to respond to a disaster. They are usually involved in search and rescue activities as well as providing treatment and relief to their families, friends and neighbours. CBDP seeks to improve these skills through training in preparedness measures, rescue techniques and first aid.

The DRR project of Practical Action focuses on strengthening the capacity of local communities and local government officials (*Union Parishad*), to cope with hazards through the building of community resilience, while at the same time promoting preparedness planning. Livelihood strengthening and diversification is enhanced through the provision of appropriate technologies and information. The project has promoted raised dwellings, low cost cluster housing, elevated hand pumps for clean drinking water, floating seed bed and vegetable gardening during periods of inundation, seed banks, livestock rearing and management, fodder management to strengthen livelihoods. The inputs and trainings provided are described in later sections.

Capacity building and training on DRR issues, including preparedness is provided to Community based organizations (CBOs), community volunteers, school students and teachers, religious leaders and Union and Upazila (sub-district) Disaster Management Committees in all the target areas. 300 community members and 300 youths (school children), half of whom are women, were motivated to volunteer for training on disaster risk reduction strategies at family and community level. Training included search and rescue, first aid and the dissemination of early warning messages. The volunteers were trained to carry out specific roles before and during disasters. They also took part in public dramas, folk songs, rallies and school-based campaigns to raise DRR awareness throughout the year. They have organized community meetings to demonstrate mitigation works (such as raising house plinths) and carried out simulations on what to do prior to the onset of floods. Messages included how to respond to early warning messages, where to take safe shelter during floods, how to stockpile household assets for emergency, the storage of valuable goods above flood levels and livestock and fodder management.

Community volunteers have also conducted courtyard meetings. These community meetings have been shown to be an effective tool for building a culture of safety; raising awareness and providing appropriate information on how to reduce individual and community vulnerability to locally prevalent disasters. The volunteers also perform social welfare activities with the help of the local administrations, NGOs, Union Disaster Management Committees, educational and religious institutions and other agencies.

Information, education and communication (IEC) materials such as posters, leaflets, brochures, rickshaw tinplates, festoons and bill boards have been produced in Bengali. These convey vital life saving messages on how to prepare for and survive natural hazards. Together with the community risk and resources map, the seasonal calendar, contingency plan and community based disaster preparedness plan developed through the vulnerability and capacity assessment (VCA) with community and stakeholder participation, the knowledge and confidence of communities to respond appropriately to disasters has been enhanced.

The project has facilitated the formation of Community Based Organizations (CBOs) in the targeted communities. The mobilization of communities around disaster preparedness activities has reinforced community cohesion and stressed the value of collective action during times of adversity. Training, together with equipment such as rescue boats, life-belts and other necessary aids has been provided to the CBO members. Megaphones have been for provided for the dissemination of early warning messages. The community capacity and awareness building activities involve all sections of the community in working together towards the long-term well being of the community. The CBOs play an essential role in mobilizing community participation. Example of a CBO planning process…

Example-1: Preparedness plan by CBOs & Volunteers (Yearly Action Plan: April 2008-March 2009)

Sl	Particular of Activities	#	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Responsibilities
1	Monthly Coordination Meeting	12													All members
2	Provide flood early warning message to the community	32													Raju, Yasmin, Saddam
3	Courtyard meeting with community on flood preparedness	20													Community volunteers
4	Rescue, evacuation of flood affected people by rescue volunteers	0													Sabu, Amirul, Chan , Raju
5	Emergency relief collection & distribution by CBOs & volunteers	0													All CBO members & volunteers
6	Posturing on disaster preparedness slogan for massive awareness	50													Lal miah. Tapon, Saddam
7	Minor renovation of village road through voluntarism (after flood)	02 km													As per responsible plan
8	Day observance (Rally, cultural show and discussion)	03													All volunteers
9	Ensure water and sanitation situation during disaster	0													As per responsible plan by volunteers
10	Emergency information centre operation	01													Lakl miah, Chan miah, Saddam
11	Coordination with union Disaster Management Committee	0													Sabu, Lal miah, Sabeda, Chan
12	Linkage with Govt. & Non-Government Organization	0													Lalmiah, Sabu, Chan miah
13	Shelter arrangement for livestock during disaster by Community volunteers	50													Sohel, Tajul, Raju, Lal miah, Saddam
14	Awareness building on seeds preservation & collection by volunteers	12													Raju , Chan miah, Kuddus
15	Fund collection for critical flood situation address	0													All members
16	Courtyard meeting on disaster preparedness by volunteers	20													Yasmin , Tapon, Rokeaya, Minu
17	Courtyard meeting on early marriage, dowry and social violence by volunteers	12													Yasmin , chan miah, Lalmiah
18	Courtyard meeting on pregnant mother and child nutrition	12													Yasmin, Sabeda, Majida, Latifa
19	Weekly saving collection for CBO strengthening	0													CBO Cashier

Through exposure to the community based planning process and other project activities, the local government disaster management committees (UDMC) have been motivated to move from focusing on relief to a preparedness approach. Capacity building has resulted in their adoption of a comprehensive DRR plan which includes specific measures including provisions to evacuate the most vulnerable such as children, the elderly, people with disabilities and pregnant women during disasters and the promotion of flood-resistant WATSAN facilities in the flood and erosion-prone river bank areas. Example of a UDMC preparedness plan…

Example-2: Preparedness plan of Union Disaster Management Committee (UDMC), (Period January 2009 to December 2009)

Sl.	Activities	#	Jan.	Feb.	Mar.	Ap.	May	June	July	Augt.	Sep.	Oct.	Nov.	Dec.
1	Monthly coordination meeting	12												
2	Flood early warning dissemination among the community people	0												
3	Rescue and evacuation of flood affected people from char land and distress place	0												
4	Arrange safe water and sanitation for sheltering people	10												
5	Ensure security of shelter camp	0												
6	Arrange dry food and saline for victims	0												
7	Repair/maintenance road communication after flooding	0												
8	Preparing a list of losing households	1												
9	Provide better services for women, elders and pregnant mothers during sheltering	0												
10	Conduct awareness session about disaster	20												
11	Coordination with Upazilla Disaster Management Committee for better services	0												
12	Arrange rescue boat for evacuation and rescue work	0												
13	Special attention for unable and handicap people during sheltering	0												
14	Taken initiatives to rehabilitation of agriculture activities	0												
15	Arrangement vaccination camp, medicinal treatment for livestock	02												
16	Arrangement of dead body trampling and inform to relatives of death	0												
17	Keep pollution free environment through cleaning of dirty, death animals and others	0												
18	Ensure heath services during post flood such as arrange health camp, medicine distribution etc.	02												

Note:

- Union parishad secretary is responsible to organize monthly coordination meeting also special meeting as when required.
- Female members of UDMC are responsible to take special care of disable, child and pregnant mothers.

Working at the individual, household and community level, the Practical Action DRR project has demonstrated that reducing the vulnerability of communities to natural disasters by improving their living conditions has increased their resilience. More secure and sustainable livelihood strategies, coupled with preparedness and contingency planning has enabled communities to efficiently manage hazardous situations and recover more quickly. Losses of lives and livelihoods have been reduced. While the comprehensive control of water-related natural hazards is not entirely possible and vulnerable populations will have to continue to live with the associated disasters which they bring, continuing effort is required in the development of a national disaster management plan that takes account of the needs of exposed rural communities.

While the preparedness and response capacity of local communities has been stressed, not all disasters can be managed at local level; sometimes the extent of the devastation is just too great. This is when a national disaster response system, backed up, if necessary, by regional and international support, comes into play.

CASE-1

Bangladesh Response to Floods 2007: A snapshot of a CBO's activities

o help address community vulnerability to floods in Kamargani Union of Gaibandha District Bangladesh, a group of 17 people (11 male and 6 female) came together voluntarily to form a Community-Based Organisation (CBO) to serve their community. Members of "*Ashar Alo Unnayan Sangstha*" were trained in group management and other skills and encouraged to actively take the lead in several community activities, including a Vulnerability and Capacity Assessment, the creation of awareness in the community regarding disaster preparedness, the preparation of a community-based risk reduction plan and the solution of various social conflicts.

The CBO has since arranged vaccination campaigns for livestock, motivated the community to carry out work to improve their water and sanitation facilities, repair culverts, bridges and the embankment and assisted government service providers to organize meetings and training workshops in the community.

In the recent floods the CBO members performed several vital roles; monitoring the flood situation, raising community awareness, disseminating early warning messages using early warning equipment supplied by Practical Action and rescuing flood marooned families.

