

# Household Economy Assessment Baseline Training Report

## Fish Cultivation Livelihood Zone

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## **Introduction**

### **Background and Objectives**

Save the Children has been funded by ECHO as part of the 'Filling the Gap: Scaling up the Use of Essential Tools to Link Food Security and Nutrition' grant to offer training in the Household Economy Approach (HEA) to increase global capacity in the tool. One set of trainings for this grant was conducted in Khulna, Bangladesh.

The objectives of the Khulna training were:

- To produce robust evidence using HEA in one livelihood zone in Khulna, Bangladesh.
- To build the capacity of ECHO stakeholders to carry out HEA assessments and use the analysis to inform programmatic and policy interventions. Specifically, participants should:
  - Learn the overall framework, concepts, methodology, outputs and utilization of HEA;
  - Be able to gather thorough and quality information during interviews in the field;
  - Use, consolidate and analyse raw HEA data.
- To provide training and spreadsheets for outcome analysis to measure the impact of future shocks. Specifically, participants should:
  - Gain an in-depth understanding of the logic and structure of the single zone and Livelihoods Impact Analysis Spreadsheets (LIAS) that are used to analyse data;
  - Learn to produce seasonal forecasts and scenarios that model the impact of a hazard, as well as project interventions that can mitigate the impact of the hazard.
- To provide essential information for a subsequent Cost of Diet analysis in Khulna.

### **Methods and steps in baseline training and fieldwork**

The Household Economy Approach (HEA) was used for collecting and analysing field-based information on the wealth breakdown and for profiling livelihood strategies, which include sources of food and cash income, expenditure patterns, and household coping strategies.

HEA looks at households' access to basic food and non-food items, through production, purchase and other mechanisms. The household is taken as the unit of reference because it is the chief unit through which populations operate for production, sharing of income, and consumption. The framework proposes that if we can first understand how households obtain their food and non-food needs, and likewise how they obtain cash with which to buy these things, then we have a basic description of how people survive – how their household economy 'works'. This tells us whether a given population is economically insecure and currently in need of assistance. It also acts as the baseline information against which we can view a new threat to food and non-food access, be it from crop failure, flooding or market

disruptions. Baseline information enables us to judge a population's vulnerability to different shocks or threats to its livelihood.

For more information on possible uses of the livelihood baselines, key concepts related to livelihoods and HEA, and the HEA methodology, readers are referred to *The Household Economy Approach: A Guide for Programme Planners and Policy-Makers*.<sup>1</sup>

The team undertook the following steps during this study:

- **Preliminary work:** Save the Children staff undertook a livelihood zoning exercise for Khulna Division before the start of this training assessment. This was carried out using the local knowledge of SCI project field staff, CODEC (partner) staff, and government officials from the fisheries, agriculture, land and livestock departments at district and sub-district (*upazila*) levels. A map was produced for each district (Khulna, Bagerhat and Satkhira) before a merged map for Khulna Division, below, was produced. There are three livelihood zones: A) Natural Sources Livelihood Zone (mainly covering the Sundarbans Mangrove Forest), B) Fish Cultivation Livelihood Zone (where shrimp and fish cultivation are the key economic activity), and C) Agriculture Livelihood Zone. It is possible that the Agriculture Livelihood Zone should be sub-divided into smaller zones, but this was not followed up as part of this exercise. The Fish Cultivation Livelihood Zone was chosen for the HEA training and assessment.



<sup>1</sup> The guide, *The Household Economy Approach: A Guide for Programme Planners and Policy-Makers*, is available at <http://www.feg-consulting.com/resource/the-household-economy-approach-a-guide-for-program-planners-and-policy-makers> and at <http://www.savethechildren.org.uk/resources/online-library/household-economy-approach-guide-programme-planners-and-policy-makers>.

- **Training.** A training workshop was held from 4-8 November 2012, with 6 participants from four organisations (SCI, Shushilan, CARE, Islamic Relief). The topics covered included: HEA framework overview, livelihood zoning, reference year, wealth groups, livelihood strategies (food, income, expenditure), kilocalorie calculations, coping strategies, seasonality, ensuring high quality field information, and reviewing and practicing community leader and household focus group interviews.
- **Fieldwork timing.** The fieldwork outlined in the following paragraphs was carried out from 10-20 November 2012.
- **Interviews with community leaders.** The team conducted semi-structured interviews in seven villages<sup>2</sup> with groups of leaders, elders and community members. The purpose was to gather information on production, prices, the historical timeline and seasonal calendar and to establish the wealth breakdown.
- **Interviews with household representatives.** Semi-structured interviews to quantify food and income sources and expenditure patterns at household level were conducted with 27 focus groups at different income levels (very poor, poor, middle, and better off) in the seven villages. An average of 4-5 people participated in each interview and they were engaged in a wide variety of economic activities. The household economy information was cross-checked within and across interviews. Information was gathered for the most recent one-year period (mid-November 2011 – mid-November 2012).
- **Analysis of information, compilation of the baseline picture, and development of scenarios.** The baseline analysis was conducted during 21-22 November and is available in a baseline storage spreadsheet. A livelihood impact analysis spreadsheet (LIAS) has also been prepared to facilitate scenario analysis.

