Char Development and Settlement Project Phase IV
Bangladesh

Impact Survey 2018

Technical Report No. 22

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Government of Bangladesh / IFAD / Government of the Netherlands

Implementing Government Agencies:

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

and NGOs

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Abbreviations

AOS	Annual Outcome Survey
BWDB	Bangladesh Water Development Board
c.i.	cropping intensity
CDSP (I, II, III, IV)	Char Development and Settlement Project (phases I, II, III, IV)
DAE	Department of Agricultural Extension
DPHE	Department of Public Health Engineering
DTW	Deep tubewell
FD	Forest Department
FF	Farmers' Forum
FHH	Female Headed Household
FLI	Field Level Institution
GO	Government Organisation
GoB	Government of Bangladesh
GoN	Government of the Netherlands
HH/hh	Household
HYV	High yielding variety
IFAD	International Fund for Agricultural Development
IGAs	Income generating activities
LCS	Labour Contracting Society
LGED	Local Government Engineering Department
M&E	Monitoring and Evaluation
MFI	Micro Finance Institution
MoL	Ministry of Land
NGO	Non-Governmental Organization
PNGO	Partner Non-Governmental Organization
SFG	Social Forestry Group
STW	Shallow tubewell
WMG	Water Management Group
yr	year

Currency equivalents

USD 1.00 = 82.00 BDT (April 2018)

Weights and measures

1 decimal (dec)	=	0.01 acres
1 acre (ac)	=	0.405 ha = 100 decimals
1 hectare (ha)	=	2.47 acres = 247 decimals
1 bigha	=	33 decimals
1 maund	=	40 kg

Executive Summary

The impact survey gathered evidence of the results of CDSP IV from a sample of 1004 households on the five project chars, and is a follow-up to the 2011 baseline survey,

Household profile: average size in 6.4 persons, with 90% of adult men and two-thirds of women earning an income. Fewer women work in better-off households, which also tend to have fewer members. Almost all children are attending school. Less than 5% of households are headed by women - a proportion virtually unchanged since the baseline survey.

Occupation: Agriculture is reported as the principal occupation of household heads, followed by day labour. A significant number also report petty trade – this has increased since the baseline survey. While wives of male household heads almost always say that they are primarily housekeepers, they also mostly give livestock as their secondary occupation.

Land tenure: around 60% of households are holding at least some of their land via legal titles, with 40% of land being settled in this way – with slightly less being informally occupied and the balance leased through various short term rental agreements. Virtually all households have some land. The average holding is just under 2 acres / 0.8 ha, of which about two-thirds is cultivated, and 86% of households cultivate field crops.

Crop damage Many fewer farmers located inside a polder (i.e. protected by an embankment) reported significant damage to homestead vegetables. The difference for aman was smaller, but still significant for flood damage. More farmers inside polders also report reductions in crop damage, especially from flooding, than those outside polders

Cropping: the area of crops has increased, with cropping intensity rising from 104% to 130%[1]. Although paddy remains the predominant crop, aus paddy has now almost disappeared, but the increase in boro cultivation has offset some decline in the area of aman, so overall more land is now occupied by paddy. There has been a larger increase in the area of non-rice crops including field vegetables and melons. Virtually all farmers grow paddy, only a minority of farmers grow other crops.

Integrated vegetable-fish production involving raised beds (sorjon) covers 2.5% of all land, predominantly in Char Nangulia. The total area of field vegetables is equal to 6.1% of cultivated land and, as sorjon is involves multiple cropping, it is likely to account for most field vegetable cultivation.

HYV aman is now the main type of paddy, accounting for 59% of the total paddy area. Razashail, a local variety of aman is still widely grown, accounting for 25% of the paddy area, and boro has become popular on char Nangulia, where accounts for 31% of the total paddy area. The overall average yield of paddy is 3.8 tons per hectare, double that recorded by the baseline survey. Average production of paddy per household had increased by about two thirds, with 58% being consumed at home, 41% sold and 1% retained for seed.

Vegetables: although field vegetables are an important part of crop sales, only 11% of char households produce field vegetables. In contrast, almost all households grow and also sell homestead vegetables. Although average sales per grower are much higher for field vegetables, the much larger number of homestead producers means that vegetables produced on homesteads account for 75% of total vegetable sales. The value sales of field and homestead vegetables exceed the value of paddy sales.

Trees: all households now own trees, with an average of 101 timber, 83 fruit (mostly banana) and 30 palm trees. Around 45% of total fruit produced is sold, and average sales are Tk4,677 per household. Some households are also selling fuel wood and timber from fast growing trees.

Poultry and livestock: almost all households now keep poultry and the number of birds has almost doubled, with egg production and sales income increasing by 3.5 times, and egg consumption by over four times. Over three-quarters of households keep bovines (mainly cattle) – with 31% owned via a sharing system. There has been a switch to milk production and compared with baseline, milk production, consumption and sales have greatly increased. Beef fattening has become an important activity and almost half of all CDSP IV households report sales in the last year. Sheep and goat production is not so widespread, with 23% of

[1] Other estimates and sources give a higher figure for the current cropping intensity.

CDSP households keeping goats and 2% sheep. Sheep (along with buffalo) are mostly kept on Urir char where extensive grazing is available.

Aquaculture: almost all households own ponds and these are now nearly all cultivated. Fish production has quadrupled and yield per unit area has gone up 5.5 times.

Innovation: one of the most significant innovations in CDSP IV has been the sorjon system of integrated vegetable-fish production. This system originated in Indonesia and has become quite widespread in south-western Bangladesh, but is new in this region. Both DAE and PNGOs informed and trained farmers in this system, which has proven to be a catalyst for development of the vegetable sub-sector. For homestead vegetable production, PNGOs have promoted the idea of "vertical gardening" – growing vegetables on trellis supports – which enabled homestead producers with little space to produce sorjon crops. Other innovations include new crop varieties, IPM pest control and mechanisation as well as vaccination of livestock and poultry.

Marketing: On average each household sells farm produce worth almost Tk90,000 per year. Of this, 27% comes from field crops and vegetables, 22% from homestead fruit and vegetables, 11% from pond fish, 9% from poultry and 30% from livestock (although buying and selling cattle inflates the last figure). New roads and bridges have greatly improved market access, with the time taken top reach a local market being reduced by 63%.

Microfinance services**:** four PNGOs were contracted to provide microfinance services to women group members. Survey data shows that 85% of respondent households had taken loans, borrowing an average of Tk68,871 in 3.24 loans. Loans were used for agriculture (28%), consumption - mainly housing (25%), livestock and fish (15%), and loan repayment and re-lending (16% and non-farm enterprises (15%). Almost one third of households also took loans from a variety of informal sources, borrowing an average of Tk53,565 over the last one year. Almost 80% of respondent households currently have some savings, most depositing savings with NGOs as part of their micro-finance programme. Average savings per saver household were Tk15,900.

Household income: average income is now almost Tk300,000 per household per year, 313% more than at baseline. Income in Urir char is (and was at baseline) significantly higher than the other chars. Although this is an island cut off from the mainland with no flood protection embankment, it is less densely populated with larger land holdings and ample land for grazing large herds of cattle, buffalo and sheep. AOS data shows that overall household income for CDSP IV households is still about 10% less than that for households in the older CDSP areas.

Although more households report farm-related income sources than non-farm sources, 60% of income comes from non-farm sources – including wage labour (some of which is hired farm labour). Some sources, such as handicrafts, were reported as sources by many households, but do not generate much income. Overall the major single source of income is labour wages, followed by field crops.

The share of income coming from farming has increased from 36% to 41% since the start of the project. The contribution from wages fallen from 46% to 33%, with increases in other non-farm sources. Wages are the most important source for low income households but, as incomes increase, more is provided by agriculture and other non-farm sources. Increasing income from farming plays a vital role in moving poor people out of poverty, but as incomes increase further, other non-farm sources become as important as farming. However the farm sector is still a key driver of most non-farm enterprises and occupations.

Out-migration: someone from 57% of all households leaves to work outside for at least part of the year - mostly to brickfields in nearby districts. The baseline survey recorded 66% of households sending migrants, so the proportion of households sending migrants has fallen a little despite the transformation of the economy of the chars. Out of the total population of adult men, 41% migrate.

Assets: there has been an even larger growth in the value of assets held by households than in income. The average total value of assets per household has increased from Tk35,160 to Tk261,480 – an increase of over seven times. The greatest increase has been in the value of assets for non-farm enterprises (increasing by 30 times) and farm assets (increasing by 23 times). The increase in value of livestock assets is relatively modest – only three times.

Housing: with secure tenure of their land and increased income, many households have invested considerable sums in better and larger houses. The size of houses has increased by over 70%, and the proportion of houses with solid materials (brick, concrete, tin sheet) for walls and roofs has increased by multiple times.

Domestic water: Provision of deep tubewells means supplies of drinking water are now closer to home – the average distance that people need to go to collect water has fallen from 382 metres to 64 metres. As a result of the sanitation programme the proportion of households with hygienic latrines has increased from 6% to 98%.

Self-assessed wealth ranking shows that five years ago almost all households were in the poor and very poor categories, now there are virtually no very poor households and only 10% are poor. Households on Urir char are (and were before) significantly better off than those on the other chars

Food security: CDSP IV households can now meet household basic food needs from their own production for 10.6 months, 3.6 months more than in the baseline situation. Prior to CDSP IV most (82%) of households faced an acute food crisis in the last year, while now this has fallen to only 4%.

Shocks and crisis: 36% of households report suffering a shock or crisis during the last 12 months. Although this is a significant reduction from the 78% reported in the baseline survey, the baseline data refers to shocks over the last five years rather than one year, so the data is not directly comparable. The major type of shock was ill health, reported by almost 14% of households, followed by losses of livestock (8.3%) and losses of crops due to floods or drought (8.0%). Protection from flooding means fewer household now report being displaced by flooding or loosing crops.

Key findings and lessons

(a) Despite more or less universal adoption of family planning households remain larger than is now expected for rural Bangladesh. Although larger households have more working members, they also have more dependent (non-working) members, and tend to have a lower income per person
(b) Female headed households (FHH) have lower income, but are not so far behind male headed households in terms of sales of pond fish and poultry – suggesting these are good enterprises for FHH.
(c) Despite opportunities for homestead farming and in the non-farm sector, women's participation in the workforce is still limited and significantly lower than for men.
(d) Continued out-migration in search of work shows that there is still a lack of year-round employment opportunities in the CDSP IV area.
(e) There is a growing disconnect between access to land and poverty. Overall, as land holdings increase, average income goes up, but the increase in income is, especially at the lower end of the land holding categories, relatively small, with income sometimes falling as land holdings increase.
(f) Reduced flooding and better drainage is linked to uptake of HYV paddy, and to increases in total paddy production and cropping intensity. Households in chars without protective embankments (Caring and Urir) are more likely to suffer from loss of crops.
(g) Homestead-based farming generates considerably more in sales than field crops – so homestead production can play a significant role in raising income.
(h) Non-farm sources of income, other than wage labour, are growing in importance, so efforts to increase farm income will have a reduced impact on total household income – but farm production and sales are00 a key driver of non-farm enterprises and occupations.
(i) There is minimal access to bank loans, with formal loans are almost all provided by NGO-MFIs.
(j) Households with cumulative borrowing of over Tk75,000 to Tk100,000 have higher income, especially from non-farm sources.
(k) Many households also take informal loans and it is clear that informal loans have an important role in financing farming and managing household expenditure, and more account needs to be taken of this source of credit when assessing the credit needs of farmers.

1. Introduction

The goal of CDSP-IV was reduced poverty and hunger for poor people living on newly accreted coastal chars. The objective was improved and more secure rural livelihoods for 28,000 households who comprise the population of Nangulia, Noler, Caring, Ziauddin and Urir Chars in the coastal area of Noakhali District in southeast Bangladesh.

The project built protective water management infrastructure to protect land from flooding and saline intrusion and to improve drainage. Protection was also provided by extensive tree plantations. The project built roads and bridges to improve access to these poorly connected chars, as well as cyclone shelters. Households were provided with access to safe drinking water and hygienic sanitation. Households who had settled on the chars were given secure legal titles to their land, and agricultural livelihoods were developed.

The project was implemented by six government agencies: the Bangladesh Water Development Board (BWDB); Forest Department (FD); Local Government Engineering Department (LGED); Department of Public Health Engineering (DPHE); Ministry of Land (MoL); and Department of Agriculture Extension (DAE). BWDB was the lead agency and coordinated overall implementation. Implementation was supported by a Technical Assistance team provided by international and national consultants. Four partner NGOs (PNGO) supported homestead livelihoods, provided basic health care, promoted legal and human rights and implemented a micro-finance programme.

CDSP IV was jointly financed by IFAD, the Government of Netherlands (GoN) and the Government of Bangladesh (GoB). At design the cost was estimated at USD89.2 million, funded by an IFAD loan of USD47.30, a GoN grant of USD20.6 million, GoB financing of USD15.6 million, NGOs credit funding of USD4.9 million, and beneficiaries' contribution of USD0.81 million. The project period was from May 2011 to June 2018.

The results from CDSP-IV\\\ have been assessed and measured using a number of tools and approaches. One of the primary tools is this impact evaluation survey of a sample of participating households with data being compared to that from a baseline survey carried out in 2011. Other sources include Annual Outcome Surveys (AOS), which gathered information on some log frame objective and outcome indicators at annual intervals, a number of assessments of field level institutions (Water Management Groups, Farmer Forums, Labour Contracting Societies), as well as other evaluations – including gender, cyclone shelters, improved communications, and agriculture.

The objectives of the survey are to gather information on key purpose and goal level log frame indicators, regarding the outcomes, results and impact of CDSP IV. From this information it is hoped to learn lessons regarding the effectiveness of interventions and pathways out of poverty.