"Our CBO members rescued flood-stranded people, shifted 23 lots of housing materials damaged by river erosion and constructed temporary cattle shelters for 75 cattle. We installed 6 temporary sanitary latrines and 3 elevated tube wells for people marooned in the flood shelters, maintained 4 flood shelters, repaired 3 culverts and organized 2 vaccination camps for the cattle" said the Secretary of the CBO, Mohammad Sabu Mia". "This year's flood gave us an opportunity to test our plan and what we had learned from our training. "We know how to rescue people and to how to shift them to the shelter during flood. I think we have passed the test", said a confident Sabu Mia.

The CBO members felt that by performing these activities in the community their social standing (dignity) had improved. They are now confident enough to communicate with external service providers for their needs. "The Upazila Executive Officer visited our community and observed our activities. He has assured us of his support for our further development", said Md. Chan Mia.

"We will soon be able to involve other agencies in development activities in our community" confidently said the Chairman of the CBO.

Ensuring Secure Homesteads

Ensuring secure homesteads

VCA findings in the project locations indicate that 70% of the people were settled in low lands (inundated by moderate flood) and that 60% of these families came from other locations where they had previously been made homeless by river bank erosion. Baseline survey data shows that while 71% of households have their own homestead land, the remaining 29% of households are residing on the embankment of the river or on government land. Only 23% of all households have their own cultivable land in the area. The homeless people are the poorest of the poor; living in sub-human conditions, and existing on irregular jobs such as day labouring, or share cropping. Their poverty and lack of shelter, a basic human right, is a matter of great concern.

The 35 most vulnerable families living on the embankment or in the over-crowded homes of neighbours or relations in each of the three project locations were identified jointly by the community, CBO members, Union Council (local elected bodies), project and partner NGOs staffs. In all, 54 male headed and 51 female headed households, were selected to benefit from project-funded housing. 105 low cost houses were constructed in clusters in the three locations for these 105 most vulnerable families.

Comments/ Recommendations:

CBO Kazipur: Mr. Bellal Hossain, President of Jamuna Bahumukhi Unnayan Dal (the village CBO) expressed the view that the formation of a committee was essential to maintain and manage the cluster village and ensure the future socio-economic development of the cluster dwellers.

Upazila Nirbahi Officer (UNO) of Kazipur (Executive Officer) gave thanks to Practical Action and partners for arranging a secure and hygienic place for 35 vulnerable community people through establishing a cluster village at Meghai under Kazipur Union. He said that this was the right way to reduce the exposure to risks of very vulnerable people and at the same time to secure alternative livelihoods for them.

The selected beneficiaries are now living in safe, flood free houses in a hygienic environment with the following facilities:

- A ground area of 1150 square feet raised above the highest flood for each family.
- A complete house of 280 square feet made of corrugated iron sheets, wood and reinforced concrete pillars for each family.
- 18 Sanitary latrines with safety tanks in each cluster village of 35 families.
- 6 tube wells for each cluster villages for safe drinking water
- 1 pond for bathing and fish culture in each cluster village.

How do the cluster villages help reduce vulnerabilities?

The cluster village helps to reduce the vulnerabilities of the inhabitants in the following ways:

- Cluster village is raised 2 feet higher than previous highest level of flood (1988); they no longer suffer frequent flooding.
- Cluster houses are both flood and storm resistant
- All of the beneficiaries have access to safe drinking water and hygienic sanitation facilities.
- All of the beneficiaries have their own, permanent homestead; a complete dwelling house.
- Women are free from disaster impacts during critical moments, such as during pregnancy and child delivery.
- Children and disabled persons are dwelling in a risk free environment.
- All of the inhabitants are able to establish a social network within the cluster. They are a community.
- Saplings have been planted around the cluster village to protect against soil erosion.
- The pond provides a facility for bathing and fish culture.
- Having a secure home enables the inhabitants, especially the women, to engage in income-earning activities such as animal rearing on a shared basis.
- The inhabitants are able to establish small home gardens to grow vegetables for home consumption.

Education and Commerce advisor of the government of Bangladesh were visited at cluster village of Kamarzani.

Involvement of the local authority:

The involvement of the local authorities in the building of cluster villages is vital to ensure their ongoing support.

- Union Parishad Chairman and members, CBO members and local elite persons were involved during the purchase of the land.
- Union Parishad members, Community volunteers, CBO members and local elite persons were involved in earth cutting activities.
- CBO members and UP members were involved in purchasing timber for house construction.
- Union Parishad Chairman and members, CBO members and local elite persons were involved in the selection of beneficiaries as per project criteria
- Upazila Project Implementation Officer (PIO) and Journalist were also involved in cluster village activities.

Support from Upazila Agriculture Department.

With the assistance of CBO members, the cluster village dwellers requested the Department of Agriculture Extension (DAE) personnel at Kazipur Upazila for their support. As a result, 120 saplings of Mango, jackfruit, black berry, neem and mehgoni trees were donated free of cost and planted around the slopes of the cluster village. These trees will help to reduce soil erosion, act as a wind-break and provide shade; protecting the beneficiaries from intensive sun light. Eventually the trees will provide nutritionally healthy fruit for consumption by the villagers.





CASE-2

Cluster Village Addresses The Dream of Nurul Hossan

Nurul Hosan 55 is the father of 1 son and 3 daughters. The son has moved away, but the two daughters are separated from their husbands and together with their three children are dependent on their father. He is currently living with relatives in Goghat village, Gaibandha, a low-lying flood-prone area. “It is a painful, uncertain and unstable life as we do not know where we will be after the next rainy season”, he explained.

Nurul says “Once I had a lot of cultivated land, a homestead, a cow, goats and other household assets. I was a good farmer but I lost everything due to frequent river erosion. Now I have nothing; I am a vulnerable, landless day labourer dependent on others and unable to regularly provide two square meals each day for my family. I have changed my home at least twelve times, recovering my homestead with hard labour each time, but the devastating flood of 1998 finally changed my life. I could not recover my homestead and was forced to live with misery and in the presence of social violence in the house of relatives”.

Nurul and his family were selected as beneficiaries to be housed in the cluster village. “Now I am no longer vulnerable to flooding as my new home is raised 2 feet higher than the flood level of 1998. We are no longer treated as refugees; we are free from social violence, getting all kind of human facilities, social networks and linkages with GO/NGOs. I am very happy and grateful to Practical Action-Bangladesh, SKS and the Project”.

Previous house

Present house in Cluster village

CASE-3

Happiness of Nirmola in her secure & hygienic house in a cluster village

Nirmola (35) is the fourth of seven children and lives with her husband, Noresh Chandra Bormon, a poor fisherman, on the embankment at Paikpara, Sariakandi, Bogra.

Nirmola's father was rendered landless when the Jamuna River took his1.33 hectare of land, forcing the family to take refuge on the embankment and survive on his meagre income from fishing.

"When I was 12 years old, in class-II in school, my father arranged my early marriage in order to reduce the family burden. I lived on Kumarpara Char with my husband, cultivating 4.86 hectare of land. But the mighty Jamuna engulfed all. We have moved home 16 times in 23 years, becoming poorer and poorer each time. Many days pass without even one square meal", Nirmola told us.

Nirmola is the mother of four children. Although, she has managed to marry her elder daughter aged 13 years she still struggles to survive and cannot pay the cost of schooling for the others. Nirmola's life is hard and painful.

Nirmola was selected to receive a house in Paikpara cluster village. At the same time she received handicraft training, providing her with an opportunity to supplement the family income. Her daughter has joined her in the enterprise of hand-sewing and embroidering dresses.

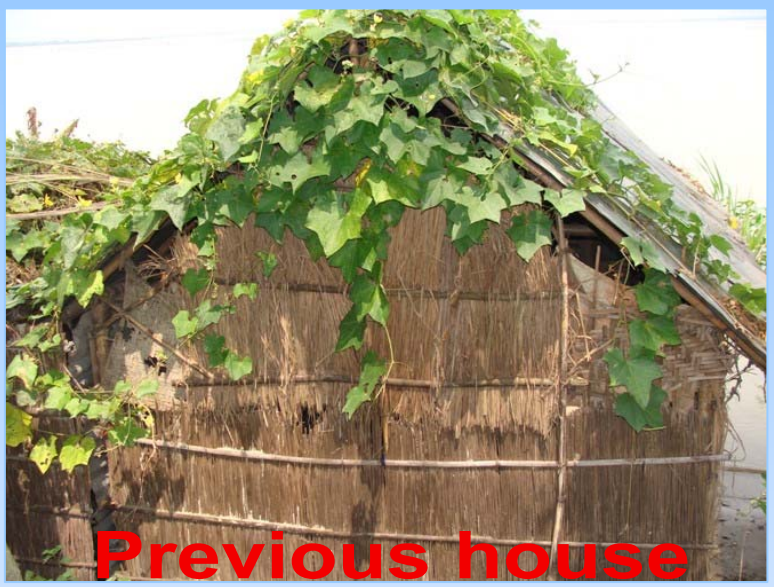
"Now, I am happy and thanks to Practical Action and UDP our fundamental needs are provided for", said Nirmola with a smile.