A few limitations of the assessment should be noted:

- HEA baseline assessments usually cover a good **geographical spread** of villages within a livelihood zone. In this assessment, for logistical reasons, villages were selected from just one upazila in one district (Rampal Upazila in Bagerhat District). This makes it difficult to comment on the accuracy of the livelihood zoning and on the representativeness of the findings outlined here for the other parts of the livelihood zone. Rampal Upazila is among the upazilas with better road and market access within the Fish Cultivation Livelihood Zone. The precise implications of this on household food and income sources and expenditure patterns are not known. In addition, some parts of the Fish Cultivation Livelihood Zone have poor access to drinking water, with households having to pay for the transport of water. This was

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<sup>2</sup> The original plan was to conduct interviews in eight villages, but one village had to be dropped due to a *hartal* in Khulna on 15 November 2012.

not the case in Rampal Upazila, where households have good access to free tube well water.

- The lower end of the **better off wealth group** was interviewed, partly because community leaders said it would be difficult to call the 'rich' for interviews and partly because HEA is generally less interested in the extremes of the wealth spectrum (i.e. the top or bottom 5%). The limitation that this presents to the analysis is that, while the better off that we interviewed do employ some labour, the top half of the better off must be the main employers at village level. This means that it has not been possible to cross check the local labour earnings of very poor and poor households against that spent by rich households.
- In some cases we did not separate out sources of income or expenditure items that are linked to **safety nets**. For example, we asked people how much rice they were purchasing, whether this varied over the year, and the average price at which it was purchased. We did not ask details about where it was purchased and from whom. Thus we cannot comment on which times of the year, if any, very poor or poor households may have been purchasing government-subsidised rice (on the open market system or OMS). Similarly, when covering income earned from labour, we focused on whether the work was local or migrant labour, the number of days worked per week or month, and the income earned per day. We did not specifically ask whether the work was part of the government's cash-for-work schemes. In some cases, this was mentioned directly by interviewees, in other cases it was not. Allowances for widows, pregnant women and the elderly were generally reported to not be common across a whole wealth group. The allowances that were more common were cash for poor children to attend school and vulnerable group feeding (VGF) linked to festivals twice a year.
- Off-farm income had '**urban**' characteristics in the sense that households had different income sources within each wealth group, particularly for the very poor and poor wealth groups. This made it difficult to specify what proportion of casual labour was found on local ghers versus outside the livelihood zone but still within commuting distance on paddy farms in Fakirhat Upazila of Bagerhat District or in factories in Mongla town versus outside the livelihood zone in more distant migration locations.
- Information on the **quantification of bad year coping strategies** is gathered from each wealth group at the end of long semi-structured interviews on reference year food and income sources and expenditure patterns. In a training context, it was difficult to find enough time to quantify these strategies in detail. The types of bad year coping strategies were clearly listed – increased labour migration, increased loan taking, increased livestock sales, sale of productive assets, switching expenditure from non-essential to basic items – but quantifying the extent to which the less destructive coping strategies could expand was difficult.

## Description of Study Area

The Fish Cultivation Livelihood Zone lies in the Ganges tidal floodplain in the southern part of Khulna Division, north of the Sundarbans. Shrimp and fish farms (*gher*) dominate the landscape, bordered by elevated mud embankments. Coconut, palm and other trees surround homes, which are located on small pieces of elevated land. Rivers and canals crisscross the zone. Siltation in rivers is a major problem, contributing to waterlogging and high levels of soil and water salinity.

Due to this salinity, paddy production is restricted to a few areas in a few villages and was not common across the villages visited. The zone relies on imports of rice from the other parts of Bangladesh for its staple food. Livestock ownership is limited in this livelihood zone, due to salinity and the absence of grazing land. Households keep very small numbers of cattle, goats and poultry (chickens and ducks).

Seven villages were visited in two unions of Rampal Upazila of Bagerhat District. This upazila, with a population of 154,965 people as of the 2011 census, has better market and water access than some other parts of the livelihood zone. The population split in the upazila is 80% Muslim and 20% Hindu.<sup>3</sup>

For middle and better-off households, shrimp and fish cultivation provide the basis of local livelihoods. Shrimp and fish farming is largely based on traditional methods, with few inputs beyond land preparation and stocking of fingerlings. The main species of shrimp cultivated is *bagda* (*Penaeus monodon*, a saltwater black tiger shrimp), with small amounts of *golda* (*Macrobrachium rosenbergii*, a freshwater shrimp) cultivated during the rainy season. Various types of white fish are also cultivated, with fingerlings usually stocked along with *golda* at the start of the rainy season (when the *gher* water becomes less saline). A minority of households also cultivate crabs.

Most very poor households own land for their homes, but do not own productive land for shrimp and fish cultivation. Poor households own small amounts of land and do cultivate shrimp and fish. But for these poorer groups, most income comes from local and migrant casual employment or from other labour-intensive types of self-employment like 'van' pulling or from small-scale petty trade. Except for domestic casual labour (which is mostly undertaken by women from female-headed households) most paid work in this livelihood zone is done by men.

There is one rainy season from June to September and rainfall averages about 1700 mm per year. Temperatures peak at 34-35 C in April - May and hit lows of 12-14 C in December - February.