Reference is made in this report to data from AOS. The AOS collected data from 600 sample households divided between CDSP I&II (combined), CDSP III and CDSP IV. This has provided data on the continued benefits and sustainability of the earlier phases of CDSP, as well as enabling progress of CDSP IV to be compared with that of earlier phases. The AOS sample for CDSP IV was a sub-sample of baseline and impact survey households, and results from the AOS sample of 200 households differs slightly from the sample of 1,004 in the impact survey.

2. Methodology

2.1 Sample design

The sample for the impact survey was 1,004 households from five chars of CDSP-IV. Most sample households were the same as those selected for the 2011 baseline survey – thus it was a panel sample. It is to be noted that due to change of river course, heavy erosion is taking place, especially in Caring Char, but also in Char Nangulia and Noler char. As a result some samaj (villages) have been partly or completely been lost. This has meant that the distribution sample between chars has changed since the baseline survey – with the number being adjusted to approximate with up-dated population estimates for each char (Table 1). However, as far as possible, the sample covered the same villages and households as the baseline survey (Appendix 1, Table 1).

Table 1: Distribution of samples households by char

CDSP-IV Chars	HH population 2010	Baseline survey samples	HH population 2017	Impact survey samples	
				Planned	actual
Char Ziauddin	2000	100	2380	80	100
Char Nangulia	12000	600	15113	520	518
Noler Char	6000	300	6152	210	219
Caring Char	6000	300	2628	90	77
Urir char	2000	100	2725	90	90
Total	**28000**	**1400**	**29008**	**990**	**1004**
Char Ziauddin	7.1%	7.1%	8.2%	8.1%	10.0%
Char Nangulia	42.9%	42.9%	52.1%	52.5%	51.6%
Noler Char	21.4%	21.4%	21.2%	21.2%	21.8%
Caring Char	21.4%	21.4%	9.1%	9.1%	7.7%
Urir char	7.1%	7.1%	9.4%	9.1%	9.0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

2.2 Survey questionnaire

The impact survey questionnaire (see Appendix 1) was developed and finalized after field testing involving households and field investigators. The questionnaire consists of 29 sections based on key impact indicators. The areas of indicators linked with questions were as follows:

- Household profile and composition (Q1 to Q6)
- Land holding and housing (Q7-Q8)
- Water and sanitation (Q7 to Q8)
- Health and family planning (Q9)
- Household assets (Q11)
- Crops and vegetables (Q12 to Q17)
- Poultry and livestock (Q18 to Q20)
- Aquaculture (Q21)
- Loans and savings (Q22)
- New income generating activities (Q23)
- Household income (Q24)
- Seasonal migration, food security and wealth category and mobility (Q25 to Q28)
- Shocks and coping strategy (Q29)

2.3 Field data collection and data entry

Temporary staff were recruited to assist with the impact survey - eight field investigators (five men and three women) and one data entry-cum-supervisor. These personnel were trained on the data collection process through an orientation course for two days (19 December 2017 and 20 December 2017) covering the survey tools and field testing at couple of households the project command areas. Impact survey data collection began on 23 December 2017 and concluded on 28 January 2018. The impact survey data collection in the field level was supervised by two CDSP-IV Monitoring and Evaluation Officers under guidance of Monitoring Evaluation and Knowledge Management Adviser. Data gathered are captured into computerized database developed in MS Access. Data validation has been ensured at the every stage of processing and confirmed, sometimes re-visiting households as required.

2.4 Data analysis

Data was analysed using MS Excel. The larger sample has allowed more detailed analysis than is possible for AOS – including generation of tables of results by char, income band, wealth category and other criteria. In most tables, data from the impact survey are compared with data from the baseline survey to show the changes that have occurred during CDSP IV. However it has not been possible to use baseline data to track changes for individual households – such as those who previously did not grow HYV paddy, or were below a certain income threshold. Although the baseline survey database is available with data for each respondent, it was not possible in

the time available to confirm which data applied to which questions and what codes were used to record answers. It would have been useful to do this – and so find out how households that, at the start of the project were relatively poor or otherwise disadvantaged, improved their livelihoods and living standards.

3. Results and discussion

3.1 Household size and composition

The size and composition of households in the five CDSP-IV chars areas at baseline and completion are shown in Table 2. This shows that average household size is 6.4 persons – larger than is usual in rural Bangladesh (typically around 5 persons), and also slightly larger than in the 5.9 persons recorded in the baseline survey The age categories used in the baseline survey differ from those in the impact survey, so the composition by age group is not directly comparable, however there has been a small increase in the proportion of female adults (up from 45% to 47%) while the proportion of household members aged under 16 does not appear to have changed.

Table 2: Household size and composition

		Ziauddin	Nagulia	Noler	Caring	Urir	Total
Impact survey							
Persons	number	6.39	6.20	6.58	6.75	6.81	6.40
Composition	Men 16+	29%	29%	30%	31%	32%	30%
	Women 16+	25%	26%	27%	28%	27%	26%
	Child 5-16	34%	32%	30%	27%	31%	31%
	Child under 5	12%	12%	13%	14%	11%	13%
		100%	100%	100%	100%	100%	100%
Baseline survey							
Persons	number	6.30	6.00	5.93	5.40	6.50	5.90
Composition	men 20+	23%	24%	27%	24%	24%	25%
	women 20+	19%	20%	22%	21%	18%	20%
	child under 20	58%	56%	52%	55%	57%	55%
		100%	99%	101%	100%	99%	99%
Women	impact	47%	47%	47%	48%	46%	47%
% of adults	baseline	46%	45%	45%	47%	43%	45%
Children	impact	46%	44%	43%	41%	42%	44%
% of hh	Baseline*	46%	44%	42%	44%	46%	44%

'* adjusted for aged under 16 years

AOS data for the older CDSP areas also shows quite large households – 6.46 persons in CDSP I&II and 6.71 in CDSP III. As already mentioned, this is larger that would normally be expected in rural Bangladesh. Apart from the legacy of inadequate family planning services prior to CDSP, one possible explanation is that some households are accommodating relatives who have been displaced by erosion (both in the CDSP chars and elsewhere).

Data in Table 3 shows the proportion of household members who earn an income (from both employment and self-employment), or are in education or are otherwise unable to work. This shows that overall 90% of men aged over 16 years are earning an income, as are two-thirds of women. There is potential for more women to earn an income with 27% of women not earning, nor in education or elderly/handicapped. Almost all (90%) of children aged 5 to 16 years are at school, although education is only compulsory up to the age of 10. Only 1% of these children are earning an income.

AOS data shows that proportions are similar in the older CDSP areas, except in CDSP I&II 34% of women fall into the not earning/education/elderly/handicapped category. Table 3 shows that the percentage of such women is also relatively high in Zia and Urir chars. Households in these two chars, and the CDSP I&II area, are relatively

well off, suggesting that women are less likely to earn an income in better off households However this is not confirmed by analysis in Table 82 of the proportion of women earning from different income bands.

Less than 5% of households are headed by women – including widows and those divorced or separated from their husbands, plus some who consider themselves to be female headed as their husband is working away from home (Table 4). This proportion is virtually unchanged since the baseline survey. It is not clear why a higher proportion of households (11%) in Urir char are female headed. Follow-up enquiries did not reveal a reason, such as loss of a disproportionate number of men in a cyclone.

Table 3: Activities of household members

		Number of	Percentage of household members			
		persons	Earning	Elderly/disabled	In education	Other
Ziauddin	Men 16+	1.84	85%	3%	4%	8%
	Women 16+	1.60	61%	2%	0%	37%
	Child 5-16	2.19	1%	0%	85%	14%
	Child under 5	0.76	0%	0%	3%	97%
	Total member	6.39	40%	1%	31%	27%
Nangulia	Men 16+	1.83	90%	3%	3%	5%
	Women 16+	1.62	69%	4%	1%	26%
	Child 5-16	1.98	1%	0%	88%	11%
	Child under 5	0.77	0%	0%	3%	97%
	Total member	6.20	45%	2%	30%	24%
Noler	Men 16+	1.99	91%	6%	1%	3%
	Women 16+	1.78	70%	8%	0%	22%
	Child 5-16	1.95	0%	0%	91%	8%
	Child under 5	0.86	0%	0%	2%	98%
	Total member	6.58	46%	4%	28%	22%
Caring	Men 16+	2.06	96%	1%	1%	3%
	Women 16+	1.91	69%	4%	0%	27%
	Child 5-16	1.84	0%	1%	87%	12%
	Child under 5	0.94	0%	0%	3%	97%
	Total member	6.75	49%	2%	24%	25%
Urir	Men 16+	2.17	93%	4%	3%	1%
	Women 16+	1.81	61%	6%	1%	33%
	Child 5-16	2.09	0%	0%	100%	0%
	Child under 5	0.74	0%	0%	0%	100%
	Total member	6.81	46%	3%	32%	20%
Total	Men 16+	1.91	90%	3%	2%	4%
	Women 16+	1.69	68%	5%	1%	27%
	Child 5-16	2.00	1%	0%	90%	10%
	Child under 5	0.80	0%	0%	2%	98%
	Total member	6.40	45%	2%	29%	24%

Table 4: Women headed households

		impact	baseline
Percentage of households headed by women	Ziauddin	1.0%	4.0%
	Nangulia	5.0%	3.8%
	Noler	3.2%	5.0%
	Caring	0.0%	2.7%
	Urir	11.1%	11.1%
	Total	4.4%	4.3%

3.2 Occupational profile

The primary and secondary occupations of the heads of households are shown in Table 5. Housekeeping is reported by many of the female headed households. The most widely reported principal occupation is agriculture, reported by over one thirds of households , followed by day labour (29%) and petty trade with 15%. Over half of household heads also report agriculture as a secondary occupation. The vast majority of households report agriculture as a primary or secondary occupation, and over half report day labour as a primary or secondary occupation.

Table 5: Occupation of household head

	Ziauddin	Nangulia	Noler	Caring	Urir	Total
Primary						
Agric/crop farming	35%	39%	24%	44%	34%	35%
Livestock/poultry	0%	0%	0%	0%	1%	0%
Day labour	26%	27%	37%	32%	18%	29%
Salaried job	7%	5%	6%	4%	6%	6%
Fish/PL catch/dry	4%	2%	5%	1%	2%	3%
Small trade	13%	15%	13%	12%	19%	15%
Rickshaw / boat	5%	2%	4%	1%	3%	3%
Driver	2%	3%	2%	4%	0%	3%
Handicraft	0%	0%	0%	0%	0%	0%
Housekeeping	1%	3%	2%	0%	10%	3%
Tailoring	0%	0%	0%	0%	1%	0%
Other	6%	3%	5%	1%	6%	4%
Secondary						
Agric/crop farming	54%	60%	69%	62%	57%	61%
Livestock/poultry	3%	5%	5%	0%	15%	5%
Day labour	31%	30%	17%	28%	24%	26%
Salaried job	0%	1%	1%	2%	0%	1%
Fish/PL catch/dry	3%	2%	1%	0%	0%	1%
Small trade	6%	1%	2%	7%	1%	2%
Rickshaw / boat	3%	0%	1%	0%	0%	1%
Driver	1%	1%	1%	0%	1%	1%
Handicraft	0%	0%	0%	0%	1%	0%
Housekeeping	0%	1%	1%	0%	0%	0%
Tailoring	0%	0%	0%	0%	0%	0%
Other	0%	1%	2%	2%	0%	1%

Percentage of all sample hh reporting the occupation.

Spouses of household heads (who will be women) overwhelmingly report housekeeping as their primary occupation and livestock as their secondary occupation (Table 6).

Table 6: Occupation of spouse of household head

	Ziauddin	Nangulia	Noler	Caring	Urir	Total
Primary						
Agric/crop farming	0%	0%	0%	0%	0%	0%
Livestock	0%	2%	2%	0%	0%	1%
Day labour	0%	0%	0%	0%	1%	0%
Salaried job	0%	1%	1%	0%	1%	1%
Fish/PL catch/dry	1%	0%	0%	0%	1%	0%
Small trade	0%	0%	0%	0%	2%	0%
Rickshaw / boat	0%	0%	0%	0%	0%	0%
Driver	0%	0%	0%	0%	0%	0%
Handicraft	2%	0%	0%	0%	0%	0%
Housekeeping	97%	97%	95%	100%	94%	97%
Tailoring	0%	0%	0%	0%	0%	0%
Other	0%	0%	1%	0%	0%	0%
Secondary						
Agric/crop farming	0%	0%	0%	0%	4%	1%
Livestock	91%	96%	93%	100%	95%	95%
Day labour	0%	0%	0%	0%	0%	0%
Salaried job	0%	0%	0%	0%	0%	0%
Fish/PL catch/dry	0%	1%	2%	0%	0%	1%
Small trade	0%	0%	0%	0%	0%	0%
Rickshaw / boat	0%	0%	0%	0%	0%	0%
Driver	0%	0%	0%	0%	0%	0%
Handicraft	4%	0%	1%	0%	1%	1%
Housekeeping	2%	2%	3%	0%	0%	2%
Tailoring	2%	0%	0%	0%	0%	0%
Other	0%	0%	0%	0%	0%	0%

Percentage of all sample hh reporting the occupation

Table 7 compares data on the principal occupation of household heads at baseline and completion. Agriculture and day-labour are now reported by slightly fewer household heads, while there has been an increase in petty trade, salaried jobs and other non-farm income. As the char economy has developed there are more non-farm opportunities. Although day labour includes both farm and non-farm work, more household heads are now able to have better, more remunerative occupations.