Previous home on embankment

New house in cluster village away from flood zone

CASE-4

Rabeya is in Cluster Village



Forty five year-old Rabeya is the wife of physically disabled, Osman Gani, a day-labourer. Together with their daughter they lived at Meghai, a village adjacent to the mighty river Jamuna. Originally they had a small piece of land on which they lived, but this was engulfed by the Jamuna. During the last 20 years they have been forced to move 10 times to different places on the river bank as each time the river has taken their home. They have no assets at all.
To add to their problems, Rabeya had to pay Tk.300/year rent to the owners of the land on which they lived with an unhygienic kitchen, bedroom, latrine and drinking water. With little help from her disabled husband, she maintained her family of six by rearing cattle on a share system.

According to her “Once I came to know that a group of people of the community were invited by Practical Action and its local partner GKS to a meeting to discuss community involvement in development initiatives. I got interested and participated in the meeting. I was selected as a member of cluster village and finally, I got housing with all sort of facilities. Now that I have a safe home, I am able to rear goats for other people on a share basis. At last I have a source of income”.

New house in cluster village

Ensuring Safe Drinking Water

'Every year in Bangladesh 75 million episodes of diarrhoeal diseases occur that result in approximately 110,000 deaths. The Government of Bangladesh alone spends US$80 million per annum in addressing this problem. One of the key reasons for the high incidence of diarrhoeal diseases is the use of contaminated water." (*ICDDRB, Annual report 2007, published, June 2008*).

Continuous and reliable access to safe drinking water and sanitation services is one of the most important elements for quality of life and the possibility of development. People have survived without electricity, vehicles, telephones and many other services that seem indispensable today, but they have never survived without water.

The tube-well (hand pump) is the major source of drinking water for rural people. A considerable number of tube-wells have been installed in the country by Government, NGOs and other private investors, but most did not consider flood levels when they installed them. As a result, a large number of tube wells are inundated during the monsoon. Flood waters contaminate the wells and people suffer waterborne diseases like dysentery and diarrhoea. During the monsoon, safe drinking water is in very short supply.

Waterborne diseases like dysentery and diarrhoea have broken out in Faridpur. The health department and Bangladesh army are engaged in distributing medicine and oral saline. Scarcity of drinking water remains. About 200 people infected with diseases like diarrhoea, pneumonia and skin infections have been admitted to different health complexes and hospitals, district civil surgeon's office, Sirajgonj sources said. "We have been staying here for seven days but no one came to help us with food and drinking water," said Jogesh Chandra, who took shelter at Al-Furkan Kindergarten School in Gaibandha Sadar.
"Typically we see a large increase in the number of patients twice a year -- once in pre-monsoon and then in post-monsoon period, which is closer to the end of September due to flood situation," said Henry Richards, Manager, Communications Unit of ICDDR, B.

-The Daily Star, September 09, 2008.

Do not considering flood level

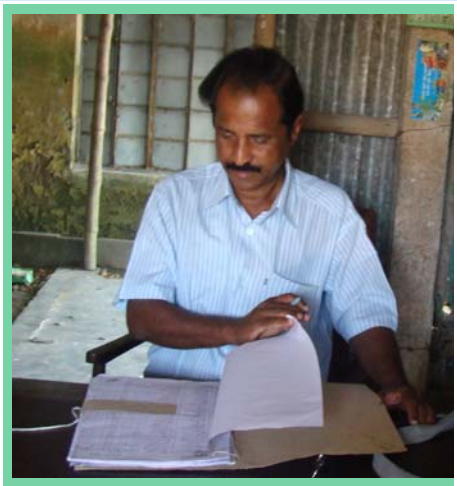
Result: Flood 2008

DRR PROJECT INITIATIVE

To ensure the availability of clean drinking water all year round, 60 tube-wells on raised platforms have been installed at the three project locations. The platforms, constructed with bricks, sand and cement, have been designed to be two feet above the height of the highest flood level previously recorded. In some instances platforms are actually 4-6 feet above ground level. Normally 15-20 families use each well, but more than 60 families depend on each during the monsoon. If flooding is extreme, an extension pipe can be fitted by locally trained community technicians who provide regular maintenance.

"Our life was very painful due to a lack of safe drinking water; particularly during floods. While the flood is ongoing we were fetching safe drinking water from one or two kilometers distance. Some times we even used flood water to meet our needs. Every year we suffered waterborne diseases like dysentery and diarrhoea. However, now we can permanently overcome these problems because Practical Action – Bangladesh has installed a community based elevated tube well near my house. 60-70 families collected water every day as this tube well did not go under flood water in current year (2008). Now we all are very happy because we are no longer at risk from drinking water contaminated with waterborne diseases."

-Moina Begum, Village: Koraibari, Kamarzani.



Mr. Solaiman Islam
Chairman
Kamarjani union Parishad
Gaibndha Sadar Upazila
Gaibandha, Bangladesh.

Drinking water scarcity and waterborne diseases like dysentery and diarrhoea were our life mates during the monsoon due to 70%-80% of tube wells being inundated almost every year. More than 95% of tube wells were installed under various government programmes, through the Union Parishad, NGOs and a few other private sector initiatives, but they did not consider flood levels. Practical Action is one of the pioneer organizations in the development sector for ensuring safe drinking water in flood prone areas, something which has never been done before. Their elevated tube wells are a simple and sustainable technology which effectively reduces vulnerability to water borne disease-making access to safe drinking water possible at a most critical period. The UDMC members of Kamrjanin Union feel encouraged and it was strongly decided in the UDMC meeting that in future all of the tube wells in Kamarjnai Union will be sunk using Practical Action –Bangladesh's technology as part of the strategy for integrated flood management.

Facilitating Employment Generation

Knowledge sharing among beneficiaries by Ms. Olivia Coghlan, Disaster Risk Reduction Adviser, Conflict, Humanitarian and Security Department, Operation Team, DFID at Kazipur.

Facilitating Employment Generation

Background

Employment in the rural areas of Bangladesh has traditionally been tied to land ownership. Most employment is generated by land owners, either farming their own land or employing others to do so. Share-cropping is still a major form of employment, the opportunities for cash based employment, including traders, craftsmen and a small number of unskilled labourers are severely limited. All agricultural activities are weather-dependent. A single event such as a flood, cyclone or drought can push workers into unemployment and debt with a very long recovery period.

The Northern Region of Bangladesh, which includes Gaibandha, Bogra and Sirajgonj districts, is situated in the Brahmaputra-Jamuna river basin, and contains many tributaries of these rivers. The topography and climate make the area ecologically vulnerable to destabilizing variations including floods, river erosion, drought spells, and cold waves, all of which occur more frequently and intensely than in other regions. Amidst these adverse conditions, the local economy shows little diversification and is heavily dependent on agriculture – which yields only one or occasionally two annual harvests, in contrast to the three crops per year in more fertile and benign parts of the country. In average years local employment is limited from September through December. As the landless and poorest survive on agricultural wage labour, their opportunities and incomes decrease in this period, and they become trapped in what is called *Monga* – a cycle of poverty and hunger.

Monga is seasonal food insecurity in ecologically vulnerable and economically weak parts of north-western Bangladesh, primarily caused by an employment and income deficit before *aman2* is harvested. It mainly affects those rural poor, who have an undiversified income that is directly or indirectly based on agriculture.

Monga is therefore not a problem of food availability, but of lack of access to food.

-*The Journal of Social Studies*, No. 111, July-Sept. 2006, Centre for Social Studies, Dhaka.

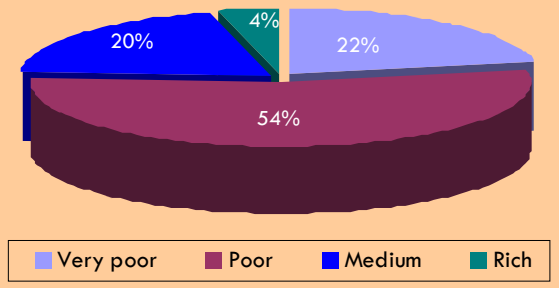
Introduction

Poverty in the project locations (Gaibandha, Sariakandi and Kazipur), is multifaceted, characterised by low standards of living, lack of education, poor health, and vulnerability of most households to natural and human-induced disasters. The basic causes of poverty are lack of access to (i) productive resources, primarily land and water; (ii) public resources, such as health services and education services; and (iii) employment. Inadequate social safety nets make the landless particularly vulnerable. Land ownership, as an income-generating physical asset, has a predictable link with poverty incidence in the rural areas, but the size of landholdings is an imperfect measure of wealth. Most of the areas are sandy and sandy clay. Furthermore, monsoon floods, riverbank erosion and water logging engulf the major portion of cultivable lands.