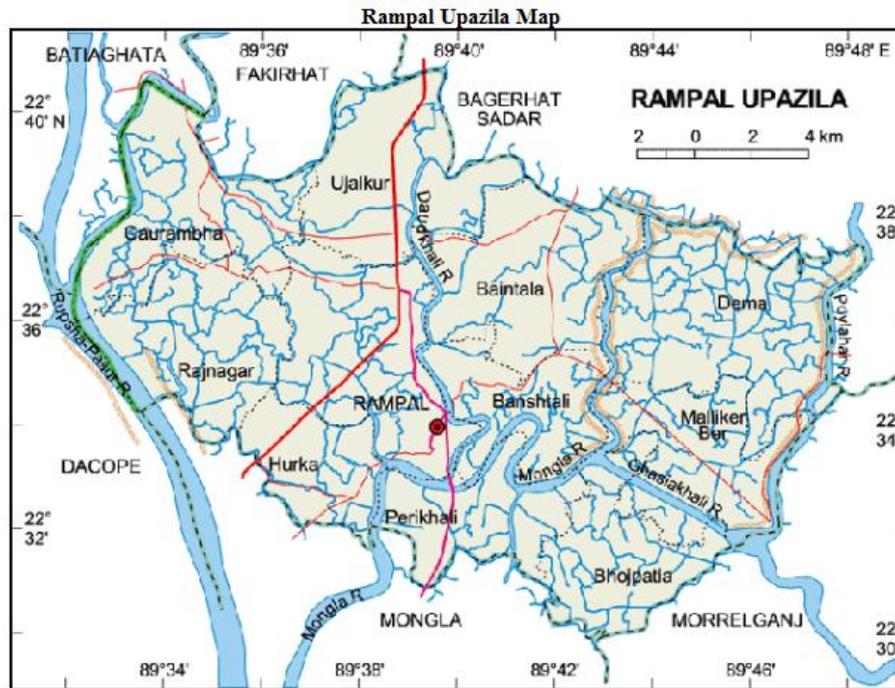
Households obtain fresh water from deep tube wells and from ponds. There is no payment for water in this livelihood zone.

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<sup>3</sup> *Population and Housing Census 2011*, Bangladesh Bureau of Statistics.

## Markets

The main Khulna-to-Mongla tarmac road passes through Rampal Upazila (the dark red line in the map below). Other main roads within the upazila are tarmac, while smaller roads are narrow and dirt, more suitable for 'vans' (bicycle rickshaws with flat boards for carrying passengers or goods) or 'tomtoms' (motorcycle rickshaws). Market access is reasonably good in the zone, except at some periods during the rainy season when some areas can get cut off.



There are a number of bazaars throughout the livelihood zone, each having two *haat* days (market days) per week when mobile traders set up temporary stalls selling fresh vegetables, fish and other food and non-food items.

Rice, the staple food, is imported from the north of Khulna Division and from the north of Bangladesh.

The trade route for shrimp, the main item exported from the area, is from producer to small-scale village trader to local depots (or direct from producer to local depot) to Khulna or Bagerhat for processing and freezing and then abroad through Mongla port. The main destination market for shrimp is international (the US, Europe and Japan).

The trade route for various species of white fish is from producer to village trader to local depot (or direct from producer to local depot) to Khulna or Bagerhat and then to Dhaka. The main market for white fish is within the country. The trade route for crab is similar to that for white fish, except that most crabs are exported live by plane from Dhaka. The main destination markets are mostly in Asia.

## Seasonality

There are twelve months in the Bangla calendar (each starting mid-month in the Gregorian calendar) and six seasons (each two months long), as indicated in the graphic below.

Bangla season	Hemonto	Sheet		Bashonto		Grishmo		Borsha		Shorot		Hemonto	
English season	Late Autumn	Winter		Spring		Summer		Rainy (monsoon)		Autumn		Late Autumn	
Bangla month	Ogrohayon	Poush	Magh	Falgun	Chaitro	Boishakh	Joishtho	Ashar	Shrabon	Bhadro	Ashshin	Kartik	
English month	Nov	December	January	February	March	April	May	June	July	August	September	October	Nov
Rainy season													
Bagda shrimp	H	H / LP / P	P				P / H	P / H	P / H	P / H	P / H	P / H	P / H
Golda shrimp	H	H							P	P			
White fish	H	H							P	P			
Paddy (aman season)	H	H							LP	P / T			
Paddy (boro season)	LP	P / T			H	H							
Vegetables	H	H										P	H
Labour migration - paddy harvest													
Labour migration - factory work													
Milk production peak													
Livestock sales (reference year)													

LP = land / gher preparation      P = planting      H = harvesting

There are some variations in the calendar above depending on proximity to the main rivers passing through the livelihood zone and whether areas depend on tidal water or rainwater. However, land preparation and *bagda* fingerling stocking generally begins in January-February and harvesting and additional stocking are on a two-week cycle from April through to December. *Golda* shrimp and white fish fingerlings are added to the *bagda gher*s in June at the start of the rainy season, when water salinity levels drop, and are harvested when water levels get low in late November to early January.

In areas with paddy production, *aman* season land preparation starts in June, with planting and transplanting in July-August and harvesting in November-December. *Boro* season land preparation starts in late November, with planting and transplanting in December-January and harvesting in April-May. Vegetables can be grown throughout the year, but the peak planting period is at the end of the rainy season and harvesting occurs throughout the winter months.

The hunger season varied from village to village and interview to interview: in some it was just before the *aman* season paddy harvest; in some it was during the rainy season; in some it was in March-April when there is little local fish cultivation work.