Table 7: Principal occupation of household head at baseline and completion

	Ziauddin		Nangulia		Noler		Caring		Urir		total	
	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact
Agriculture	29%	35%	48%	39%	40%	24%	25%	44%	37%	36%	39%	36%
Day Labour	37%	26%	27%	27%	29%	37%	50%	32%	20%	18%	33%	29%
Housekeep	4%	1%	2%	3%	3%	2%	2%	0%	10%	10%	3%	3%
Fisherman	4%	4%	1%	2%	3%	5%	5%	1%	2%	2%	3%	3%
Job	6%	7%	3%	5%	3%	6%	2%	4%	8%	6%	3%	6%
Petty trade	9%	13%	9%	15%	11%	13%	6%	12%	13%	19%	9%	15%
Rickshaw	8%	5%	4%	2%	3%	4%	4%	1%	1%	3%	4%	3%
Others	3%	8%	5%	7%	7%	8%	5%	5%	9%	7%	5%	7%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Data from the AOS on the occupation of household heads shows that in the older CDSP areas these is a trend away from agriculture with more households reporting non-farm occupations. For instance, in the CDSP I&II zone, 14% of household heads now say their main occupation is a salaried job.

3.3 Participation in Field Level Institutions

CDSP IV promoted a range of field level institutions (FLI) to support the work of project implementation and build community ownership of project outputs. Water Management Groups (WMG) were formed with an average of 36 members, representing some hundreds of farmers in a water management catchment area formed by a drainage khal. Farmers Forums (FF) were formed as a conduit for extension services from DAE, with about 20% of farmers being members. Social Forestry Groups (SFG)were formed to establish and maintain plantations on public land. Women from all households were given the opportunity to joint micro-credit groups formed by CDSP partner NGOs (PNGOs). PNGOs also gave these groups support for livelihoods, legal rights and disaster management, along health services. Households were also members of Tubewell User Groups (TUG) based around DTW installed by CDSP to provide domestic water. Labour Contracting Societies (LCS) were formed to undertake small construction contracts.

Table 8: Membership of FLI

	Ziauddin	Nangulia	Noler	Caring	Urir	Total
At present time						
WMG	17%	14%	7%	6%	0%	11%
FF	24%	18%	13%	27%	19%	18%
SFG	37%	18%	32%	42%	0%	23%
NGO group	85%	74%	77%	83%	48%	74%
TUG	76%	70%	81%	56%	28%	68%
LCS	1%	1%	0%	0%	0%	0%
At some time						
WMG	17%	15%	8%	6%	0%	12%
FF	25%	21%	14%	26%	20%	20%
SFG	37%	18%	32%	42%	0%	23%
NGO group	95%	89%	89%	92%	76%	89%
TUG	79%	71%	81%	60%	29%	70%
LCS	3%	1%	0%	0%	1%	1%

Table 8 shows the proportion of households reporting membership of these six types of FLI. This shows membership at the current time and membership at any time (both current and in the past). In general membership

as reported in this survey reflects the formation of FLI during the CDSP IV implementation period. WMG are effectively a local level committee managing water resources on behalf of the wider population, Farmers' Forums aimed to reach 20% of all farmers, while NGO groups should have covered 100% of all households (although some did not wish to join). It is surprising that only 70% of households report membership of TUG when almost all use project DTW - and will have been enlisted into TUG at the time of installation of these DTW as a contribution towards the cost of the DTW was collected at this time. It seems that many people do not realise that they are (or were) members of TUG. It would be expected that there would be some fall off in group membership as project activities come to an end and the immediate benefits of group membership are reduced.

3.4 Land and land settlement

On average sample households have been living on the CDSP IV chars for almost 16 years – slightly less for those on Caring char but significantly longer for those on Urir char, with 10% living in the chars for no more than 10 years (Table 9).

Table 9: Period of settlement

Char	Average number of years living here	% of HH living here 10 years or fewer	Sample n
Ziauddin	14.4	17.0%	100
Nangulia	15.1	12.5%	518
Noler	15.5	5.5%	218
Caring	12.6	10.4%	77
Urir	25.5	1.1%	89
total	15.9	10.3%	1002

One of the key interventions of CDSP has been providing char settlers with secure titles to the land that they have been occupying. Prior to the start of CDSP IV, only 1.2% of households had secure title to their land (baseline study 2011). The 2018 impact study (Table 10) shows that 61% now have secure titles (*khatian*). Evidence of such possession being maintained over an extended period of time comes from earlier phases of CDSP. The 2017 AOS shows that 87% of CDSP III households have *khatians*, as do 58% of those from CDSP I&II.

CDSP IV land settlement activities do not include Urir char, which accounts for the fact that only 37% of households here have *khatian*. Table 10 also shows that households have acquired different plots of land through a variety of channels. Apart from *khatian* and informal settlement, a relatively small number of households have inherited or purchased land, with 27% leasing in land. As there is a ceiling of 1.5 acres on the amount of land for which *khatian* can be granted through the CDSP/MoL land settlement process, the proportion of land for which legal title has been granted is only 40%.

Two of the sample of 1004 impact survey households had lost all their land to erosion and were now squatting on embankments. The other 1002 owned, leased or informally occupied an average of 199 decimals (0.8 ha) of land (Table 11), of which an average of 9 decimals is leased out, leaving a net operated area of 190 decimals (0.77 ha). The distribution of occupied area by land size category and char is shown in Table 11. Only 6% of these households had less than 50 decimals (0.2 ha) which meant they would be classified as functionally landless, with 30% in the marginal farmer category (0.2 to 0.6 ha), 44% in the small farmer group (0.6 to 1.0 ha) and 21% with over 1 hectare (mainly on Urir char). An average of 48 decimals (0.19 ha) per household is either leased in (by 27% of households) or leased out (by 10% of households) – mostly through share-cropping arrangements. Taking account of this leasing in and out, 861 households (86% of the total) actually cultivate an average of 123 decimals (0.5 ha of land) – see Table 12.

Table 10: Acquisition and occupation of land

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Acquired by	Khatian settlement	50%	50%	92%	87%	37%	61%
	Inherited	3%	1%	2%	1%	2%	2%
Percent of	Purchased	7%	5%	7%	5%	3%	5%
households	Occupy informally	48%	50%	8%	14%	80%	41%
	Lease in	19%	28%	23%	31%	31%	27%
	Lease out	22%	8%	14%	6%	3%	10%
	n - sample size	100	516	219	77	90	1002
	Total land occupied	147	174	151	198	517	199
Acquired by	Khatian settlement	57	65	112	123	79	80
	Inherited	1	1	1	0	2	1
Average area	Purchased	3	5	5	2	2	4
per hh	Occupy informally	59	69	7	17	337	74
(decimals)	Lease in	28	35	26	56	98	39
	sub-total	147	174	151	198	517	199
	lease out	19	7	10	8	6	9
	net area operated	128	167	140	190	511	190
	Khatian settlement	39%	37%	74%	62%	15%	40%
Percent of	Inherited	0%	0%	0%	0%	0%	0%
area	Purchased	2%	3%	3%	1%	0%	2%
occupied	Occupy informally	40%	40%	5%	9%	65%	37%
	Lease in	19%	20%	17%	28%	19%	20%
	sub-total	100%	100%	100%	100%	100%	100%
	lease out	13%	4%	7%	4%	1%	4%
	net area operated	87%	96%	93%	96%	99%	96%

T**able 11: Area of land occupied** (percentage of households)

Decimals	Classification	Ziauddin	Nangulia	Noler	Caring	Urir	Total
0		0%	0%	0%	0%	0%	0%
1 to 49	Functionally landless	10%	5%	8%	8%	1%	6%
50 to 99	Marginal farmer	18%	11%	16%	9%	1%	12%
100 to 149	Marginal farmer	25%	16%	26%	12%	6%	18%
150 to 249	Small farmer	36%	51%	39%	42%	21%	44%
over 250	Medium / large famers	11%	16%	12%	30%	71%	21%
Total		100%	100%	100%	100%	100%	100%

Table 12: Use of land by households

Use of land	Percentage of households	Average area per household	
		Decimals	= hectare
Homestead	100%	32	0.13
Pond	99%	32	0.13
Cultivated land	86%	123	0.50
Fallow land	6%	4	0.02
Total land		190	0.77

The distribution of cultivated land is shown in Tables 13 and 14. This shows that 72% of those households cultivating land cultivate less than 150 decimals (0.61 ha) . If Urir char is excluded, then 92% of cultivating households grow crops on less than 250 decimals (1.01 ha) – i.e. they are marginal and small farmers.

Table 13: Cultivated land area by size category

	Percentage of households	
Cultivated area	**All chars**	**Excluding Urir char**
1 to 49 decimals	16%	17%
50 to 99 decimals	30%	32%
100 to 149 decimals	26%	27%
150 to 249 decimals	16%	15%
over 250 decimals	12%	8%
Total	100%	100%
Sample n	863	783

Table 14: Land use

		Ziauddin	Nangulia	Noler	Caring	Urir	total
% of HH	homestead	100%	100%	100%	100%	100%	100%
	pond	99%	99%	99%	99%	98%	99%
	cultivated	74%	89%	82%	90%	87%	86%
	fallow	6%	5%	7%	8%	7%	6%
decimal per hh	homestead	29.00	31.41	28.46	23.17	50.16	31.57
	pond	22.15	27.42	24.37	22.39	90.97	31.54
	cultivated	76.61	105.66	85.81	141.48	349.58	123.05
	fallow	0.77	2.36	1.66	2.90	20.62	3.73
	total	128.53	166.85	140.30	189.94	511.32	189.89
percent of total area	homestead	23%	19%	20%	12%	10%	17%
	pond	17%	16%	17%	12%	18%	17%
	cultivated	60%	63%	61%	74%	68%	65%
	fallow	1%	1%	1%	2%	4%	2%
	total	100%	100%	100%	100%	100%	100%
Sample n		100	518	219	77	90	219

3.5 Crop production

3.5.1 Damage to crops from salinity, flooding and waterlogging

Data in Table 15 shows that many fewer farmers located inside a polder (i.e. protected by an embankment) reported significant damage to homestead vegetables. The difference for aman was smaller, but still significant for flood damage.

Table 15: Percentage of farmers reporting moderate or heavy crop damage

Source of damage	Crops	Inside polder	Outside polder[1]
Salinity	Aman paddy	21%	22%
	Homestead vegetables	8%	25%
Flooding	Aman paddy	20%	27%
	Homestead vegetables	2%	23%
Waterlogging	Aman paddy	21%	22%
	Homestead vegetables	8%	25%

[1] Farmers in Caring and Urir chars, other farmers are assumed to be inside polders

More farmers inside polders also report reductions in crop damage, especially from flooding, than those outside polders (Table 16). Improved drainage developed by CDSP IV may help account for the reported improvements to crops outside the polder.

Table 16: Percentage of farmers reporting reduced crop damage

Source of damage	Crops	Inside polder	Outside polder
Salinity	Aman paddy	96%	78%
	Homestead vegetables	96%	78%
Flooding	Aman paddy	95%	64%
	Homestead vegetables	96%	65%
Waterlogging	Aman paddy	94%	82%
	Homestead vegetables	95%	77%

More detailed data for each polder and for other crops is in Appendix 2.

The AOS shows that farmers in the older CDSP areas are less likely to report crop damage, but also that the downward trend in damage is continuing – suggesting that CDSP water management are continuing to be effective and that increasing benefits will continue to accrue after the completion of CDSP IV. It also suggests that, in CDSP IV, not all the improvement to the crop production environment has yet been realised.

3.5.2 Crop area and cropping intensity

The area of crops has increased, with surveys showing cropping intensity has increased from 104% to 130%[2]. Although paddy remains the pre-dominant crop, Table 17 shows that aus paddy has now almost disappeared, but the increase in boro cultivation has offset some decline in the area of aman, so overall more land is now occupied by paddy. There has been a larger increase in the area of non-rice crops including vegetables and melons grown in the field.

[2] This is significantly different to data from the AOS sub-sample, which showed a higher cropping intensity for CDSP in 2017 of 145%. Cropping intensity in Table 17 is calculated as the total area of all crops grown in the year divided by the area of cultivable land. In addition, as a check the impact survey also collected data on the areas of land cropped, once, twice, three times, four times and five times. This data generates a cropping intensity of 132% - very similar to that derived from the sum of total crop areas.

Table 17: Crop area as percent of cultivated land

Crop	Baseline 2011	Impact 2018
Aus paddy	3.8%	0.4%
Aman paddy	91.7%	87.2%
Boro paddy	0.6%	16.3%
Sub-total paddy	96.2%	103.9%
Pulses		12.8%
Oilseeds		4.6%
Spices		2.6%
Roots and tubers		0.4%
sub-total other crops	8.3%	20.4%
Field vegetables and melons	0.02%	6.1%
Total field crops	104.4%	130.4%

More detailed data is in Appendix 2, Tables 3. 4 and 4a

Baseline and impact data on cropping patterns for each char is in Table 18. This shows the following key difference between chars:

- Ziauddin has had a marginal drop in cropping intensity from 149% to 148%. Although the area under aus is greatly reduced, this has not quite been offset by the increase in other types of paddy (mainly aman) plus the increase in non-rice crops and vegetables. This char has a relatively large amount of land under oilseeds and pulses (in total over one third of cultivated land). The pulses are primarily keshari (grass pea) – a low value crop broadcast into aman prior to its harvest, while oilseeds are soyabean.
- Nangulia now has a significant (one third of cultivable land) under boro, which has more than offset a significant fall in the area of aman. Nangulia also has a much higher proportion of land (11.7%) under vegetables than the other chars.
- Caring has a relatively large area under oilseed – although not as much a Ziauddin. But this is mainly sesame rather than soyabean.
- Urir char has a larger area (27% of cultivable land) under pulses – almost entirely keshari.