Analyses of the main economic activities of households in the project areas show that 27.72% do not work, 1.61% are looking for work, 33.27% household are working (most of the women are engaged in household activities) and the remaining 37.4% of people are engaged in different types of economic activities (BBS, national population census 2001).

According to the VCA findings at the three project locations, 22% of people are very poor, 54 % are poor, about 20% have medium economic and financial conditions and 4% are regarded as rich, but only in the context of local economic conditions.

Figure-1: Socio-economic conditions at the three project locations



Main Sources of Household Income

The main sources oh household income in three locations are agriculture (comprised of cropping, livestock, forestry and fishery), day labour (agricultural and non-agricultural), small business, regular employment (services), rickshaw/van pulling and other sources using natural resources such as catches fish from open water bodies, oyster collection for duck feeding, thatching grass, fodder collection etc.

Figure-2: Main sources of household income

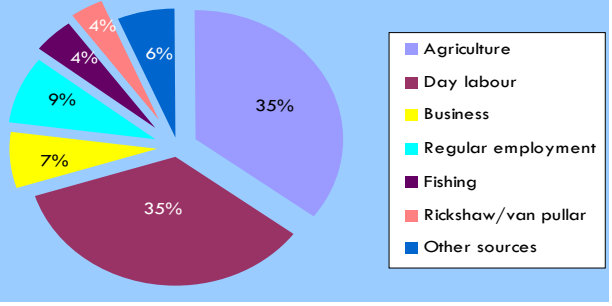
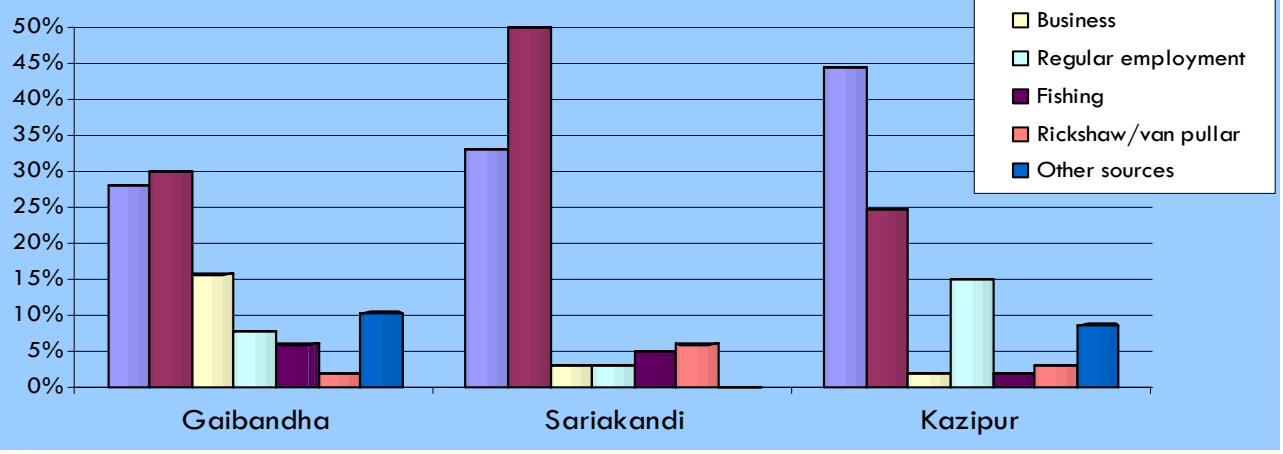


Figure-3: Location wise main sources of household income



Economic Activity (as per VCA finding)

The VCAs in the project locations, found that 21% of the population is under 7 years of age. Among the population aged 7 years and over, 30% are not working, 32% are engaged in household work (mainly women) and the remaining 38% are working. Seasonal migration during the lean period is high but variable, depending on agricultural production, the flood situation and other climatic circumstances. Many people are forced to migrate permanently due to riverbank erosion, lack of skills or alternative livelihoods options. The findings of the VCA s from each project location are shown figure-5.

Figure-4: At a glance;
People engaged in economic activities

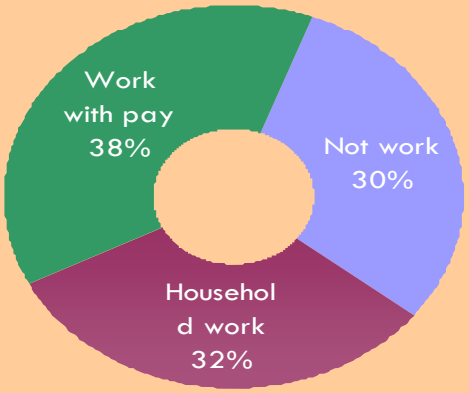
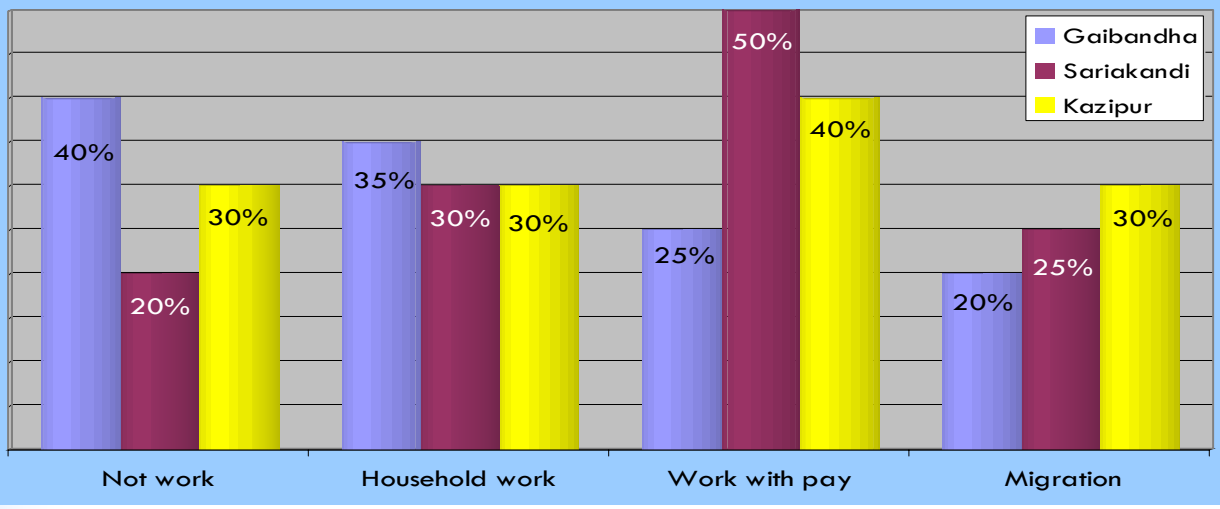


Figure-5: Project locations wise economic activities



PROJECT INITIATIVES

Many poor and vulnerable people rely on access to common resources to offset their own lack of resources. These common resources are not only declining in quality and quantity, but access to the poor is increasingly being denied. Just to survive is a constant daily struggle with uncertainty. The project facilitates the diversification and strengthening of livelihood strategies which build resilience to the impact of hazards thereby reducing the risk of disaster. Improved livelihood strategies have been shown to reduce vulnerabilities. Training in practical technologies and skills has been provided for individuals, groups and CBOs. As a result many beneficiaries are using their new found knowledge and skills in gainful employment; earning money to satisfy their basic needs and increase their resilience to the uncertainties they face. Skill training provides people with new opportunities and new ways of earning a living, moving them out of destitution while increasing their ability to cope with unpredictable changes.

A. Floating Cultivation

During the annual floods large tracts of crop land are inundated and cannot be cultivated. The "Mainstreaming Livelihood-Centred Approaches to Disaster Management Project" has introduced floating cultivation at three project locations. Demonstrations of the use of floating gardens for the germination of rice seedlings and the cultivation of vegetables have successfully convinced at least 77 persons to adopt this technology. Although this method of cultivation is new to the participants, they have adopted it out of the need to improve their food security.