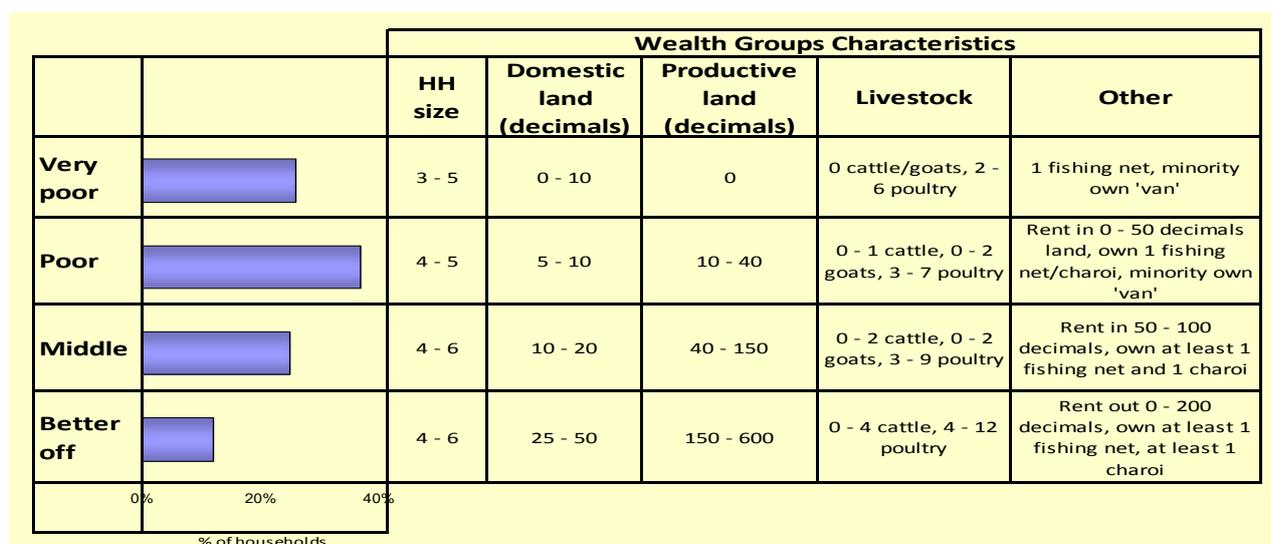
## Timeline and reference year

In HEA, the reference year is normally a consumption year, starting with the period of main production or just after the end of the hunger season. As noted above, the hunger season was difficult to define in this livelihood zone. The assessment team chose the last 12 months to be the reference year (mid-November 2011 to mid-November 2012). Mid-November marks the start of the main harvest period for *golda* shrimp and white fish and for *aman* paddy (in villages where it is grown). It was also the most recent 12 month period, which facilitated interviewee recall.

This was a fairly average year in relation to recent years. However, shrimp cultivation was reportedly affected by white spot syndrome virus (WSSV) and production levels were low compared to pre-Sidr cyclone years. The main intermittent hazards in the last few years were the Sidr cyclone in November 2007 and Aila cyclone in May 2009. These resulted in tidal surges, increased waterlogging and salinity of farms, and decreased paddy production.

## Household Economy Findings for 2011-12 Reference Year

### Wealth breakdown (2011-12)



The table above divides the population into four wealth groups. The main criterion for defining wealth is productive land ownership. Off-farm sources of income are also indicative of wealth status: very poor and poor households mostly depend on casual labour and other labour-intensive self-employment activities (e.g. 'van' pulling); some middle and better off households engage in trade or have formal employment (locally called 'services').

Household size increases slightly with wealth, but overall household sizes are remarkably small in this rural livelihood zone.

Livestock holdings increase slightly with wealth. Generally, livestock rearing is difficult in this livelihood zone since there is little grazing area, little fodder from crop residues, and high water and soil salinity. Cattle ownership is more common in the Hindu than in the Muslim community. The poorest households do not own cattle or goats (unless they have been recently given them through NGO projects).

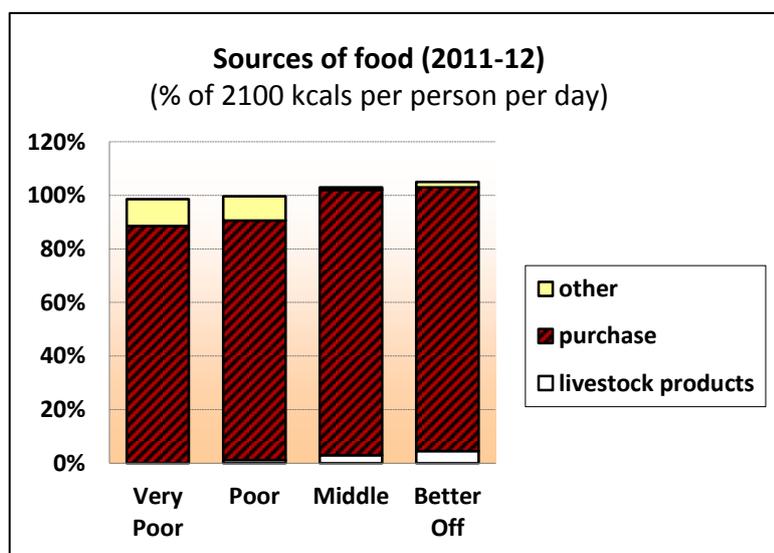
The better off presented here are the lower end of the better off with up to 6 acres<sup>4</sup> of productive land. A small percentage of households own very large tracts of land and employ relatively large amounts of local labour. Some of the largest landowners now live outside the rural community.