Table 18: Cropping patterns on different chars

	Ziauddin	Nangulia	Noler Char	Caring Char	Urir Char	total
Baseline						
Aus	20.3%	1.5%	5.1%	4.9%	1.3%	3.8%
Aman	94.8%	89.6%	100.2%	93.0%	88.9%	91.7%
Boro	0.0%	0.7%	0.4%	0.0%	0.5%	0.6%
total rice	115.0%	91.8%	105.7%	97.8%	90.7%	96.2%
Other crops	31.6%	7.1%	10.6%	2.5%	12.2%	8.3%
Vegetable	2.17%	0.06%	0.41%	0.00%	0.00%	0.02%
total	148.8%	98.9%	116.7%	100.3%	102.9%	104.4%
Impact						
Aus	3.6%	0.1%	0.6%	0.0%	0.0%	0.4%
Aman	99.3%	72.4%	97.5%	98.7%	100.0%	87.2%
Boro	0.5%	33.6%	8.2%	0.0%	0.3%	16.3%
total rice	103.4%	106.2%	106.2%	98.7%	100.3%	103.9%
Pulses	17.9%	9.1%	2.9%	2.2%	27.5%	12.8%
Oilseeds	17.1%	2.5%	5.8%	13.5%	1.2%	4.6%
Spices	4.9%	2.1%	3.0%	4.7%	2.1%	2.6%
Root+tuber	0.7%	0.3%	0.9%	1.0%	0.2%	0.4%
sub-total	40.6%	14.0%	12.6%	21.4%	31.0%	20.4%
Vegetable	2.9%	11.7%	3.1%	2.4%	0.3%	6.1%
total	147.0%	131.9%	121.9%	122.5%	131.6%	130.4%

Although virtually all farmers grow paddy, only a minority of farmers grow other crops. The percentage of farmers (i.e. households cultivating field crops) growing different types of crop are shown in Table 19 - details for individual crops are in Appendix 2 Table 3. This shows that all the farmers growing other cereals (maize, millet, pulses, oilseeds) also grow paddy.

Table 19: Percentage of farmers growing different crops

	Ziauddin	Nangulia	Noler	Caring	Urir	Total
Grow paddy	97%	96%	99%	100%	99%	97%
Maize/millet	1%	0%	0%	0%	0%	0%
Pulses	27%	13%	6%	7%	55%	16%
Oilseeds	27%	4%	8%	25%	6%	9%
All cereals	97%	96%	99%	100%	99%	97%
Spices	34%	13%	24%	45%	45%	23%
Root/tuber	7%	3%	9%	17%	10%	7%
Vegetable/melon	9%	18%	7%	19%	9%	14%
All crops	100%	100%	100%	100%	100%	100%

The average area of each crop per farmer who grows the crop is shown in Table 20. Although a higher proportion of farmers grow spices than vegetables, the area per farmer is smaller – implying that spices are more of a subsistence crop, while vegetables tend to be grown on a commercial scale. It is also worth noting that in Nangulia the area per vegetable grower is larger than on other chars – this char also has the largest area under vegetables. The average area for all farmers (crop growers) is shown in Table 21. – this reflects the overall area of each crop, and shows that farmers on Urir char grow, on average, over twice the total area of crops as do farmers on the other chars (but this is primarily paddy and pulses – there is little or no difference for other crops). There is more land available on Urir char and farm holdings are larger.

Table 20: Average area per grower of a crop (decimals)

	Ziauddin	Nangulia	Noler	Caring	Urir	Total
Paddy	110	131	112	156	410	153
Maize/millet	20	4				12
Pulses	69	82	49	48	201	113
Oilseeds	65	77	72	87	76	75
All cereals	148	146	121	181	527	178
Spices	15	19	13	17	19	17
Root/tuber	11	10	10	9	8	9
Vegetable/melon	32	75	49	20	16	61
Total field crop	152	157	127	193	531	187

Table 21: Average area for all crop growers (decimals)

	Ziauddin	Nangulia	Noler	Caring	Urir	Total
Paddy	107.1	126.3	110.9	155.9	404.5	149.0
Maize/millet	0.3	0.0	0.0	0.0	0.0	0.0
Pulses	18.6	10.8	3.0	3.5	110.9	18.3
Oilseeds	17.7	3.0	6.0	21.4	4.9	6.5
All cereals	143.6	140.2	120.0	180.7	520.3	173.9
Spices	5.1	2.5	3.2	7.5	8.3	3.8
Root/tuber	0.8	0.3	0.9	1.5	0.8	0.6
Vegetable/melon	3.0	13.7	3.3	3.8	1.4	8.7
Total field crop	152.4	156.7	127.3	193.5	530.8	187.0

In CDSP IV, 2.5% of all cultivated land is used by the sorjon system (integrated vegetable-fish production involving raised beds) – predominantly in Char Nangulia, where 11% of all farmers are operating sorjon plots (Table 22). The total area of field vegetables is equal to 6.1% of cultivated land and, as sorjon is an intensive system with multiple cropping, it is likely to account for most of the field vegetable cultivation in CDSP IV. Moreover the types of vegetables grown in CDSP IV are predominantly the climbing vegetables (beans, gourds and cucumber) that are grown in sorjon systems.

Table 22: Sorjon cultivation

	Ziauddin	Nangulia	Noler	Total
Total area of sorjon in decimals	32	2779	248	3059
Sorjon area as % of cultivated land.	0.42%	5.08%	1.32%	2.48%
Number of sample households with sorjon plots	1	50	3	54
Sorjon households as % of farming h'holds	1.4%	10.9%	1.7%	6.3%
Decimals/HH	32.0	55.6	82.7	56.6

There is no sorjon on Caring or Urir chars

AOS data from the older CDSP areas shows that, in the last two years there appears to have been a considerable expansion of boro in all CDSP areas. This expansion has been driven by the current high paddy prices (following from losses due to severe flooding in much of Bangladesh in 2017) and adoption of hybrid seeds. Farmers have been investing considerable sums in irrigation - sinking tubewells to a considerable depth. There is a considerable risk of over-abstraction, posing a threat to fresh water supplies for domestic use, and making irrigation non-sustainable.

Apart from paddy, some farmers grow pulses, but keshari (grass pea) is not as common as it still is in CDSP IV. More oilseeds are grown in CDSP I&II and III areas than in CDSP IV – with soyabean becoming significant

especially in CDSP III. Over half of all farmers in all three CDSP areas grow vegetables and spices on a field scale, but the area grown is relatively small – amounting to around 8% of cultivated land in all of the CDSP areas.

3.5.3 Paddy production, consumption and sale

Data in Table 23 shows that HYV aman is the most widespread type of paddy, accounting for 59% of the total paddy area and being grow by 75% of paddy producers. Razashail, a local variety of aman is still widely grown – accounting for 25% of the paddy area, and boro has become popular on char Nangulia, where it is grown by 40% of paddy growers and accounts for 31% of the total paddy area.

Table 23: Different types of paddy

Type of paddy	Ziauddin	Nangulia	Noler	Caring	Urir	total
Percentage of growers						
aus local	4%	0%	0%	0%	0%	0%
aus hyv	0%	0%	1%	0%	1%	0%
aman Razashail	1%	10%	6%	19%	77%	15%
Aman HYV	100%	65%	96%	83%	51%	75%
Aman other local	0%	1%	0%	0%	0%	0%
Boro	1%	40%	9%	0%	1%	23%
all paddy growers	100%	100%	100%	100%	100%	100%
Percentage of area						
aus local	3%	0%	0%	0%	0%	0%
aus hyv	0%	0%	1%	0%	1%	0%
aman Razashail	1%	11%	5%	24%	69%	25%
Aman HYV	95%	57%	88%	76%	29%	59%
Aman other local	0%	1%	0%	0%	0%	0%
Boro	0%	31%	7%	0%	0%	15%
total	100%	100%	100%	100%	100%	100%

The overall average yield of paddy is 3.8 tons per hectare, with yield being higher in Nangulia as more high yielding boro is grown here (Table 24). The baseline survey reported an average yield of 1.9 tons per hectare so the overall yield of paddy has doubled since the start of CDSP IV – with the largest increase in Nangulia.

Table 24: Paddy yield

			Ziauddin	Nangulia	Noler	Caring	Urir	Total
Yield kg/ha	Baseline survey 2011		2400	1700	1800	1900	1800	1900
	Impact survey 2018	aus local	1933					1933
		aus hyv		3529	1482		1235	1509
		aman Razashail	3162	2070	3023	2005	3141	2825
		Aman HYV	3377	3819	3592	3437	4325	3739
		Aman other LV		3125				3125
		Boro	4940	5804	4689		6916	5731
		All paddy	3332	4243	3627	3089	3470	3804
	Increase		39%	150%	101%	63%	93%	100%

Data on yields for different types of paddy on individual chars may not be reliable due to small size of sub-samples. The small number of aus growers means this data is of little value. Razashail is a popular local variety of aman.

Total annual production of paddy (reflecting changes in both yield and area grown) has also increased substantially. Impact survey respondents were asked how much their households produced now and five years ago. Data in Table 25 shows production per household for those households that produce paddy and for all households (including non-producers). For producing households, production has increased from 34.3 maunds (1372 kg) to

57.9 maunds 2316 kg), an increase of 69% - with an increase of 110% in Nangulia. Over 93% of all paddy producers report an increase in paddy production. Home consumption of paddy is reported by 86% of all households (97% grow paddy). These consuming households use 33.5 maunds (1340 kg) of their own paddy each year. Sales of paddy are reported by 44% of all households (45% of all paddy producers), who sell on average 46 maunds (1840 kg) per year . Overall 58% of paddy is consumed at home, 41% sold and 1% retained as seed.

Table 25: Paddy production, consumption and sales

		Ziauddin	Nangulia	Noler	Caring	Urir	Total
Production maunds/hh	producers	36.3	55.9	40.5	49.5	136.9	57.9
	all households	27.0	47.9	33.9	44.0	119.6	48.9
Production 5 years ago	producers	22.6	26.6	29.3	28.5	105.7	34.3
	all households	16.3	22.8	24.1	26.6	91.6	28.9
Increase	producers	61%	110%	38%	74%	29%	69%
	all households	66%	110%	40%	65%	31%	69%
Producers reporting change	increase	95.8%	97.7%	94.4%	91.7%	66.7%	93.5%
	same	1.4%	2.0%	2.8%	6.9%	33.3%	5.4%
	decrease	2.8%	0.2%	2.8%	1.4%	0.0%	1.1%
Home consumption	% of all h'holds	74%	87%	83%	94%	88%	86%
	Mds per hh	26.5	32.9	32.1	36.6	43.9	33.5
	Mds per hh (all)	19.6	28.7	26.7	34.2	38.6	28.7
Paddy sales	% of all h'holds	20%	53%	26%	44%	70%	44%
	Mds per hh	34.9	37.7	28.2	24.3	113.7	46.0
	Mds per hh (all)	7.0	19.8	7.3	10.7	79.6	20.5
Share of production	consumed	73%	59%	78%	76%	32%	58%
	Kept for seed	1%	0%	1%	0%	1%	1%
	sold	26%	41%	21%	24%	66%	41%
	total	100%	100%	100%	100%	100%	100%
Income Tk/maund		799	781	893	698	780	793

Mds = maunds = 40 kg

Similar changes are observed if data from the impact survey is compared with that from the baseline survey. On the assumption that baseline data on production and consumption per household refers to all sample households and not just paddy producers, baseline data is compared to impact survey data in Table 26. This shows that there has been a 55% increase in production (slightly less than that in Table 25), and a 31% increase in consumption. At the time of the baseline, 70% of paddy produced was consumed at home, this has now fallen to 58% as total production is increased – even after allowing for reduced purchases by those who did not produce sufficient to meet household requirements.

Table 26: Baseline and impact survey data on paddy production and consumption

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Paddy production	Baseline	1167	1051	909	1581	2937	1261
Kg per household	Impact	1081	1917	1354	1760	4785	1956
	increase	-7%	82%	49%	11%	63%	55%
Consumption	Baseline	783	828	762	935	1439	877
Kg per household	Impact	392	575	533	684	771	574
	increase	0%	39%	40%	46%	7%	31%
Percent consumed	Baseline	67%	79%	84%	59%	49%	70%
	Impact	73%	59%	78%	76%	32%	58%

3.5.4 Production and sales of other field crops

Data in Table 27 shows that only a minority of farmers produce non-paddy crops. Most growers of non-paddy crops sell some of their production. The proportion being sold being similar to paddy for wheat/maize/millet, root crops and spices, with larger proportions of vegetables and oilseeds being sold. Although more farmers grow pulses and spices, overall sales are dominated by field vegetables which make up 62% of total sales of these other field crops. Details for individual chars are in Appendix 2 Table 5.

Table 27: Other field crops

	Number growers	% of total h'hold*	area per grower(dec)	% growers selling	Sales Tk/hh*	Sale Tk/grower	production % sold
Wheat, maize, millet	10	1.0%	43.8	60%	19	1885	41%
Pulses	136	13.5%	113.5	96%	955	7048	64%
Oilseeds	68	6.8%	83.1	99%	399	5886	86%
Root crops	57	5.7%	10.8	82%	367	6466	46%
Spices	203	20.2%	18.4	85%	1287	6365	47%
Field vegetables	114	11.4%	44.0	100%	4998	44019	72%

The value of sales by sample farmers in each char are shown in Table 28. Not only are sales dominated by field vegetables, but 70% of the value of total sales comes from char Nangulia – as this is where most vegetables are produced. Sales of field vegetables also exceed that any other non-rice crop in Ziauddin and Caring chars, but in Noler sales of spices are larger, while in Urir char pulses are the main type of non-paddy crop sold.