The southern, south western and the coastal areas of Bangladesh remain submerged for long periods every year, especially during the monsoon season. People in these areas depend on agriculture and have been coping with submerged/flooded conditions for generations. The have adopted a method of cultivation, locally referred to as "*Vasoman Chash*," meaning floating agriculture, since the time of their forefather's. This system is similar to hydroponics, which is a scientific method whereby the plants are grown in water and derive their nutrients from the water instead of from the soil. A bio-land or floating bed is prepared from biomass using water-hyacinth, aquatic algae, waterwort and the other water born creepers, straws and herbs or plants residues. People of the area mentioned that this method was also being practiced in the north eastern parts of Pirojpur district, the north western parts of the Jhalkathi districts and in Gopalgonj district.

Why floating cultivation?

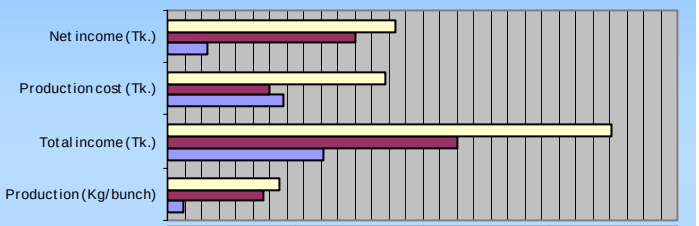
The project areas are situated in low lying areas; on a flood plain. Traditionally during the monsoon (June-November), *Amon* (a local variety) rice is cultivated. Yet every year floods occur at this time. Most of the crops are washed away resulting in hunger and economic hardship. As the flood waters recede, many farmers try to replant their rice crop, with little success as rice seedlings for transplanting are in short supply. It is too late to sow new seed as the time for transplanting will be past by the time they are germinated. The introduction of floating seed beds has provided a solution. Seed can be sown in a timely fashion and when the floods recede a plentiful supply of seedlings ready for transplanting is available. Although this method of cultivation is not new to Bangladesh, it was previously unknown in the project locations.

Result of floating cultivation

Good coping strategies which reduce vulnerability are often innovative, developed in response to environmental conditions and ideally should be sustainable. Demonstrations of floating gardens were introduced at the 3 project locations in 2007. Their ability to contribute to food security and to provide a supplementary source of income for marginalized communities was emphasised. The overall reception of floating cultivation in the three selected locations was encouraging. As awareness of this new technology increased, beneficiaries were mobilized into groups to make floating platforms. As a result, over the last two years both rice seedlings and vegetables have been successfully cultivated. Analysis of the inputs and outputs of the methodology have clearly shown that floating gardening is a feasible and productive alternative livelihood option for communities living in wetland areas where land is regularly submerged. Furthermore, this method also provides landless people with the opportunity to grow vegetables and rice seedlings.

77 beneficiaries cultivated 43 beds of vegetables and 34 rice seed beds. On average, each beneficiary produced 85 kg of vegetables and 668 bunches of rice seedlings. The vegetables were generally consumed by beneficiaries with any excess being sold. The rice seedlings produced were sufficient for trans-planting into a total of 147 decimals of land.

Figure-6: Cost & benefits of floating cultivation



	Production (Kg/bunch)	Total income (Tk.)	Production cost (Tk.)	Net income (Tk.)
Total	26367	104686	51105	53581
Rice seedlings	22712	68136	23800	44336
Vegetables	3655	36550	27305	9245

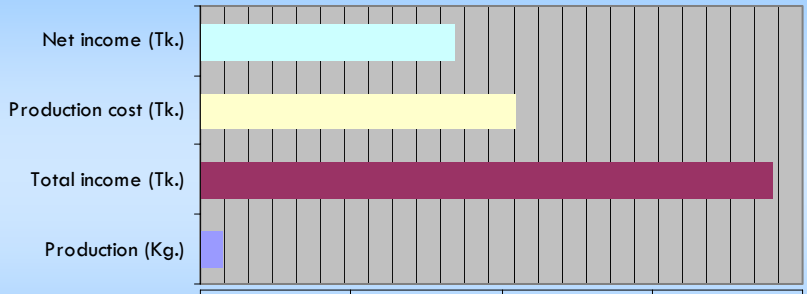
Mr. Joinal Pramanik of Godagari village, Sariakandi is a small trader. He has 2 sons and a wife and a land holding of 66 decimal. He received Tk.700 from Practical Action for floating seed bed and vegetable cultivation. 18 decimal of his land was planted with *Gainja* (a local variety of rice) paddy seedlings which he produced on a floating seed bed. The current market price of this Gainja paddy seedling is Tk.1000. In addition he sold Gainja paddy seedlings to the value of Tk.230 in the local market. Having produced the rice seedlings, he is now growing a variety of different vegetables on the same floating bed, estimated to have a market value of Tk.600.

B. Garlic Cultivation by Zero Tillage

During an exposure visit to Gurudashpur Upazila, 66 marginal farmers were introduced to zero tillage garlic cultivation methodologies by the Upazila Nirbahi (executive) Officer, the Agriculture Officer and local farmers. Practical knowledge about the methodology, problems and likely success of the method were shared with the visitors. While the cultivation time, just after harvesting of *Amon* rice, is new for the targeted communities, using this particular technology encourages better land utilisation and reduces the risk of crop failure. Following the visit, 2,970 kg. of garlic seeds were distributed among 66 beneficiaries at Gaibandha, Sariakandi and Kazipur project locations.

The 66 farmers cultivated a total of 8.016 hectares. On average, each farmer produced 316 kg garlic. The garlic produced was generally sold, consumed or preserved as seeds for planting in the coming season.

Figure-7: Cost & benefits of garlic cultivation



	Production (Kg.)	Total income (Tk.)	Production cost (Tk.)	Net income (Tk.)
Garlic	18960	474,500	262,953	211,542

Zero tillage garlic cultivation: When flood waters recede from the land and the soil is still wet and muddy, garlic seeds are planted in the field and immediately covered with straw. Approximately 400 kg of straw is need for 30 decimal of land. If paddy straw is not available, any other kind of straw can be used. Prior to planting the field should be fertilized with urea-10 kg, TSP- 30 kg, Gypsum 15 kg, Boron 0.50 kg per 30 decimal. Local farmers recommend planting seeds 3 inches apart in rows, the rows being separated by 6 inches. Depending on the quality of the seeds, about 45 kg of garlic seeds are needed to plant a 30 decimal field. Irrigation to maintain soil moisture, combined with the application of 5kg of urea, is essential 30 days after planting. Depending on the local climate and in the absence of rainfall, irrigation may be required on two further occasions. Care needs to be taken not to over-irrigate as this may cause the bulbs to rot. Fungicides or pesticides may have to be used if the crop is infested. Usually after 120/130 days, the tops begin to dry and the garlic is ready for harvesting. Harvesting and storage needs to be done with care. Sprouting bulbs will not store for long. The harvested bulbs need to be dried and stored in an airy open place.

CASE-5

Garlic Cultivation by Zero Tillage

Sumon Miah, a 35 year-old, small farmer from Karaibari village, Gaibandha provides a shining example of how a new technology can reduce vulnerability, change the occupation, social status, livelihood, and life of a beneficiary.

Sumon Miah sorrowfully told us, “I am a small farmer and also a share-cropper in a *Char* area adjacent to Kamarjani. I produce various types of crops in different monsoon seasons, like jute, paddy, maize, vegetables and spices, but high production and cultivation costs mean that I gain little benefit from my efforts. In last year’s devastating floods I lost all my cultivated crops. As a result my life was dreadful. I could not manage to provide two square meals for my 7 family members; many days passed without food. I was depressed and in financial crisis”.

In the light of his overall living conditions and to strengthen his livelihood options, Sumon Miah was selected as being in need of support by the project partner Samaj Kallayan Sangstha (SKS). Following an exposure visit to see the best practices on zero tillage garlic cultivation at Gurudaspur Upazilla, Sumon Miah, using the techniques learned on his visit and supported with inputs and advice from the project, planted 15 decimals of land with garlic.

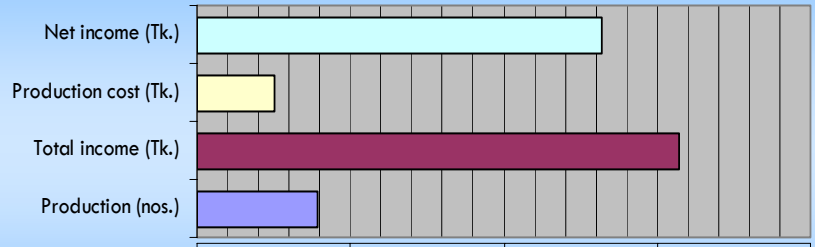
After 120/130 days Sumon Miah harvested his garlic crop. He was delighted with the yield of 270 kg from his 15 decimal field. “Compared to traditional cultivation this type of cultivation is much better because of lower costs and high production. Using traditional methods I could have collected 10-12 kg/per decimal but with this new technology I have harvested 18kg/ per decimals”.