<sup>4</sup> An acre is 100 decimals.

The land rental arrangements between households and wealth groups are complicated, with some households both renting out and renting in land in the same year (due to distances of land from homes). The land rental situation presented in the 'other' column in the table above is an average picture.

There are a variety of types of locally-owned fishing nets: small strips of net used in local *gher*; *charoi* used to trap shrimp in local *gher*; and much larger open water fishing nets. Almost every household owns at least one type of net.

### Sources of food (2011-12)



In the graph, food access is expressed as a percentage of minimum food requirements, taken as an average food energy intake of 2100 kcal per person per day.

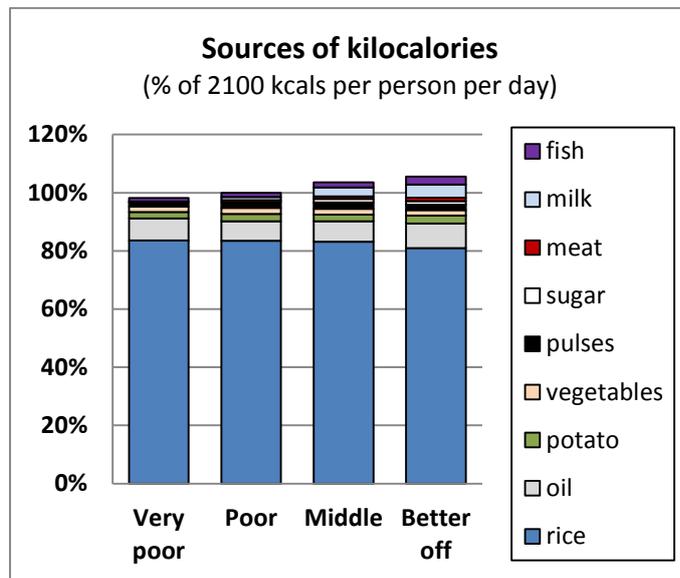
The graph presents the sources of food for households in different wealth groups in the livelihood zone for the period mid-November 2011 – mid-November 2012. Food is presented as a percentage of 2100 kcal per person per day for the 12-month period.

For all households, market purchase was by far the main source of food in the reference year. The main items purchased were rice, vegetable oil, potatoes, pulses, and vegetables. Small amounts of fish, meat and sugar were also purchased, increasing in quantity with wealth. The vast majority of calories (80-85%) come from rice consumption across all wealth groups.

The contribution of own livestock products (milk, eggs and meat) increased with wealth, but was generally very low, due to the small number of animals owned.

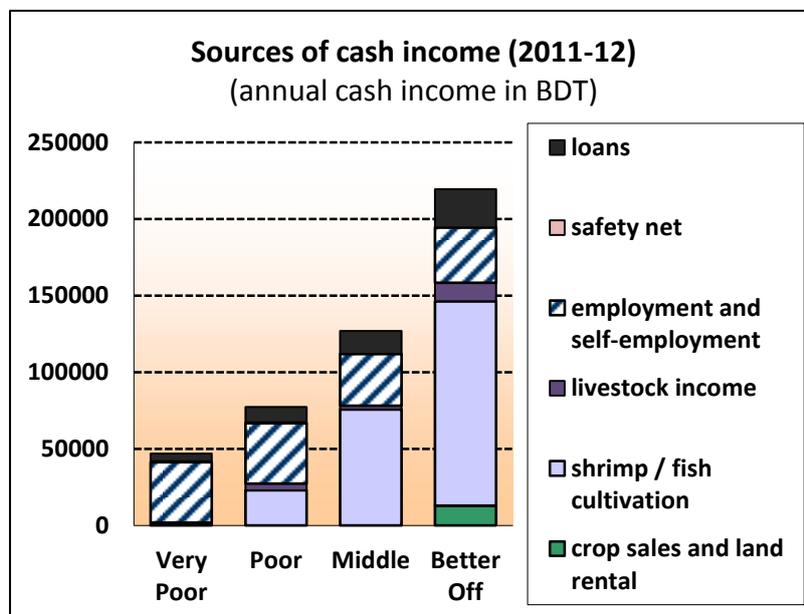
'Other' food sources included own fish cultivation, open water fishing, safety nets (usually 10kg twice a year for very poor and poor households through the Vulnerable Group Feeding (VGF) programme), and payment-in-kind (labour exchange). People grow rice in some

villages but not in a majority of villages in the zone, so own crop production has not been included as a source of food.



The graph above presents sources of kilocalories (rather than sources of food). Rice was by far the largest source of calories across all wealth groups in the reference year, followed by oil. Potatoes, vegetables, pulses, milk, meat, fish and sugar provided small amounts of kilocalories (ranging from 10-20% for very poor households to 20-30% for better off households).

Sources of cash income (2011-12)



The graph provides a breakdown of total annual cash income in Bangladeshi Taka (BDT) according to income source.

The graph presents cash income sources by wealth group for the reference year mid-November 2011 – mid-November 2012.

Cash income from sale of shrimp and fish increased steadily with wealth (and with land areas cultivated) in the reference year. *Gher* farmers complain about the impact of the white spot syndrome virus (WSSV) on production levels. There is no known treatment for the virus, which can affect one *gher* and not another within the same village. Shrimp and fish are sold to local traders or directly to depots in nearby markets or *bazars*. Crab cultivation is also pursued by a minority of middle and better off households.