Table 28: Total value of sales of other field crops by all sample households

Tk'000	Ziauddin	Nangulia	Noler	Caring	Urir	Total
Wheat, maize, millet	1.00	14.25	0.00	0.00	3.60	18.85
Pulses	150.16	393.85	41.60	20.00	352.90	958.51
Oilseeds	197.30	102.65	42.10	42.80	15.40	400.25
Root crops	4.60	117.30	167.50	35.25	43.90	368.55
Spices	51.80	673.50	259.90	129.25	177.70	1292.15
Field vegetables	256.50	4384.50	111.00	146.50	119.70	5018.20
total	661.36	5686.05	622.10	373.80	713.20	8056.51

AOS data shows that sales of vegetables are of less importance in the older CDSP areas. In CDSP III oilseeds (soyabean) are the principal non-paddy crop, while oilseeds and field vegetables are of equal importance in CDSP I&II.

3.5.5 Homestead vegetable production

Although field vegetables are an important part of crop sales, only 11% of char households produce field vegetables. In contrast, almost all households grow homestead vegetables – and this proportion has increased since the baseline survey when 84% of households reported growing homestead vegetables. Homestead vegetables are grown for sale as well as family consumption – 98% of households growing homestead vegetables also sell them, and on average 62% of production is now sold (Table 29). Although the proportion of production that is sold does not seem to have increased much since the baseline survey, total sales have increased by over six times, suggesting that there has also been a major increase in home consumption. It is worth noting that the increase in sales in Urir char is much lower than in other chars, and the proportion of vegetables that are sold here has fallen – reflecting the poor access to external markets from this island char.

Although average sales per grower are much higher for field vegetables, the much larger number of homestead producers means that vegetables produced on homesteads account for 75% of total vegetable sales. More information on the types of homestead vegetables is in Appendix 2, Table 6.

Table 29: Vegetable production and sales

		Ziauddin	Nangulia	Noler	Caring	Urir	All chars
Households growing homestead vegetables as percent of all households	Baseline	86%	90%	78%	76%	87%	84%
	Impact	100%	98%	99%	97%	97%	98%
Households selling homestead vegetables as percent of all growers	Impact	97%	98%	99%	93%	100%	98%
Average sales per grower per year – Taka	Baseline	1176	2162	1315	1202	7142	2254
	Impact	8852	17082	13132	10740	18201	15003
	increase	653%	690%	899%	794%	154%	566%
Average percentage of homestead production that is sold	Baseline	52%	54%	54%	60%	75%	60%
	Impact	52%	65%	64%	64%	48%	62%
Average sales of homestead vegetables – average for all sample households - Taka	Impact	8852	16819	12952	10461	17594	14764
Average sales of field vegetables – average for all sample households - Taka	Impact	2565	8464	507	1903	1330	4998
Average total sales of vegetables – average for all sample households - Taka	Impact	11417	25283	13459	12364	18924	19762
Homestead sales as percentage of total sales	Impact	78%	67%	96%	85%	93%	75%

According to a DAE officer who knows the area well, the development of the sorjon system in char Nangulia has boosted homestead production. Nangulia has conditions that are suitable for sorjon (waterlogged land that is protected from flooding) that do not exist in the other chars or in the previous phases of CDSP. The development of sorjon created a cluster of commercial vegetable production which attracted the interest of traders seeking to buy products – especially country beans and cucumber. Other households saw the money being generated by this business and started production around their homesteads and ponds and on field boundaries. They were helped in this by the training offered by DAE and PNGOs and by technology demonstrations from these agencies.

More households in CDSP IV cultivate vegetables, root crops and spices around their homesteads, than in the older CDSP areas. While 98% of households in CDSP IV grow homestead crops, the figure for CDSP III is 86% and for CDSP I&II it is only 65% (AOS data). The value of sales of homestead vegetables per grower in these chars are less than half of those in CDSP IV.

3.5.6 Fruit and trees

The impact survey shows all households own trees, with an average of 101 timber, 83 fruit and 30 palm trees (Table 30). Over two-thirds of fruit trees are bananas, other major types are mango (14% of fruit trees) and guava (6%). Guava was specifically promoted by CDSP IV. Around 45% of total fruit produced is sold, and average sales are Tk4,677 per household. Some households are also selling fuel wood and timber from fast growing trees such as karoi. More details are in Appendix 2, Tables 7 and 8. Members of SFG have also been getting fuel wood and some fruit from trees planted in social forestry plantations.

Table 30: Ownership of trees and sales of fruit

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Percent of households with trees	Fruit trees	100%	98%	100%	100%	100%	99%
	Palms	99%	95%	97%	92%	99%	96%
	Timber trees	100%	98%	99%	95%	99%	98%
Average number of trees per HH	Fruit trees	71.3	71.2	84.2	129.6	116.3	82.5
	Palms	46.2	26.3	28.6	16.8	50.0	30.2
	Timber trees	122.5	92.0	97.8	54.7	178.6	101.2
Sales of fruit	Percent HH	92%	85%	86%	90%	92%	87%
	Tk/year	4652	4157	4842	4490	7452	4677
	Percent sold	44%	47%	43%	49%	41%	45%

The baseline survey has information on banana, guava and papaya. Table 31 compares data on the percentage of households with these three fruits at baseline and impact – and it can be seen that there has been a dramatic increase in the numbers of households with these fruits. Income from sales has grown six by over six times (but this includes all types of fruit at impact).

Table 31: Baseline and impact survey data on three types of fruit

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Percentage of households with this fruit							
Banana	baseline	43%	35%	45%	9%	50%	33%
	impact	86%	85%	90%	97%	91%	88%
Guava	baseline	7%	9%	7%	1%	18%	7%
	impact	97%	93%	96%	95%	90%	94%
Papaya	baseline	11%	14%	20%	1%	23%	11%
	impact	81%	59%	74%	84%	79%	68%
Sales income	baseline	661	596	762	89	2051	636
Tk/year all HH	Impact*	4652	4157	4842	4490	7452	4677

'* for all types of fruit

AOS data shows that all households in the older CDSP areas also own trees. CDSP III households have almost as many fruit trees as CDSP IV, with CDSP I&II having rather fewer. CDSP IV households own fewer palm trees than those in the older areas. The number of timber trees is much the same in CDSP IV and I&II, with rather less in CDSP III. Taking all trees together, households in the three areas have much the same numbers of trees.

3.6 Poultry, livestock and aquaculture

Almost all households now keep poultry and the number of birds has almost doubled, with egg production and sales income increasing by 3.5 times, and egg consumption by over four times (Table 32). Some CDSP IV households (12%) keep pigeons. More detailed data, including for each char is in Appendix 2 Tables 8 and 9. AOS data suggests that poultry production and consumption in CDSP IV now slightly exceeds that in the older CDSP areas.

Table 32: Poultry

	Baseline 2011	**Impact 2017**
HH rearing poultry (% of all HH)	89	99
Average nos. of chicken per HH*	5.3	13.0
Average nos. of duck per HH*	6.2	7.6
Production of eggs (No/ HH per year)*	156	551
Consumption of eggs (No/ HH per year)*	47	199
Income from eggs (Tk/ HH per year)*	817	3081
Chickens & ducks consumed (no/HH per year)*		15.0
Chickens & ducks sold (no/ HH per year)*		20.2
Income from sales of chickens and ducks (Tk/ HH per year)*		5281

* average for all 1400/1004 sample households in baseline and impact surveys

Around three-quarters of households keep bovines (92% are cattle). Increasingly mechanized cultivation (tractors replacing draught animals) and reduced grazing on fallow land with the increase in crop cultivation, have discouraged households from keeping more cattle. A significant proportion of all cattle (31.5%) are owned through a sharing system, whereby the animal owner allows someone else to keep the cow in return for a share (usually half) of the value of milk and young animals produced. Such sharing arrangements are more widespread than in the older CDSP areas.

There has been a switch to milk production and, compared to the baseline, milk production, consumption and sales have all greatly increased (Table 33). Beef fattening has become an important activity and almost half of all CDSP

IV households report sales in the last year. Although the value of these sales appears to be much larger than the value of milk sales, household spend a significant amount on purchasing animals to fatten and the value added by this activity will be significant lower than the value of sales. More detailed information including data for each char is in Appendix 2 Table 10.

Table 33: Cattle and buffalo

	Baseline 2011	Impact 2017
Number of HH rearing cattle/buffalo (% of all HH)	75%	77%
Number of cattle/buffalo*		2.49
Number of HH with milking cows*		35%
Number of HH producing milk*		37%
Avg. milk production (Lt per year)*	47	126
Avg. milk consumption (Lt per year)*	26	44
Number of HH selling milk*		37%
Avg. income from milk *	1,169	4,348
Number of HH selling cattle*		48%
Number of animals sold *		0.85
Income from animal sales*		21,920

* average for all 1400/1004 sample households

Rather fewer households (around 50%) keep bovines in the CDSP I&II and III areas, and each household keeps fewer animals. However milk production per household is higher in CDSP I&II but lower in CDSP III. With more animals being sold, total income from cattle/buffalo is higher in CDSP IV than in the older areas (AOS data).

Sheep and goat production is not so widespread, with 23% of CDSP households keeping goats and 2% sheep. Sheep (along with buffalo) are mostly kept on Urir char where extensive grazing is available. Sharing of ovines is less common, with only 13% of goats being under shared ownership. See Table 34 with details for each char in Appendix 2 Table 11. On average an owner of goats/sheep will have just under 3 animals, and sells just under one animal per year. AOS data shows a higher proportion of households (39%) in CDSP III own goats and sheep, but the proportion is lower (20%) in CDSP I&II.

Table 34: Sheep and goats

	Baseline 2011	Impact 2017
Number of HH rearing sheep (% of all HH)	0.2%	2%
Number of sheep*	0.008	0.23
Number of HH rearing sheep (% of all HH)	17%	23%
Number of goats*	0.34	0.59
Number of animals sold *		0.27
Income from animal sales*		1124

* average for all 1400/1004 sample households

Almost all households own ponds and these are now\ nearly all cultivated – compared with little more than half at baseline (Table 35). More or less all households with sorjon plots report cultivating fish in the ditches. Total fish production for households with ponds in CDSP IV has quadrupled and yield per unit area has gone up 5.5 times. Details of individual chars are in Appendix 2 Table 12. This shows that households on Urir char have considerable larger area of pond – 92 decimals, over three to four times the average area for other chars. Urir char households, produce, consume and sell more fish, generating an average income of Tk31,675 per year, about three times more than that for Nagulia and six times more than Caring char. The yield of fish per unit area is slightly lower in Caring and Urir than in the other chars – possibly because of the lack of flood protection.

Table 35: Aquaculture

		Baseline 2011	Impact 2017
Owning a fish pond	% of all HH	99%	98%
Cultivating fish in pond	% of all HH	51%	98%
Cultivating fish in sorjon	% of all HH		5%
Consuming fish	% of all HH		97%
Selling fish	% of all HH		75%
Area of pond	Decimal/ all HH		35.2
Area of sorjon	Decimal/ all HH		2.8
Area cultivated	Decimal/ all HH		27.9
Total production	Kg/ all HH	43	208
Yield	kg/hectare	420	2,313
Amount consumed	Kg/ all HH	29	82
Amount sold	Kg/ all HH	14	72*
Average price	Tk/kg	105	148
Sales value per year	Tk/ all HH	1,455	10,447

'* some fish remain in stock in the pond

The picture regarding aquaculture is similar in the older CDSP areas, but CDSP IV households have a slightly larger pond area, and a greater proportion (90%) of CDSP I&II households sell fish.

3.7 Innovation and adoption of new technologies

One of the most significant innovations has been the sorjon system of integrated vegetable-fish production. This system originated in Indonesia and has become quite widespread in south-western Bangladesh. It was introduced into CDSP III by the project's Agricultural Advisor, but conditions for sorjon are most suitable in char Nangulia. Both DAE and PNGOs informed and trained farmers about this system, which has proven to be a catalyst for development of the vegetable sub-sector. For homestead vegetable production, PNGOs have promoted the idea of "vertical gardening" – growing vegetables on trellis supports – which enabled homestead producers with little space to produce sorjon crops.

Sorjon farmers also adopted new types of vegetables (see Table 36), as did some of households with homestead vegetable gardens – largely the same types of vegetable as grown in sorjon systems as homestead producers responded to the market opportunities for these vegetables (Table 37). New varieties of sorjon vegetables - cucumbers, gourds and country beans were introduced, along teasel gourd (a new crop) and single-sex tilapia – quick growing fish for use in the ditches on sorjon plots.. Biological systems of pest control were also introduced, and pheromone traps are now often seen. Vegetable growers also say that improved composting systems are useful (see Table 39).

Table 36: New types of vegetables in sorjon systems

Percentage of sorjon farmers growing these vegetables for the first time	Cucumber	78%
	Bitter gourd	60%
	long bean	62%
	snake gourd	50%
	ribbed gourd	48%
	sponge gourd	17%
	country beans	59%

Table 37: New types of vegetables in homestead gardens

	Percentage of homestead vegetable growers taking up new types of vegetables					
	Ziauddin	Nangulia	Noler	Caring	Urir	total
Cucumber	32%	35%	44%	36%	26%	36%
Bitter gourd	29%	39%	51%	29%	22%	38%
long bean	34%	33%	32%	29%	22%	32%
snake gourd	11%	12%	14%	9%	13%	12%
ribbed gourd	2%	7%	6%	5%	0%	5%
sponge gourd	42%	20%	14%	5%	56%	23%
Okra	22%	5%	6%	4%	18%	8%
Tomato	45%	26%	24%	18%	26%	27%
cauliflower	5%	1%	0%	0%	3%	1%
Carrot	0%	2%	0%	0%	0%	1%
Radish	20%	13%	16%	11%	3%	13%
Brinjal	28%	19%	23%	20%	25%	21%
country beans	35%	40%	23%	45%	56%	38%

CDSP IV, through its PNGOs, supported the establishment of 125 tree nurseries to produce both timber and fruit trees for sale. Out of 1004 impact survey respondents, 52 reported operating such nurseries – but these could include small operations primarily to produce saplings for planting on the owner's own land. It is also possible that more nurseries were set up than were recorded as being supported by PNGOs. These nurseries reported growing a number of new types of trees (Table 38). It is interesting to note that new types of tree that were widely reported such as amra (a fruit – *Spondias Mombia*), olive (Jalpai – Elaeocarpus serratus) and blackberry (Jambul – *Syzygium cumini*), were not fruits that were widely reported as being grown in homesteads – so maybe these have yet to become popular.