Sumon Miah expressed his feelings with full satisfaction, “I sold 200 kg of garlic for Tk.5000 and used this money to cultivate vegetables on 45 decimals lands. I have earned Tk.16,000 from these vegetables as a direct result of the benefits of the garlic production. Zero tillage garlic cultivation has reduced my depression and changed my farming practices. I have preserved 60 kg of garlic as seed for the coming season’s cultivation and my target will be 30 decimal lands. The DRR project has changed my economic condition, family status and my livelihoods”.

C. Nursery Establishment

To increase income or provide alternative sources of income, 10 tree nurseries have been established by 10 beneficiaries at the three project locations. Although 10 families benefit directly from the nurseries' income, 50-70 families benefit by being paid for their labour and from the produce of the trees planted. Support for the establishment of the nurseries has included the provision of different types of seeds, poly bags, water jars, scissors and chemical inputs.

Figure-8: Cost & benefits of Tree Nursery



	Production (nos.)	Total income (Tk.)	Production cost	Net income (Tk.)
Seedlings	78575	314,300	50,000	264,300

CASE-6

A successful Nursery

"After retrenchment of my job I became frustrated as I had no way to support my family. For this reason I was very anxious to explore any way of securing a livelihood. I was born in 1955 at Kuptola village in Sariakandi and I was a freedom fighter. My father was a landless agricultural day labourer. I could not continue to study beyond HSC due to the poverty of my family. I am the 3rd child among 3 brothers and 1 sister"".
I had a job with a non government organization, but suddenly I was retrenched. Following this, I started a business partnership but due to the disloyalty of my partner this was discontinued. After that I went to Dhaka to try to get a job in a foreign country. By selling some assets I was able to pay an advance to a reputable source, yet failed to secure a job. I returned home saddened and tried to start a small nursery. Due to my lack of money this was not a success".
Nazir Uddin Pramanik continued, "I have 1 son and 1 daughter. My daughter Ms. Nurmohal Khatun was reading in college and my son Mr. Walid Hasan Dipu reached Class 9 but I was not able to bear the cost of their studies due to my lack of income. I was desperate to find a way of supporting my family".

"In 2006 I was selected as a "vulnerable household" in the Disaster Risk Reduction Project of Practical Action Bangladesh which is being implemented by Uttara Development Program. I received poly bags, Sikacher, Jharna, different varieties of seeds of fruit, medicinal and timber trees to start my nursery. I established a nursery on 64 decimal lands including my 12 decimal of fallow lands and produced about 45,000 seedlings of various species of trees. Up to October 2008 I have sold about 27,000 seedlings for a total of Tk105,000. At present about 18,000 seedlings with a value of Tk90,000 are available in my nursery".

Nazir Uddin reported that presently he is bearing the cost of his children's studies as well as maintaining his family from the income of the nursery. This activity is now his main occupation and by carefully working in his nursery, day by day its quality is being improved. He intends to establish a good quality nursery in Sariakandi Upazila, which will contribute to the planting of more saplings in the local area. This will help to improve the environment and contribute to reducing the risk of disasters.

D. Fisheries

VCA findings indicated that around 25% of families are seasonally engaged in catching fish from open water bodies during flood periods and 10% of the families are occupied fulltime (year round) in fishing in rivers, floodplains, canals and wetlands at the project locations. Although a large proportion of families are dependant on fishing (both fulltime or/and seasonal), most of these people are so poor that they do not have proper fishing equipment such as boats and nets. They have no other sources of income or other ways to cope. Many of them are living in appalling conditions under constant threat of flood, erosion and other natural hazards.

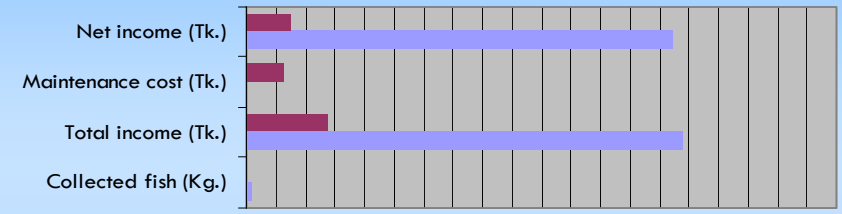
Fishing Boat and Net Group:

The project has organized 8 fishing groups of 8 to 9 persons per group – a total of 66 persons at the 3 project locations. Each group has been provided with a boat and net (8 boats and 8 nets in total).

Fish Culture in Pond:

Fish culture has a long tradition in Bangladesh, playing an important role in supplying the increasing needs of the people. Satisfying this growing demand for fish provides a real income earning opportunity for rural people with access to an enclosed body of water. As well as providing a source of income, fish culture has a vital role to play in satisfying the nutritional requirements of the rural poor. The project has supported 44 beneficiaries in 5 groups at three project locations to engage in pond fish culture.

Figure-9: Cost & benefits of Fisheries



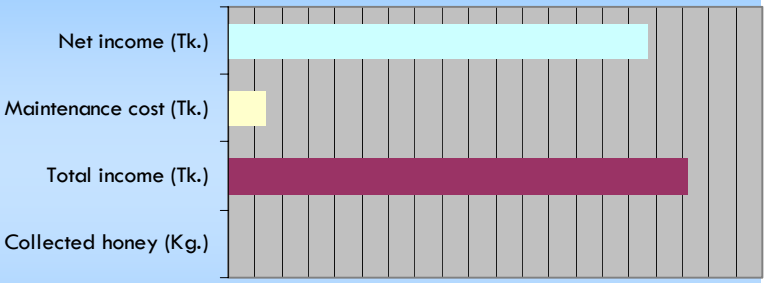
	Collected fish (Kg.)	Total income (Tk.)	Maintenance cost (Tk.)	Net income (Tk.)
Fish culture in pond	1570	109,900	51,320	58,580
Fishing boat & net group	8430	590,100	1,200	578,100

E. Beekeeping

The project has provided a total of 24 colonies (bee boxes or hives) of bees to 12 beneficiaries at the three project locations. The selected beneficiaries are extremely poor and landless with few income earning opportunities. Following an exposure visit to an established bee enterprise, training and technical support has encouraged them to keep bees.

In the context of agricultural employment and the economy of rural Bangladesh, beekeeping can be a full-time activity generating a reasonable income. As a family based activity it is very easy, acceptable and less expensive than many other income generating activities. As 5 or 6 colonies can be kept around the family homestead, no land is required. During most of the year there will be no need to purchase raw materials, as honey bees collect nectar and pollen from naturally occurring bee plants. When flowers are in short supply (dry season) supplementary feeding with sugar will suffice. The management of 5 colonies requires as little as 35 minutes per day, yet the average monthly earnings might be Tk. 3,000.

Figur-10: cost & benefits of Beekeeping



	Collected honey (Kg.)	Total income (Tk.)	Maintenance cost (Tk.)	Net income (Tk.)
Beekeeping	864	172,000	14,400	157,600

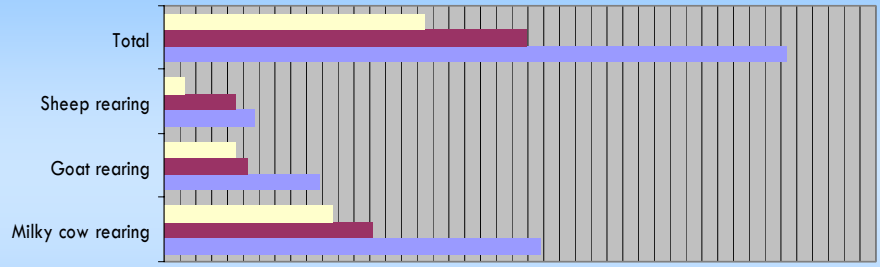
F. Livestock

Milky Cow Rearing: Milk is a valuable commodity with many uses. Besides providing sustenance to the calf, milk is a valuable source of nutrition, especially for children. It can be consumed by the household or sold if a local outlet or collection service is available. The project has encouraged the rearing of milk cows both as an income earning enterprise and as a food source. 60 beneficiaries (mainly women, most of whom were not previously engaged in income-earning activities) were selected from the three project locations and provided with three days of training on cow rearing by the Upazila Livestock Officer. This not only provided the trainees with the necessary skills to become competent cow rearers, but catalysed the development of strong long-term ties between the appropriate government service providers and the beneficiaries ensuring that appropriate support and advice would be available in the future. 60 female calves were purchased and distributed amongst the trained beneficiaries.