Income from livestock sales also increased with wealth, but was a minor income source. 'Livestock income' in the graphic includes both live animal sales and livestock product sales. Only poor households typically sell milk.

Very poor households own little land and few livestock, so casual labour and some labour-intensive types of self-employment (labelled 'employment and self-employment' in the graph above) are their main sources of cash income. These are very important sources of income for poor households as well and even some middle households undertake casual labour. Local types of casual work and self-employment include fish farm labour (land preparation, *gher* maintenance and harvesting), 'van' pulling, small-scale petty trade and domestic labour (for women from female-headed households). *Gher* cultivation reportedly requires less labour than many other types of farming, such as rice cultivation, with implications for the local work opportunities for very poor and poor households.

Beyond the immediate local area, nearby types of casual work include factory work in Mongla and paddy cultivation and harvesting in Fakirhat Upazila. More distant migration includes urban work in Khulna or even Dhaka and farm labour in neighbouring districts (Gopalganj, Faridpur and Barisal Districts were mentioned).

There are many types of cash safety nets in Bangladesh, most of which target a very small percentage of the population and are not typical across an entire wealth group. The most common type found during this assessment was cash for poor children at school (based on attendance and performance).

Loans were common across all wealth groups, increasing in size with wealth. These are mainly taken from NGOs at low interest rates (12-15% per year), but other sources of loans include banks (for the better off groups), advances from shrimp/fish traders, and credit at grocery shops. Loans have an important income-smoothing effect for poorer households, assisting them to get through periods when work is less available. For households that cultivate shrimp and fish, loans are useful during periods when input costs are large.

In households with a man (a husband or older son), it is the man who earns income while the woman mostly stays at home and occupies herself with unpaid domestic work. There are a small percentage of female-headed households within the very poor wealth group, but these were not analysed separately during this assessment.

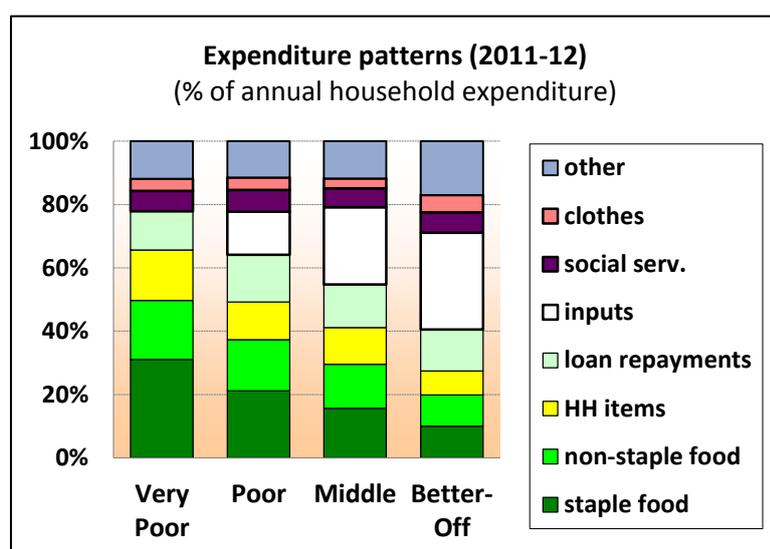
The following table summarises the income levels per household and per person per year and per day in Bangladeshi Taka and in US dollars (converted at an exchange rate of US 1 =

BDT 80 in for the reference year). All figures in the table are the mid-point of a range for each wealth group.

Income levels*				
	VP	P	M	BO
BDT per HH per year	46795	77345	126770	219250
Household size	4	4.5	5	5
BDT per person per year	11699	17188	25354	43850
BDT per person per day	32	47	69	120
USD per HH per year	585	967	1585	2741
USD per person per year	146	215	317	548
USD per person per day	0.40	0.59	0.87	1.50

\* All figures are the midpoint of a range

### Expenditure patterns (2011-12)



The graph provides a breakdown of total annual cash expenditure according to category of expenditure.

The graph presents expenditure patterns for the reference year mid-November 2011 to mid-November 2012. While total expenditure increased with wealth, the expenditure breakdown by percent in this graph demonstrates how much expenditure was spent on different categories.

The proportion of annual expenditure spent on food decreased with wealth, with very poor households spending about 50% of their income on staple and non-staple food and better off households spending about 20%. The individual food item that households spent the most money on – across all wealth groups – was rice. The average price paid during the reference year was 22 BDT per kilo. The team did not gather information on where rice was being purchased throughout the year (i.e. from private traders or from the government OMS rice subsidy system).

The proportion of annual expenditure spent on inputs increased very significantly with wealth. For shrimp and fish cultivation, this category includes the purchase of fingerlings and, in some cases, fish feed and labour (for earth cutting, embankment construction, pond preparation, pond maintenance, fencing, guarding, harvesting). For livestock production, the main inputs were fodder and veterinary drugs.

'HH items' (in yellow) includes spending on spices, soap, utensils, kerosene, firewood and electricity. 'Social services' includes spending on education (including any tuition fees, uniforms, stationery, transport and pocket money) and health care (including fees, drugs and transport). 'Other' includes paan, mobile phone credit, transport and house repairs. Household did not spend money on water.