Table 38: New types of tree grown in nurseries

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Percentage of nurseries reporting new type of fruit / timber tree	Guava	0.0%	0.0%	20.0%	0.0%	11.1%	5.8%
	Papaya	0.0%	4.3%	10.0%	0.0%	0.0%	3.8%
	Kul	0.0%	0.0%	10.0%	0.0%	0.0%	1.9%
	Ester fruit	11.1%	0.0%	0.0%	0.0%	0.0%	1.9%
	Amra	77.8%	87.0%	60.0%	100.0%	66.7%	76.9%
	Amroj	22.2%	0.0%	0.0%	0.0%	11.1%	5.8%
	Dalim	11.1%	0.0%	0.0%	0.0%	0.0%	1.9%
	Amloki	0.0%	0.0%	0.0%	0.0%	11.1%	1.9%
	Olive	77.8%	87.0%	60.0%	100.0%	66.7%	76.9%
	Ata fruit	0.0%	0.0%	20.0%	0.0%	0.0%	3.8%
	Blackberry	66.7%	21.7%	0.0%	100.0%	55.6%	32.7%
	Coconut	0.0%	4.3%	10.0%	0.0%	0.0%	3.8%
	Beetle nut	0.0%	4.3%	0.0%	0.0%	0.0%	1.9%
Number of tree nurseries		9	23	10	1	9	52

Table 39 shows the proportion off farmers reporting trying and adopting a number of new or improved technologies that were promoted by CDSP IV. This data needs to the read with caution – some technologies may have been adopted regardless of CDSP IV activities. Nevertheless farmers emphasise the importance of getting new varieties of paddy, such as BR 52 aman paddy – an early maturing and submergence tolerant variety, as well as new varieties of a number of vegetables.

For livestock, the use of community service providers (poultry workers and paravets) to provide preventative animal health services is an innovation in the area. Improved goat houses (raised off the ground) have been introduced, along with fodder crops (Napier grass) and Sonali cross-bred chickens. Data in Table 39 suggests that, although most producers now get animals and birds vaccinated, improved housing and improved breeds are not yet widely adopted. Innovations in aquaculture include the use of lime, fertiliser and feed to increase yield and the stocking of ponds with mixed varieties of carp.

Table 39: Adoption of new technologies

		Number of producers	Percent who tried technology	Percent who adopted technology
Paddy	New paddy cv	839	95%	94%
	Line sowing	839	4%	4%
	Young seedling	839	95%	92%
	Zinc	839	59%	57%
	TSP	839	100%	98%
	Potash	839	67%	65%
	Perching	839	65%	64%
Fruit & vegetable	New varieties	988	76%	74%
	Rainwater harvest	988	6%	6%
	Pheremone traps	988	13%	13%
	Soap spray	988	13%	13%
	Neem leaf spray	988	17%	17%
	Bordeaux mixture	988	4%	4%
	Cow urine spray	988	26%	26%
	Vermicompost	988	33%	33%
	Quick compost	988	19%	19%
	Organic/compost	988	79%	77%
Cattle/goats	Vaccination	770	100%	99%
	Deworming	770	100%	28%
	Improved breed/AI	770	6%	6%
Poultry	Vaccination	981	79%	77%
	Improved shed	981	85%	16%
	Improved breed	981	19%	15%
Aquaculture	Single sex tilapia	982	11%	11%
	Mixed carp	982	75%	73%

Agricultural has also become mechanised. At the start of CDSP IV draught animals were widely used, now virtually all land cultivation is done by power tillers. CDSP IV demonstrated and distributed pedal threshers for paddy which are now used by 58% of farmers (Table 40), with another 25% using engine-driven threshers (power threshers and power-tiller driven threshers). It is worth noting that engine driven threshers are most widely used on Urir char, where farmers grow larger areas of paddy. However other labour-saving methods for paddy production have not yet been widely adopted – including push weeders (which require transplanting in lines – also not much adopted) and herbicides, and there is not yet any mechanical harvesting.

Table 40: Use of farm machinery

		Ziauddin	Nangulia	Noler	Caring	Urir	All
Land prepare	Power-tiller	100%	99%	99%	100%	100%	99%
	Animals	0%	1%	1%	0%	0%	1%
Pest control	Hand sprayer	22%	20%	17%	31%	35%	22%
	Knapsack	35%	38%	40%	28%	34%	37%
	Power sprayer	6%	6%	6%	21%	1%	7%
	No pest control	38%	35%	36%	19%	30%	34%
Weed control	Push weeder	4%	3%	3%	12%	0%	3%
	Herbicide	7%	7%	7%	12%	0%	7%
	Manual weeding	89%	91%	90%	76%	100%	90%
Paddy threshing	Power thresher	6%	3%	2%	0%	41%	8%
	Pedal thresher	61%	60%	72%	79%	12%	58%
	Power tiller	5%	17%	9%	0%	47%	17%
	Manual/animal	28%	20%	17%	21%	0%	18%

3.8 Sales and marketing

Estimates from the impact survey of the average value of sales of farm produce per char household are in Table 41. The largest sale item are bovine animals (mainly cattle) which account for 24% of total sales - as already mentioned this is rather misleading as most cattle are traded a number of times so their cumulative sale value rises. Paddy has the next largest sales value (18% of the total), followed by homestead vegetables – but homestead vegetables and field vegetables added together exceed the value of paddy sales. Vegetable production and sales in CDSP IV also exceeds that in the older CDSP areas (AOS data).

Table 41: Sales of farm produce

	Tk per HH	% of total
Homestead vegetables	14,764	16%
Homestead fruit	4,677	5%
sub-total	19,440	22%
Field vegetables	4,998	6%
Paddy	16,221	18%
Other crops	3,026	3%
sub-total	24,245	27%
Eggs	3,081	3%
Poultry birds	5,444	6%
sub-total	8,525	9%
Milk	4,348	5%
Cattle and buffalo	21,920	24%
Goats and sheep	1,124	1%
sub-total	27,393	30%
Fish	10,270	11%
Total	89,874	100%

Average sales are for all households, not just for producers of the different commodities

Information on problems in market access were collected in the Assessment of Farmers Forums (FF) (Technical Report 16). This found that marketing of crops was not generally seen as a problem, with more than 80%

responding FF reporting that there were no marketing problems. When there are problems, these are mostly related to transport and communications – roads do not reach all parts of the chars, some bridges are missing, and bulky vegetable crops are best produced where trucks can be loaded close to the field where they are grown. A small number of FF report other marketing problems – for instance saying that they feel that buyers do not given them a fair price.

3.9 Access to markets and services

Construction of roads, bridges and culverts has greatly improved communications, resulting in easier access to markets and services. The average time taken to travel to local primary school has been reduced from 34 minutes to 18 minutes, a reduction of 48% (Table 42) Previously 26% of people making these journeys could not use a road (over 50% in Caring char). Now 97% can use roads, with 39% using brick and 38% using bitumen paved roads.

Table 42: Travel to local primary school

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Baseline							
Time to travel	wet season	49	41	32	32	28	38
to school – minutes	dry season	39	22	28	25	21	30
Road type	No road	14%	19%	30%	51%	35%	26%
	Earth	86%	81%	70%	49%	65%	74%
Impact							
Time to travel	wet season	26	22	15	14	17	20
to school - minutes	dry season	21	17	11	10	14	15
Average reduction in travel time		-47%	-38%	-57%	-57%	-37%	-48%
Road type	No road	0%	4%	1%	5%	0%	3%
	Earth	19%	72%	41%	52%	84%	60%
	Brick	58%	22%	49%	74%	59%	39%
	Bitumen	46%	44%	29%	0%	54%	38%
	Travel by water	0%	8%	1%	0%	1%	4%

Travel time to local markets has been cut from an average of 56 minutes to 20 minutes, a reduction of 63%. Around one quarter of journeys now involve brick paved roads and 22% bitumen roads (Table 43).

Table 43: Travel to local market

		Ziauddin	Nangulia	Noler	Caring	Urir	Total
Baseline							
Time to travel	wet season	81	59	50	86	29	62
to market	dry season	58	48	38	69	23	49
Road type	No road	35%	25%	24%	57%	36%	33%
	Earth	65%	75%	76%	43%	64%	67%
Impact							
Time to travel	wet season	30	24	21	18	22	23
to market	dry season	25	18	15	13	17	18
Average reduction in travel time		-60%	-60%	-60%	-80%	-24%	-63%
Road type	No road	0%	4%	1%	4%	1%	3%
	Earth	17%	71%	41%	41%	84%	58%
	Brick	48%	13%	39%	49%	15%	25%
	Bitumen	35%	18%	21%	7%	45%	22%
	Travel by water	0%	9%	0%	0%	7%	5%

AOS data shows journey times in CDSP IV are now similar to those the older CDSP areas, but a greater proportion of journeys in the CDSP I&II area use bitumen paved roads – with fewer on brick roads – as these are an

intermediate stage of road development that, over time, are replaced with bitumen. Compared with CDSP IV, a similar proportion of journeys in the CDSP III area use bitumen roads, with fewer on brick and more on earth roads.

3.10 Financial services

3.10.1 Formal borrowing

The four PNGOs were contracted to provide microfinance savings and loan services to women group members. Capital for loans came from the savings collected from group members, PNGOs' own capital and loans from banks and PKSF. Data in Table 44 shows that 85% of respondent households had taken loans – the percentage being highest in Ziauddin char (94%) and lower in Urir char (73%).

Table 44: Basic data on lending

	Ziauddin	Nangulia	Noler	Caring	Urir	total
Number of loanee h'hold	94	447	178	65	66	850
% of hh taking loans	94%	86%	81%	84%	73%	85%
Total borrowed Tk/h'hold*	78,915	67,611	67,388	49,231	85,288	68,781
Number of loans	345	1,415	565	182	251	2,758
Number loans per h'hold*	3.67	3.17	3.17	2.80	3.80	3.24
Average loan size Tk	21,501	21,358	21,230	17,582	22,426	21,198

* the average amount borrowed and number of loans is per household that has taken loans.

The four PNGOs were allocated working areas on the five chars defined by samaj (village settlements). Table 45 shows the number of sample households covered by each of the four PNGOs. All households in chars Ziauddin and Caring were covered by BRAC, while all households in Urir char came under SDI. Three PNGOs worked in Noler char and all four were in char Nangulia.

Table 45: Coverage of sample households by PNGO working areas

	Number of sample households					
PNGO	Ziauddin	Nangulia	Noler	Caring	Urir	total
BRAC	100	216	39	77	0	432
SSUS	0	129	106	0	0	235
DUS	0	79	74	0	0	153
SDI	0	94	0	0	90	184
total	100	518	219	77	90	1004

As shown in Table 44 above, 85% of sample households have taken at least one loan. Data in Table 46 shows that this percentage is fairly similar in the working areas of all four PNGO, with a slightly lower percentage (82%) taking loans in the SDI area, although the average number of loans per borrower were higher in this area. Although the PNGOs were contracted to provide micro-finance services to all households within their areas, and there were agreements not to recruit micro-finance group members in the areas of other PNGO, some loans were made in the areas of other PNGOs.

Table 46: Credit coverage in each PNGO working area

	Households covered		Number of	Borrowers	total number	Number loans	% of loans from
PNGO	number	Percent	borrowers	as % h'hold	of loans	per /borrower	samaj PNGO
BRAC	432	43%	369	85%	1203	3.26	89%
SSUS	235	23%	199	85%	618	3.11	83%
DUS	153	15%	131	86%	402	3.07	72%
SDI	184	18%	151	82%	535	3.54	93%
total	1004	100%	850	85%	2758	3.24	86%

In addition a few households took loans from other NGO-MFIs (including Grameen Bank) and from banks. Some households switched loan providers during the course of CDSP IV. Overall, 86% of loans within each working area were provided by the PNGO responsible for the area – with the proportion ranging from 93% for SDI (there

were no other providers on Urir char) to 72% for DUS. The number of loans per borrower were also slightly lower (3.07) in the DUS area, but 86% of households received loans as they used other credit producers.

Data in Table 47 shows that loans from other providers (non-PNGO NGO-MFIs such as ASA and Grameen Bank, and commercial banks) accounted for under 2% of the total number of loans provided. Although United Leasing Company is reported to be operating in the area, providing loans for cucumber production, none of the sample households had taken loans from this source. Although only four bank loans were recorded (being taken by two households) these were significantly larger then MFI loans. Non-project MFI also provided slightly larger loans (average Tk27,388) than PNGOs. Amongst the PNGOs, SSUS had the largest average loan size (Tk23,454), and SDI the smallest (Tk19,182). Overall 5.5% of borrowing households switched between loan providers (Table 48).