Goat Rearing: 150 goats were purchased and distributed to 150 mainly women beneficiaries who were trained in goat rearing by the relevant government livestock specialist. Permanent linkages with the Upazila livestock and veterinary services were established to ensure that adequate advice and support would be provided in the future.

Sheep Rearing: 60 women received training in sheep husbandry from the Upazila livestock officers. 180 sheep were distributed between the 60 women beneficiaries, each receiving 2 female and 1 male sheep. Sheep are fed with fodder gathered from field margins, embankments and other common property resources. Thus as a condition of receiving the sheep, each participant agreed to pass on one of the female offspring of their small flock to a neighbor. This arrangement will ensure that the benefits of sheep ownership are extended beyond the primary beneficiaries, providing an asset to other vulnerable households, while building social cohesion and encouraging sharing and better management of local resources.

Figure-11: Cost & benefits of livestock



	Milky cow rearing	Goat rearing	Sheep rearing	Total
Net income (Tk.)	425,580	182,830	50,035	658,445
Investment (Tk.)	525,920	211,100	180,125	917,145
Total income (Tk.)	951,500	393,930	230,160	1,575,590

CASE-7

Contentment of Jarina Begum through goat rearing

"My father, with only 16 decimal of land, was an agricultural day laborer", said Jarina Begum. "I am the eldest daughter of his six children and could not attend school due to the poverty of my family. To reduce the burden on the family, my father arranged my early marriage when I was only 15 years old". Her husband, Insar Ali, was a marginal farmer with 220 decimal lands including the 20 decimals which their homestead occupied. But erosion by the Jamuna River has consumed all their land including their home. The family has been forced to live on the Bangladesh Water Development Board (BWDB) embankment.

"I have three sons and three daughters who cannot continue their studies due to our total poverty. My husband is physically weak and unable to work and we are often hungry," explained Jarina. "I was desperate to do something to maintain my family." Jarina Begum's extreme vulnerability and poverty drew the attention of the staff of the Uttara Development Program who are Practical Action's partners implementing the "Disaster Risk Reduction Project" in Sariakandi – Bogra. Having expressed an interest in small livestock, she was selected to be a member of a group to be trained on goat rearing by the Upazila Livestock Officer. On completion of the training, she and the other trainees were each given a she-goat (valued at Tk1,560) to rear.

Jarina Begum expressed her appreciation saying, "The training gave me the strength and courage to take care of my goat properly and established an important linkage with the government Livestock Officer". She received her initial goat in November 2006 and by continual breeding and careful rearing had by June 2008 increased her herd size to 8, including kids.

In July 2008 Jarina sold 2 goats for 3300 taka which she used to purchase a "Van". The family's assets now include 1 "Van" and 6 goats with a total market value of about Tk13,000. "My son is now riding this "Van" and earning Tk.100 per day," she said and "I am spending this money repairing our house, on food, clothing and for medical treatment when required".

Jarina finally said that she would like to sell the remaining six goats in order to purchase a female calf, with which she thinks she could earn more money. To achieve her ambition she regularly communicates with the livestock department for vaccination and other veterinary treatments of her livestock. "I always take good care of my animals to ensure they are healthy and grow well," she explained.

Jarina and her family's poverty and vulnerability have been reduced through the provision of relatively small inputs and appropriate skill development. Building on her newly acquired knowledge and through the application of her determination the family has been able to diversify their livelihood strategies, making them more resilient to shocks and stresses.

CASE-8

Aduri (a milky cow) recovered my solvency and dignity

Md. Kashem Ali son of Md. Mazibur Rahman, a 48 year old poor landless labourer did not inherit a single decimal of land from his father. Owning no homestead land, he leased 2 decimals of land annually on which he had two huts (Shan houses) in which he lived with his wife, 2 daughters and a son. Kashem tearfully recounted that his irregular earnings as a labourer of 50 to 65 taka was not enough to provide 3 meals a day for his family. Many days they had no food at all. Furthermore, with no way of earning more, he was unable to educate his children.

Kashem's vulnerability, extreme poverty and overall living conditions led to his selection for support by the Project team. He was selected to receive training in cow rearing as a new livelihood strategy. Following training by the Upazila Livestock Officer, an in-calf heifer was purchased for Tk6,200 in November 2006. The project provided Tk3,500 and Kashem raised a loan for his contribution of Tk2,700.

After six months of cow rearing he took a bull calf from his neighbour to rear on a shared basis. Due to the intensive care of his family members, the bull calf fattened rapidly and realised a good profit when sold. Kashem used his share of the profit to pay for his pregnant heifer and to take good care of her. In June 2008, after18 months rearing, **Aduri Cow** delivered a nice healthy female calf. The cow is rearing her calf and producing an additional 4 litres of milk per day. Of this, 0.5 litre is being consumed by the family while 3.5 litres (valued at Tk30 per litre) is being sold in the local market. Furthermore, Kashem told us that to date he has earned Tk.3600 from selling cow-dung as fuel and manure and spent Tk10,000 on cow rearing. He estimates that the present market value of his cow and calf is not less than Tk35,000.

Kashem knows that his family has returned to economic solvency through cow rearing. His family is now able to enjoy two square meals each day as well as being provided with clothes and educational expenses.

One month ago Kashem took a lease on 70 decimal of crop land and also built a permanent house made of corrugated sheets with reinforced concrete pillars. "All this has only been made possible by the profits generated from cow rearing and the hard work of all my family", said Kashem. "We are using cow-dung as fuel and while meeting our nutritional requirements we also able to enjoy the ideal food, cow milk, and can afford to educate my children". Kashem is certain that none of this would have been possible had he not been selected to benefit from the Project.

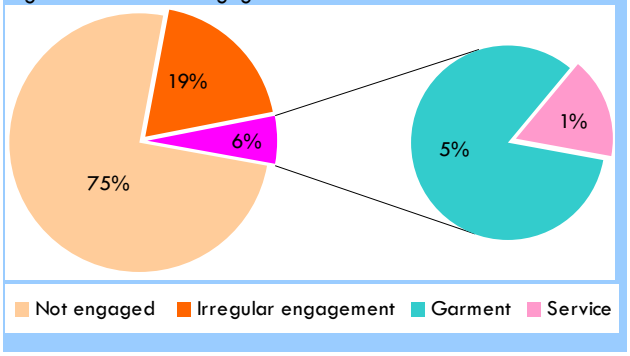
Kashem says that in future he intends to establish a small dairy farm where landless unemployed hard-working poor men and women like them can be employed and by working hard, reduce their poverty and vulnerability.

At the end of his interview Kashem expressed his heart-felt thanks to the Almighty Allah and gratitude to GKS and PAB for bringing the positive changes which allow him and his family to live decently and with dignity in his community.

G. Women encouragement to economic activities

According to the VCA findings, 49.5% of the total population of the project areas of 119,174 persons are female. While almost all women are engaged household activities, 75% of women are not engaged in any income-generating activities. 19% are engaged in irregular economic activities such as domestic bird rearing, cow or goat rearing, homestead vegetable cultivation and agricultural labour. The remaining 6% are engaged in regular employment; 5% in the garment industry in Dhaka city and 1% in services such as teachers, NGO workers or other community services.

Figure-12: Women engaged in economic activities



Steps have been taken to encourage women to become involved in income generating activities which can improve their status and independence and provide greater security for their families. Besides their traditional roles in animal rearing and other agricultural activities, training in a lternative skills has been provided.

Groups of 10 women in each of the three project locations have been pr ovided with training on sewing, dress making and tailoring. Each group was provided with sewing machines and assistance to set up small tailoring shops from which they could sell the clothes they produce. Start up materials and technical support in small business management was provided.

CASE-9

A story of new-found self confidence

To be sustainable the livelihood of a household depends on a reliable and adequate source of income. Summa provides a practical example. “Now I am no longer vulnerable, have no problems in managing food for my family or the educational expenses of my children”, said Summa with full confidence. Summa Akhter, 36 years old, an ordinary house wife of Goghat village of Gaibandha Sadar was previously living a dreadful life with her family members due to extremely financial crisis.