Except in female-headed households, men do the shopping for food and non-food items. There are market days (or *haat*) twice a week at the main bazaars in the livelihood zone. At these markets, almost all of the traders and customers are men.

The following table provides a typical expenditure pattern for very poor households (with four people) in the reference year.

Annual expenditure pattern of very poor households				
Item	kg per month	no. of months	price	BDT per year
rice	55	12	22	14520
potato	7	12	20	1680
pulses	1	12	53	636
meat	1	6	125	750
oil	2	12	110	2640
fish	1	6	100	600
veg	12	12	17	2448
salt	1	12	16	192
spices				1700
soap and toiletries				1530
kerosene				1000
firewood				3000
festivals				1000
loan repayments				5750
school				2000
medicine				1000
clothing				1800
betel/cigarettes/tobacco/tea				3000
house repairs				500
transport				1000
<b>TOTAL (BDT)</b>				<b>46746</b>

## Hazards

The Fish Cultivation Livelihood Zone is subject to a number of hazards, some of which undermine food and livelihood security every year, while others threaten in some years more than others. Cyclones are the most destructive and visible intermittent hazards in this livelihood zone. The two most recent cyclones were Aila in May 2009 and Sidr in November 2007, characterised by destructive winds, heavy rainfall and tidal surges.

A less visible, but an extremely problematic, chronic hazard since the Sidr cyclone is the white spot syndrome virus (WSSV) that affects shrimp production. Waterlogging and high water and soil salinity are other chronic problems that limit the types of production that are possible in the livelihood zone.

Lastly, because of their heavy reliance on the market for food, households are vulnerable to market shocks that increase the prices of essential items in relation to earnings. These shocks can take the form of short-term price hikes during the rainy season when roads become temporarily impassable and trade is hampered, or more widespread price increases due to harvest failures within the country, worldwide food price increases, or increases in the price of fuel and transport costs.

## Response strategies

Households described a number of damaging coping strategies that have not been included in the analysis, including sale of productive assets.

Strategies that have been included are: switching expenditure from non-essential to essential items, switching to lower quality items, increasing loans, increasing labour sales and labour migration, increasing livestock sales.

**Switching of expenditure** – Reducing expenditure on expensive foods (including meat and fish), clothes, utensils, transport, mobile phone credit and non-essentials (like *paan*, cigarettes and ready-made tea), in order to purchase more staple food, is a commonly used coping strategy pursued by all wealth groups.

**Labour migration** – Members of very poor, poor and, to some extent, middle households travel to other parts of the country, both rural and urban, to look for casual work.

**Increased credit-taking** – Households increase borrowing from NGOs, relatives and shop keepers in bad years, often acquiring large debts.

**Increased livestock sales** – Wealthier households sell additional livestock to cover basic food and non-food expenses in bad years. However, the extent to which this strategy can be pursued without damaging future livelihoods is quite limited because livestock holdings in this livelihood zone are small.

### Key parameters for monitoring

The key parameters listed in the table below are things that make a substantial contribution to household food and income sources in the Fish Cultivation Livelihood Zone. These things should be monitored to indicate potential losses or gains to local household economies, either through ongoing monitoring systems or through periodic assessments.

It is also important to monitor the prices of key items on the expenditure side, including rice prices.

Item	Key Parameter – Quantity	Key Parameter – Price
<b>Fish production</b>	<ul style="list-style-type: none"><li>• Shrimp production</li><li>• Fish production</li></ul>	<ul style="list-style-type: none"><li>• Shrimp prices</li><li>• Fish prices</li></ul>
<b>Livestock production</b>	<ul style="list-style-type: none"><li>• Milk production (cow)</li><li>• Livestock sales (cattle and goat)</li></ul>	<ul style="list-style-type: none"><li>• Milk prices</li><li>• Livestock prices (cattle and goat)</li></ul>
<b>Other food and cash income</b>	<ul style="list-style-type: none"><li>• Local casual labour</li><li>• Migrant casual labour</li><li>• Small business turnover</li></ul>	<ul style="list-style-type: none"><li>• Local casual labour wage rates</li><li>• Migrant casual labour wage rates</li><li>• Self-employment prices (e.g. van pulling daily incomes)</li><li>• Small business daily incomes</li><li>• Land rental prices</li></ul>

### Programme implications

The programme implications suggested below were highlighted by community leaders and wealth group interviewees and require further detailed feasibility studies.

**Income diversification** – Poorer households obtain much of their income from casual labour sales and because local opportunities are limited, this often requires commuting or migration to other areas. Community leaders and wealth group representatives regularly highlighted the need for income diversification, but unfortunately concrete ideas were lacking. Some suggested cash support for setting up small businesses, combined with adult education and business training. Another suggestion was skills training linked to specific industries.

**Shrimp production and prices** – The white spot syndrome virus (WSSV) is the main complaint of shrimp farmers and there is no effective cure. Finding a solution to this global problem is beyond the capacity of NGOs, but there may be a role to advocate with government and research bodies to invest in this. Similarly, advocating for ‘fair trade’ throughout the shrimp sector could improve the prices that farmers receive.

**Siltation, waterlogging and salinity** – This is a major problem in the livelihood zone and it prevents farmers from diversifying their production by limiting the types of crops and livestock that can be reared. One suggestion is for organisations to advocate the

government for large-scale tidal river management to restore the natural flow of water and to remove residences and farms from silted land.