Table 47: Number and value of loans from different providers

	Number of loans		Value of loans		Average loan amount Tk
	total	percent	Tk million	Percent	
BRAC	1199	43.5%	23.96	41.2%	19,982
SSUS	665	24.1%	15.60	26.8%	23,454
DUS	330	12.0%	7.08	12.2%	21,441
SDI	511	18.5%	9.80	16.9%	19,182
Other MFI	49	1.8%	1.34	2.3%	27,388
Bank	4	0.1%	0.35	0.6%	87,500
total	2758	100.0%	58.13	100.0%	21,075

Table 48: Number of borrowers switching between loan providers

	first loans	switch	% switch
BRAC	363	13	3.6%
SSUS	218	18	8.3%
DUS	106	6	5.7%
SDI	144	6	4.2%
other MFI	17	4	23.5%
Bank	2	0	0.0%
Total	850	47	5.5%

As shown in Table 49, the average total amount borrowed is Tk68,871 (3.24 loans of Tk21,198). The maximum total amount borrowed by a single household was Tk925,000 and the distribution of the total amounts borrowed is in Table 49, showing that 17% of borrowing households had total loans in excess of Tk100,00**0.**

Table 49: Total amount borrowed by sample households

Total amount borrowed	No. of h'holds	% of h'holds
Up to Tk10,000	63	7.4%
Tk10,001 to Tk30,000	167	19.7%
Tk30,001 to Tk50,000	181	21.3%
Tk50,001 to Tk75,000	168	19.8%
Tk75,001 to Tk100,000	122	14.4%
Tk100,001 to Tk150,000	95	11.2%
Over Tk150,000	53	6.2%
Total	849*	100.0%

One household failed to report size of loans

The use of loans is shown in Table 50. This shows that the primary use of loans was for agriculture, and this was mainly for the purchase of inputs and other expenses. This was followed by loans for consumption purposes, mainly house building and improvement. In terms of the number of loans, livestock and fisheries are in third place,

but in terms of value, non-farm enterprises and businesses are in third place – as these loans were for larger amounts. Lying in fourth place in terms of number and fifth (and last) in terms of value, are loans for financial purposes, either repaying other loans (mostly) or on-lending to other people. Funds for loan repayment includes release of land from mortgages, which means the owner is then able to farm it again.

Table 50: Use of loans

Sector	Loan purpose	Percent of loans		Percent of loan amount	
Agriculture	inputs and expenses	22.1%		17.7%	
	lease in land	0.7%		0.6%	
	buy land	0.3%		0.5%	
	farm machinery/equipment	0.3%		0.3%	
	vegetable production	4.8%	28.3%	4.0%	23.1%
Livestock and Fishery	livestock production	13.4%		12.6%	
	aquaculture	7.0%		5.5%	
	capture fisheries	1.1%	21.5%	1.1%	19.1%
Non-farm	non-farm IGA/business	15.4%	15.4%	21.0%	21.0%
Financial	lending out money	5.1%		4.5%	
	repay old loan	10.9%	16.1%	10.3%	14.8%
Consumption	health expenses	2.7%		2.1%	
	education expenses	0.4%		0.3%	
	house building and repair	13.2%		11.5%	
	wedding	2.5%		3.0%	
	other consumption	5.9%	24.7%	5.1%	22.0%
Total*		105.8%	105.8%	100.0%	100.0%

'* more than one purpose was reported for 5.8% of loans, but loan value has been based on the first mentioned use of the loan

The use of loans changed as the implementation of CDSP IV progressed (Table 51). Over one third of first loans were invested in agriculture, but this proportion declined to around one quarter (or less in terms of value). Loans for finance purposes also declined, while those for livestock at first increased and then decreased, while consumption loans increased and then levelled off. What is very clear from the table is the upward trajectory of loans for non-farm enterprises – with more and more lending being used for this purpose.

Table 51: Use of loans by loan cycle.

	Sector	first loan	second loan	third loan	fourth loan	fifth loan	sixth loan	seventh loan	eighth loan
Number	agriculture	38.0%	25.9%	21.7%	20.1%	30.7%	27.5%	17.6%	20.0%
	livestock and fish	18.4%	24.4%	22.8%	24.9%	16.4%	9.8%	5.9%	20.0%
	non-farm IGA	10.5%	12.3%	17.6%	21.6%	25.7%	31.4%	41.2%	80.0%
	finance	19.0%	14.9%	16.7%	12.0%	13.6%	9.8%	23.5%	0.0%
	consumption	17.5%	26.8%	27.8%	30.0%	28.6%	29.4%	29.4%	0.0%
	total	103.3%	104.4%	106.6%	108.7%	115.0%	107.8%	117.6%	120.0%
Value	agriculture	34.4%	23.7%	20.3%	15.9%	22.3%	29.1%	26.0%	15.0%
	livestock and fish	17.5%	22.4%	21.4%	23.1%	11.2%	8.9%	2.9%	10.0%
	non-farm IGA	13.5%	15.2%	20.5%	24.8%	24.9%	30.8%	42.3%	75.0%
	finance	18.8%	14.5%	13.4%	11.0%	22.8%	10.5%	12.6%	0.0%
	consumption	15.8%	24.2%	24.4%	25.2%	18.8%	20.7%	16.2%	0.0%
	total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Percentage of total loans		100%	90%	69%	40%	17%	6%*	2%*	0.5%*

'* The very small number of sixth, seventh and eighth loans means data from these loans should not be taken as indicative of any trend.

3.10.2 Informal borrowing

Almost one third of households have also taken loans from a variety of informal sources (Table 52). These include getting paid in advance for sales, selling labour in advance, and loans from relatives, informal societies and moneylenders. The proportion of households taking such loans varies from 44-45% in the Ziauddin and Urir chars to around 20% in Noler and Caring char (incomes are higher in Urir char and Ziauddin is relatively developed).

Table 52: Informal loans

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Number of households with:							
Informal loans		45	169	43	16	40	313
Loan sources	relatives	17	70	20	4	12	123
	loan samity	0	8	3	0	0	11
	sales advance	14	61	8	5	23	111
	wage advance	17	33	11	5	4	70
	moneylender	2	12	1	2	3	20
Percentage of households							
Informal loan		45.0%	32.6%	19.6%	20.8%	44.4%	31.2%
Loan sources	relatives	17.0%	13.5%	9.1%	5.2%	13.3%	12.3%
	loan samity	0.0%	1.5%	1.4%	0.0%	0.0%	1.1%
	sales advance	14.0%	11.8%	3.7%	6.5%	25.6%	11.1%
	wage advance	17.0%	6.4%	5.0%	6.5%	4.4%	7.0%
	moneylender	2.0%	2.3%	0.5%	2.6%	3.3%	2.0%
Percent of informal borrowers							
Loan sources	relatives	37.8%	41.4%	46.5%	25.0%	30.0%	39.3%
	loan samity	0.0%	4.7%	7.0%	0.0%	0.0%	3.5%
	sales advance	31.1%	36.1%	18.6%	31.3%	57.5%	35.5%
	wage advance	37.8%	19.5%	25.6%	31.3%	10.0%	22.4%
	moneylender	4.4%	7.1%	2.3%	12.5%	7.5%	6.4%
	Total[1]	111.1%	108.9%	100.0%	100.0%	105.0%	107.0%
Total loan per borrowing HH							
	relatives	7,356	18,734	24,535	4,938	11,850	16,310
	loan samity	-	1,923	3,837	-	-	1,565
	sales advance	8,067	10,994	5,716	14,500	61,800	16,520
	wage advance	38,978	10,178	11,512	10,500	3,250	13,633
	moneylender	7,778	4,751	9,302	3,750	3,000	5,537
	totall	62,178	46,580	54,902	33,688	79,900	53,565
Total loans per HH[2]							
	informal loan	27,980	15,197	10,780	7,000	35,511	16,699
	formal loan	73,930	58,181	54,772	41,169	60,322	57,893

[1] total adds up to more than 100% as 7% of households report more than one source of informal loans

[2] average total amount borrowed per household for all sample households – including households who do not borrow at all.

The main sources of informal loans are relatives and from traders who give advances on sales prior to harvest. The other major source are wages in advance. Cash loans from moneylenders and via loan samities (informal savings and loan clubs) are less common. Apart from borrowing from relatives, informal loans are often thought of as exploitive with very high interest rates (10% per month or more), and this was certainly the picture at the time of the design of CDSP IV with annual interest rates of 400% or more on advances for sales of paddy. However it is also apparent that traders make advance payments to secure supplies of vegetables, such as okra

and country bean, and still pay farmers the market price after deducting relatively small commissions. Many men migrate seasonally to get work in brickfields, and brickfield owners pay around half of the wages in advance to secure workers – with the total payments made in line with market wage rates. No doubt there are still plenty of cases of exploitive informal lending, but this is not always the case.

Data in Table 52 shows that the households who take informal loan borrow an average of Tk53,565 – with larger amounts being borrowed in Urir and Ziauddin chars. The overall average amount borrowed for all sample households (including those who did not borrow at all) is Tk16,669. The average amount borrowed from formal sources (PNGOs and others) of Tk57,893 – again for all sample households. However these two figures are not directly comparable as respondents only reported informal loans for the last 12 months, while formal (mainly micro-finance) loans were reported for the entire seven year project period (say six of effective micro-finance operations). However any comparison of the volume of formal and informal borrowing would need to take account of the relative short duration of most informal loans – that said, it is also possible that the survey did not capture the complete picture of informal lending – in some parts of Bangladesh input suppliers provide fertiliser on credit, and there is evidence from a research project that on average borrowing households take over two loans per month[3].

There is no evidence that households take informal loans as an alternative to formal loans – in other words they are pushed into informal borrowing by lack of access to formal loans. In fact the proportion of households who do not take formal loans but do take informal loans is much the same as those who take both formal and informal loans – although those who do not use formal loans take larger informal loans (Table 53). Short term and flexible informal loans are often used to adjust cash flows around the fixed repayment schedules of formal loans – and so are complementary to formal loans.

Table 53 : Informal loans taken by borrowers of formal loans

		Did not take formal loan	Took formal loans
Number households taking informal loans		43	270
Percent of households taking informal loans		27.9%	31.8%
Sources	relatives	39.5%	39.3%
Percent borrowers	loan samity	9.3%	2.6%
	sales advance	32.6%	35.9%
	wage advance	18.6%	23.0%
	moneylender	4.7%	6.7%
	total	104.7%	107.4%
Total loan value per borrower Tk	relatives	17,442	16,130
	loan samity	4,116	1,159
	sales advance	31,209	14,181
	wage advance	10,233	14,174
	moneylender	9,442	4,915
	total	72,442	50,559

3.10.3 Savings

Almost 80% of respondent households currently have some savings (Table 54). Most (92%) of these saver households deposit their savings with NGOs as part of their micro-finance programme. Relatively small proportions (under 5%) of saving households save with other institutions - fixed deposits (generally also with MFIs), banks/post office, and informal loan savings societies, while 12% hold cash savings. However the picture on Urir char differs to that on the other chars. On Urir Char only 71% of households have savings, while on the other chars it is close to 80% or more. Little more than two-thirds (69%) of Urir households have savings with NGOs compared with over 90% on other chars. They are less likely to have fixed deposit savings but more likely to save via multiple avenues, However almost half (47%) of households on Urir char hold savings in cash

[3] Stuart Rutherford, How the Poor Borrow, Global Development Institute, University of Manchester, 2016

compared with 6% to 11% on other chars, and 29% have savings with banks or post offices compared with under 3% on other chars. In addition the total value of savings per saver household is much higher on Urir char – an average of Tk54,820 compared with under Tk14,000 on other chars. Here much higher sums are held in banks and as cash. The higher value of savings reflects the higher incomes of household on Urir char. Although many more households have savings with banks, none of the respondents on Urir char reported having bank loans.

Table 54: Household savings

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Number of households with savings		84	407	174	67	64	796
Percent of all HH		84.0%	78.6%	79.5%	87.0%	71.1%	79.3%
Savings deposited with. (percent of saver households)	NGO group	94.0%	93.6%	93.7%	92.5%	68.8%	91.6%
	fixed deposit	4.8%	4.4%	4.6%	3.0%	1.6%	4.1%
	Bank/PO	2.4%	2.9%	2.9%	0.0%	28.1%	4.6%
	local samity	6.0%	3.9%	6.9%	6.0%	0.0%	4.6%
	cash/other	6.0%	10.6%	7.5%	9.0%	46.9%	12.2%
	Total*	113.1%	115.5%	115.5%	110.4%	145.3%	117.2%
Value of savings (Tk per saver household)	NGO group	8,126	7,257	7,795	6,983	5,789	7,325
	fixed deposit	857	385	1,436	2,537	47	819
	Bank/PO	268	2,263	1,690	-	37,031	4,532
	local samity	476	400	676	227	-	422
	cash/other	3,929	1,638	2,368	851	11,953	2,802
	total	13,656	11,943	13,965	10,598	54,820	15,900

'* total exceeds 100% as some households have savings with more than one organisation.

3.11 Income and assets

3.11.1 Annual household income

Data in Table 55 shows that there has been a four-fold (313%) increase in total household income. Income in Urir char is (and was at baseline) significantly higher than the other chars. Although this is an island cut off from the mainland with no flood protection embankment, it is less densely populated with larger land holdings and ample land for grazing large herds of cattle, buffalo and sheep. AOS data shows that overall household income for CDSP IV households is still about 10% less than that for households in the older CDSP areas.

Table 55: Average annual household income (Tk)

Name of char	Baseline 2011	Impact 2017	Increase
Ziauddin	65,743	241,213	267%
Nangulia	69,152	278,089	302%
Noler	69,281	292,322	322%
Caring	71,475	260,604	265%
Urir	104,400	509,514	388%
All CDSP IV chars	71,950	296,925	313%

Households have multiple sources of income – on average each households reports about seven (4.5 farm and 2.5 non-farm) sources from the list of 20 in Table 56. Almost all households report income from homestead vegetables and poultry, and the vast majority (88%) have income from field crops, with 73% earning from aquaculture and 62% from livestock. The most frequently reported sources of non-farm income are daily labour (two-thirds of households), handicrafts (over half) and fishing (29%). Households on Urir char report more sources, with income from livestock, aquaculture, date juice (tapping date palm for sweet sap), fishing and handicrafts being more widely reported on this char.