Summa is the mother of three children, two sons and one daughter. Two children are school students. Her husband Abdur Rashid is a landless day labourer who shows little commitment to the family and does not earn enough to maintain them. Long periods without employment meant that Summa was unable to provide regular meals for the three children and herself. Annual flooding made the situation worse. Summa was totally depressed, unable to earn anything and unable to see any way out of her situation.
With great sorrow Summa said, “We have no normal house. We established a house with 8 pieces of corrugated sheet and were living in this house, but when the rains came we could not stay in this house.”

Considering her overall poverty, Summa was selected to receive support to improve her situation by providing her with the skills necessary to generate an income. Following 13 days of training in a range of sewing skills, she was given a sewing machine for which she contributed Tk.300 out of the total purchase price of Tk.4300. Immediately and with full confidence in her newly learned skills, she started tailoring. From all over the neighbourhood people came to her to make their dresses and do other sewing activities. Her business has expanded gradually and she is now earning Tk.150-200 per day.

As a result of her new income, she has established a nice house and taken a lease on a piece of nearby land. This has enabled her to grow crops that ensure her year-round food security. Summa says, “I have been saving some money day by day from my earnings for the marriage of my daughter. Now that my two sons are going to school I shall try to give them higher education”. Summa also said, “When my husband had no work due to the two floods of 2007, I was able to maintain my family’s living expenses from my tailoring business. My tailoring skills have totally reduced the vulnerability of my family”.

Skill Development Training

The VCA findings showed that 70% of people in the project areas have no alternative local income earning opportunities, 32% of women are exclusively engaged in household works and 30% of people seasonally migrate during the lean period in search of jobs. Lack of opportunities and the necessary skills to engage in alternative income earning strategies is a major factor trapping rural people in poverty and vulnerability.

The project has provided skill development training to both men and women according to their interests and needs. Training courses have included cow rearing, goat & sheep rearing, tailoring, homestead vegetable cultivation, seeds preservation, masons, handicraft, carpenter and livestock vaccinator (paravet). A total of 616 beneficiaries, 214 male and 372 female have so far been trained. Many of the trainees are already earning significant sums through the application of their new skills.

Courses and numbers of beneficiaries;

Name of the courses	No. of courses	Duration (day)	No. of beneficiaries		
			Male	Female	Total
Cow rearing	3	3	17	43	60
Goat & sheep rearing	9	3	0	210	210
Bee farming	1	6	11	01	12
Tailoring	3	10	0	30	30
Homestead vegetables cultivation	3	2	03	57	60
Tree nursery establishment	3	3	14	0	14
Seeds preservation technology	3	7	45	0	45
Masons	3	10	30	0	30
Handicraft	6	10	0	30	60
Carpenter	2	10	35	0	35
Livestock vaccinator (paravet)	3	7	29	01	30
Shallow machine repairing / light engineering	3	5	30	0	30
Total	**42**		**214**	**372**	**616**

Skill Development Training

Package of input support and it cost

Following completion of their training the beneficiaries have been provided with the necessary inputs to implement their newly learned skills

Skill	Input supports	No. beneficiaries	Supported amount in Taka.
Cow rearing	60 female calves	60	210000
Goat & sheep rearing	150 goats & 180 sheep	210	329,475
Bee farming	24 colonies including bees	12	42,000
Tailoring	30 sewing machine	30	90,000
Homestead vegetables cultivation	6 types of seeds	60	3,000
Tree nursery establishment	Seeds and received some equipments such as poly bags, water jar, sessors and pesticide,	14	70,000
Seeds preservation technology	Plastic dram big size (150 kg), plastic dram small size (60 kg), Plastic pot, Sack with plastic paper etc.	45	135,000
Masons	Korni big and small, belcha, plum bob, korai, basla, hammer small & big, chheny, net, ary, tape, spade, horfa, bucket, kamri, wood pata and joaru.	30	60,000
Handicraft	P.G. gum, binder, CCL, N.K.Fixer, custic, hydros, ambush, golden afsan, silver afsan, ekramin color (red, blue, green, yellow and black), glycerin, apriton, white paste, Prussian color (red, blue, green, yellow and black), dyes, oxal, hand gloves, scale, bucket, bowl, pencil, brush, tea spoon, table spoon, steel tray, foam, sack,plastic bati etc.	60	180,000
Livestock vaccinator (paravet)	Flask, galipot, measuring cup, record syringe, nylon syringe, scissor, thermometer, forceps, teat siphon, gauge, roll sink nylon, cotton, de-forceps, steel needle and kit box.	30	90,000
Shallow machine repairing / light engineering	Hammers, wrenches, plus, nose plus, flat martul, star martul, flat rath, flat chheny, pencil chheny, ring wrench set, dal set, katani, drill stick, drill paste and tool box.	30	81,000
Total		**581**	**1,290,475**

Skill Development Training

Group approach

Groups that have been trained have been provided with the following inputs.

Skill	Input supports	No. beneficiaries	Supported amount in Taka.
Micro business group (women)	Decoration materials of shop and opening cloth	30 out of 3 groups	110,000
Blanket producers group (Women)	Jhut (garments wastes) as a raw materials	9 out of 1 group	44,100
Boat and fishing nets group (male)	Fishing boats and nets.	66 out of 8 groups	180,000
Community based fish culture group (both of male & female)	Fingerlings and feed	45 out of 5 groups	51320
Poultry group (both of male & female)	Chicks and feed	63 out of 3 groups	180,000
Milky cow rearing (both of male & female)	Female calves	63 out of 3 groups	135,000
Total		**278 out of 23 groups**	**700,420**

Strengths of the project initiatives:

- Active participation and cooperation of UP/UDMC, volunteers, CBO members, WDMC during project implementation.
- Upazila administration is positive to Practical Action activities.
- Project activities are religiously acceptable in the areas
- Local acceptance of PNGOs
- Easy acceptance of new technology by the community.
- Activities are based on community needs that are identified by the communities themselves.
- Women are specially targeted.

Project personnel discussed with Upazila Nirbahi Officer (a government executive officer of sub-district), Upazila Fisheries Officer, Agriculture Officer and Livestock Officer at Sariakandi Upazila (sub-district).

Conclusion

Reducing the vulnerability of people and the environment depends on the ability to cope with and respond to adverse and changing circumstances. Many traditional coping strategies are inadequate and unable to cope with extreme events. Innovations are needed to ensure that development is sustainable and resilient to current and future local hazards. To be sustainable, such innovations must be both socially acceptable and build on the capacity and experience of the communities concerned. The project approach adopted reflects community knowledge and priorities and builds on locally perceived needs and traditional practices. The community has engaged in analysing their own vulnerabilities and capacities in the light of the hazards they are exposed to. Specifically the project has designed disaster risk reduction activities based on data and information collected through baseline studies, participatory action plan development (PAPD), vulnerability and capacity assessment (VCA) along with participatory risk assessments of existing livelihood strategies. It has also assessed the needs of different occupational groups and designed capacity enhancement activities based on their existing coping strategies and practices.

The direct beneficiaries of the project who have carried out different livelihood activities promoted by the project believe that many of these activities will continue in future without external support. These include floating gardens, garlic cultivation, nursery production, vegetable gardening, livestock rearing, tailoring, etc. These activities have created new alternative livelihood opportunities, many of which were previously unknown in the area. While the impacts of flooding and erosion cannot be prevented, alternative livelihood options coupled with better preparedness increase community resilience allowing households to "bounce back" quicker when the hazards have passed. Alternative "off farm" income earning opportunities mean that income can continue to be earned while agricultural land is submerged. Savings generated from alternative strategies can be used to support families over the flood period. Social cohesion and the existence of groups increase resilience. The opportunity to grow vegetables and rice seedlings during flood periods has increased the availability of food at household and local level. Cluster villages provide the ultimate safe environment in which previously destitute families can begin to engage in productive economic activities. Raised tube wells have provided a reliable, local source of clean drinking water when normal wells are contaminated by flood waters.

The project has increased the awareness of communities to the disaster risks they face and increased their capacity to plan for and cope with these risks. Local contingency plans to prepare for, react to and respond to disasters have been prepared and rehearsed by communities. Links to local service providers for both development and emergency response have been strengthened. Central to the process of community-based disaster risk reduction has been the need to protect and diversify the livelihood strategies on which people ultimately depend for their survival.

Participation of three local NGO as partners in designing and implementing activities on the ground has increased their awareness and built their experience in CBDRR. Union Parishad (an elected tier of local government), government officials and departments have participated in all aspects of the planning and implementation of the project. Communities do not exist in isolation. They are dependent on important linkages with local government and local service providers. Without the excellent support and professional advice of these, the project would not have been possible.

The good practice examples provided in this report may help to stimulate a valuable and productive exchange of ideas and lessons learned and promote the replication and adaptation of some of the practices which have proved successful in this context.

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