## How Can the Baselines Be Used: Running Scenarios

The livelihoods baseline outlined above can be used to examine the impact of various types of change on people's livelihoods, including changes related to weather, markets, policies and interventions. At the heart of this analysis is the contention that in order to predict the effects of any shock or in order to understand the potential benefits of any development intervention, you first need to be able to understand the ways that people piece together their livelihoods.

The following graphs use the Livelihoods Impact Analysis Spreadsheet (LIAS) to analyse a scenario. In this analysis, the extent to which a household can increase access to food and income in response to a shock excludes the resort to negative coping strategies, such as unsustainable livestock sales, reduction in consumption beneath minimum requirements, or eliminating social services expenditure. To illustrate the type of analysis that can be conducted, the following shock is considered for very poor households: a 50% loss labour income and a doubling of staple food prices. Everything else is considered unchanged in this scenario.

For the purpose of this analysis, the survival threshold includes:

- Food: rice
- Non-food: 100% of baseline expenditure on firewood, kerosene, salt, soap

The livelihood protection threshold includes:

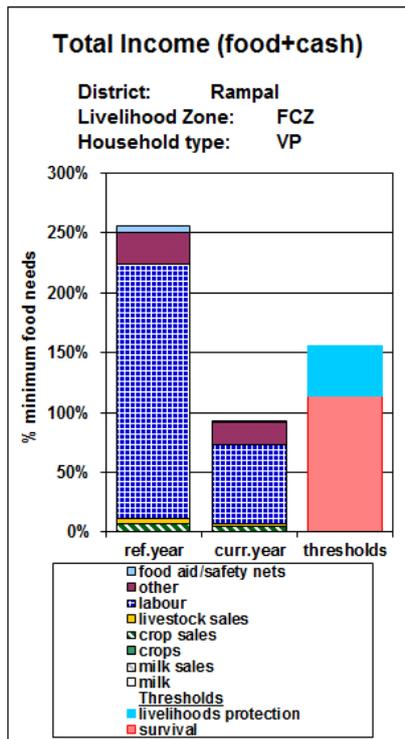
- Food: 100% of baseline expenditure on spices, vegetable oil, pulses, vegetables; 50% of baseline expenditure on fish.
- Non-food: 100% of baseline expenditure on education and health costs, fishing and livestock inputs, house repairs, electricity, loan repayments; 50% of baseline expenditure on clothing and transport.

Items excluded from both thresholds include:

- Food: meat, sugar.
- Non-food: toiletries, utensils, paan.

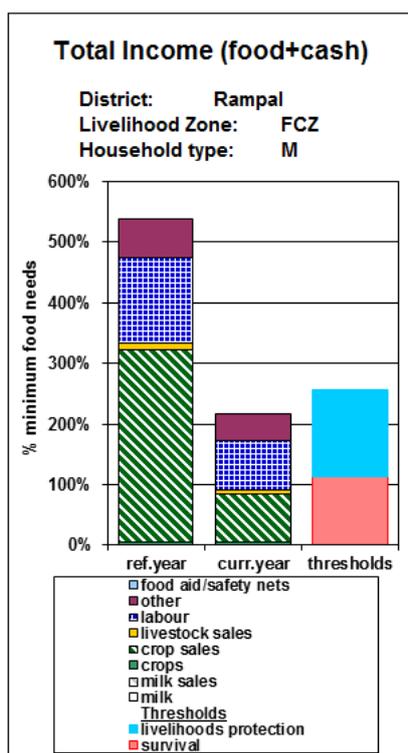
The livelihood protection and survival thresholds, as defined here, are meant to be emergency thresholds. The composition of the thresholds can be modified should decision makers wish to define deficits in relation to a different standard of living or threshold.

The graphic below illustrates this scenario for very poor households ('VP'). The bar with pink and blue on the right represents the two thresholds – the top of the pink section is the survival threshold and the top of the blue section is the livelihood protection threshold. The other two bars represent household food plus cash income – the bar on the left is for the reference year, while the one in the middle is for the scenario (labelled 'current year'). In



these charts, food and cash income have been added together and, in this case, expressed in food terms. (The results could also be expressed in cash terms). The deficit is the difference between the middle bar and the thresholds bar on the right.

Very poor households end up below the survival threshold in this annual analysis, despite employing coping strategies like switching expenditure from non-essential items to staple food. They can almost cope with a doubling of staple food prices (in the absence of any other changes), but the combination of these two shocks together causes problems in terms of both a survival deficit and a livelihood protection deficit.



For middle households ('M'), the following shock is analysed and illustrated on the left: a 50% shrimp/fish production failure and a doubling of staple food prices. Middle households end up below the livelihood protection threshold, suggesting that they would not be able to afford all of the items in the livelihood protection basket under this scenario. These items include inputs related to shrimp, fish and livestock production; the cost of education and health care; and basic items related to maintaining a minimally acceptable standard of living and a diversified diet. Middle households can just about cope with either shock in isolation (a 50% shrimp/fish production failure or a doubling of staple food prices), but a combination of the two shocks together causes problems towards the end of the consumption year.

Note that the pale blue part of the graph (the livelihood protection threshold) is much larger for middle than for very poor households because of the cost of inputs for shrimp/fish production.

Other scenarios can be examined for any of the wealth groups if decision makers are interested in different assumptions regarding: inclusion of coping strategies, components of the survival or livelihood protection baskets, prices, or quantities of income-related items (crops, labour, livestock).