Table 56: Sources of household income

	Percentage of households reporting income from source					
	Ziauddin	Nangulia	Noler	Caring	Urir	total
Farm						
Field crops	75%	91%	84%	94%	89%	88%
Homestead veg.	98%	96%	97%	94%	100%	97%
Livestock	48%	63%	54%	64%	94%	62%
Poultry	97%	98%	98%	97%	99%	98%
Aquaculture	87%	80%	53%	47%	92%	73%
Forestry/trees	18%	7%	10%	23%	4%	9%
Date juice	5%	17%	22%	4%	63%	20%
Non-farm						
Daily labour	66%	67%	66%	71%	62%	67%
Jobs	19%	15%	15%	22%	19%	16%
Skilled work/driver	4%	7%	6%	9%	11%	7%
Petty trade	17%	12%	11%	6%	9%	11%
Business	2%	8%	8%	6%	20%	8%
Fishing	37%	25%	21%	30%	64%	29%
Rickshaw etc	6%	4%	5%	1%	4%	4%
Tailoring	7%	4%	5%	1%	6%	5%
Remittance	8%	6%	12%	12%	13%	9%
Handicrafts	65%	46%	48%	45%	93%	52%
Pension & social	1%	1%	1%	3%	4%	1%
Begging & relief	0%	1%	1%	1%	0%	1%
Other sources	36%	38%	39%	51%	88%	44%

Although more households report farm-related income sources than non-farm sources, most income comes from non-farm sources (Table 57), although on Urir char, farming is the major source Some sources, such as handicrafts, and also fishing and date juice collection, were reported as sources by many households, but do not generate much income. Overall the major single source of income is labour wages, followed by field crops. On Urir char livestock is a more important source than wages, and compared to other chars, field crops and business are relatively important sources.

Table 57: Share of income from different sources

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Farm	Field crops	12.1%	18.0%	10.0%	14.8%	19.9%	15.9%
	Homestead veg.	6.0%	8.0%	6.3%	5.4%	8.2%	7.3%
	Livestock	6.4%	8.5%	7.6%	10.6%	14.8%	9.3%
	Poultry	4.3%	3.1%	3.0%	3.6%	2.9%	3.2%
	Aquaculture	5.0%	3.8%	1.7%	1.7%	6.4%	3.7%
	Forestry/trees	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%
	Date juice	0.1%	0.4%	0.4%	0.2%	0.7%	0.4%
	sub-total	34.0%	41.9%	29.1%	36.4%	53.1%	39.9%
Non-farm	Daily labour	30.6%	25.6%	26.9%	30.0%	12.6%	24.6%
	Jobs	4.0%	6.3%	5.5%	8.5%	3.4%	5.6%
	Skilled work/driver	2.0%	3.6%	2.6%	3.3%	3.2%	3.2%
	Petty trade	10.8%	5.3%	5.3%	3.0%	2.7%	5.2%
	Business	1.4%	6.0%	8.0%	1.8%	11.4%	6.6%
	Fishing	3.6%	2.1%	6.5%	2.4%	2.1%	3.2%
	Rickshaw etc	2.0%	1.4%	1.7%	0.3%	1.4%	1.4%
	Tailoring	1.3%	0.5%	0.8%	0.0%	0.4%	0.6%
	Remittance	5.3%	4.6%	8.6%	11.8%	5.7%	6.2%
	Handicrafts	1.5%	0.7%	0.8%	1.2%	0.7%	0.8%
	Pension & social	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
	Begging & relief	0.0%	0.1%	0.2%	0.0%	0.0%	0.1%
	sub-total	62.5%	56.2%	66.9%	62.5%	43.7%	57.5%
Other		3.5%	1.9%	4.0%	1.1%	3.1%	2.6%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The share of income from the broad farm sector has increased since the baseline survey (Table 58) – rising from 36% to 41% of total income, with a larger increase in livestock, poultry, aquaculture etc. than in crops and homestead vegetables. The contribution to total income from wages and salaries has fallen from 46% to 33%, with increases in other non-farm income sources. AOS data shows that the contribution of from the farm sector has declined in the older CDSP areas – it now contributed 28% to 30% of total income compared with around 45% in 2012. The contribution of the farm sector in CDSP IV has also been declining in the most recent AOS (2016 and 2017) - showing that, after initial growth in the farm sector due to CDSP interventions, the non-farm sector is becoming more important as the economy of the area develops.

Table 58: Income from different sources at baseline and completion

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Baseline	Crop and h'stead	25.9%	23.5%	21.8%	27.9%	40.7%	26.0%
	Livestock & other	6.7%	10.0%	6.8%	7.1%	25.4%	10.1%
	sub-total	32.6%	33.6%	28.5%	35.0%	66.0%	36.1%
	Wage/salary	52.0%	47.1%	49.0%	53.7%	19.8%	46.4%
	Trade/business	5.6%	11.7%	10.6%	6.2%	8.6%	9.6%
	Other non-farm	9.8%	7.7%	11.8%	5.1%	5.6%	7.9%
	sub-total	67.4%	66.4%	71.5%	65.0%	34.0%	63.9%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Impact	Crop and h'stead	18.1%	26.0%	16.3%	20.2%	28.1%	23.2%
	Livestock & other*	17.6%	16.8%	14.8%	16.8%	26.6%	18.0%
	sub-total	35.7%	42.9%	31.1%	37.0%	54.7%	41.2%
	Wage/salary	36.6%	35.5%	35.0%	41.8%	19.2%	33.4%
	Trade/business	12.2%	11.3%	13.3%	4.8%	14.1%	11.8%
	Other non-farm*	15.5%	10.3%	20.5%	16.4%	12.0%	13.6%
	sub-total	64.3%	57.1%	68.9%	63.0%	45.3%	58.8%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

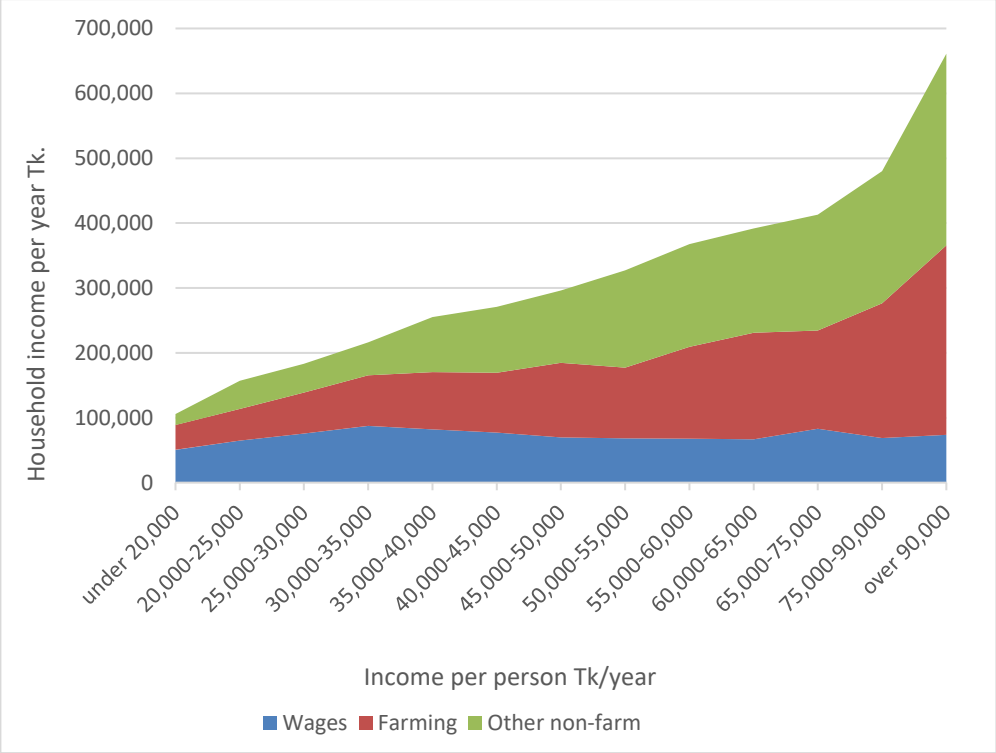
'* for comparison with baseline data, other income that was not specified as either farm or non-farm in Table 57 has been equally divided between other farm and other non-farm income.

Classification of households in terms of income per head (Table 59 and Figure 1) shows that wages are the most important source for the lowest income households, but as incomes increase more is provided by agriculture and then by other non-farm sources. This shows how increasing income from farming (crops, livestock etc.) can play a vital role in moving poor people out of poverty, but as incomes increase further, other non-farm sources become as important as farming.

Table 59: Income and income sources

Income band (Tk per head per year)	Total household income Tk per year	Sources of household income			Number of households
		Wages	Farming	Other non-farm	
under 20,000	105,851	48%	36%	16%	88
20,000-25,000	157,101	41%	31%	28%	61
25,000-30,000	183,057	41%	34%	24%	108
30,000-35,000	216,437	40%	36%	24%	115
35,000-40,000	255,110	32%	35%	33%	93
40,000-45,000	270,821	29%	34%	38%	111
45,000-50,000	296,266	23%	39%	38%	68
50,000-55,000	327,133	21%	33%	46%	63
55,000-60,000	367,669	18%	39%	43%	61
60,000-65,000	391,950	17%	42%	41%	51
65,000-75,000	412,901	20%	37%	43%	55
75,000-90,000	479,857	14%	43%	42%	61
over 90,000	661,075	11%	44%	45%	69

Figure 1: Changes in income source as incomes rise



3.11.2 Migration

Someone from over half (57%) of all households leaves the chars to work outside for at least part of the year. Mostly this is men who typically go to work in brickfields in nearby districts between November and April – although some people also get jobs in the cities or in the Middle East. The baseline survey recorded 66% of households sending migrants, so the proportion of households sending migrants has fallen, but not by a great amount. Fewer households on Urir char (and to a much lesser extent Ziauddin) send migrants – reflecting the higher income on Urir char and the better access of Ziauddin to sources of local employment. On average, for each household who sends migrants, 1.41 persons migrate (1.37 men and 0.04 women), which amounts an average of 0.8 persons for all households living in the project chars. Out of the total population of adult men, 41% migrate for some of the year, which suggests that rather more than 6.2% of income that was recorded as being remittance income in Table 57 may come from migrant work. Possibly remittance income in Table 57 is primarily from people who are away longer term (such as in the middle east) and more local and short term migrants return home with cash wages which have been included with income from wage labour.

Table 60: Out-migration

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Percent of households sending migrants		52%	58%	72%	78%	33%	57%
Average number	men	0.75	0.78	0.97	1.17	0.40	0.78
(all households)	women	0.02	0.01	0.07	0.00	0.00	0.02
	total	0.77	0.79	1.05	1.17	0.40	0.80
Adult men	total per household	1.84	1.83	1.99	2.06	2.17	1.91
	percent migrate	41%	43%	49%	57%	18%	41%

3.11.3 Household and productive assets

There has been an even larger growth in the value of assets held by households than in income. Many more households now have assets such as items of furniture (almira – wardrobe – up from 5% to 28% of households, tables and chairs up from 28% to 84%), mobile phones (46% to 97%), ornaments and jewellery (54% to 94%),

fishing nets (40% to 73%) and bicycles (7% to 21%). Some types of assets were unknown prior to CDSP IV – such as motorcycles (now owned by 5% of households), solar power systems (68% of households) and fans (12% of households). But ownership of some assets has not changed – or has even fallen. No households reported having radios, while 1% had them at baseline. Ownership of televisions has remained at 1% - although switching from black and white to colour. Rickshaw ownership has also remained at 1% of households, although another 1% now report owning battery powered rickshaws. Further details are in Appendix 2 Tables 13 and 14.

The value of assets and share of the different categories asset in total value is shown in Table 61. The average total value of assets per household has increased from Tk35,160 to Tk261,480 – an increase of over seven times. The greatest increase has been in the value of assets for non-farm enterprises (increasing by 30 times) and farm assets (increasing by 23 times). The increase in value of livestock assets is relatively modest – only three times. Comparing the CDSP IV chars, the increase in asset value on Urir char (4.3 times) has been less than on other chars, although total asset value on this char is around double or more than double that of the other chars.

The share of farm and non-farm assets in total asset value have significantly increased, while that for livestock has fallen (despite growth in the numbers of animals and birds). The main asset for non-farm enterprises are shops (mainly grocery shops). Although these are only owned by 10% of households, they are valuable assets. The main farm asset is trees, which are owned by virtually all households who have planted some hundreds of fruit, timber and palm trees around their homesteads and ponds, and on field boundaries. The main household asset is jewellery, although solar power systems have also become significant.

Table 61: Household assets

	Asset category	Ziauddin	Nangulia	Noler	Caring	Urir	total
Baseline	Household assets	9.16	6.96	7.57	5.51	11.57	7.50
Average value per household Tk'000	non-farm enterprises	1.04	1.17	3.06	0.33	-	1.05
	farm assets	3.50	3.89	3.16	1.65	26.46	4.72
	Livestock	15.10	17.20	19.73	12.84	85.38	21.89
	Total	28.79	29.22	33.52	20.33	123.42	35.16
Baseline	Household assets	32%	24%	23%	27%	9%	21%
Share of total asset value	non-farm enterprises	4%	4%	9%	2%	0%	3%
	farm assets	12%	13%	9%	8%	21%	13%
	livestock	52%	59%	59%	63%	69%	62%
	total	100%	100%	100%	100%	100%	100%
Completion (impact)	Household assets	54.93	44.77	52.96	44.70	66.33	49.50
Average value per household Tk'000	Non-farm enterprises	37.43	26.32	38.90	12.65	60.67	32.20
	Farm assets	103.77	94.54	123.14	65.09	189.23	107.93
	livestock	43.42	55.56	58.45	70.60	197.32	68.84
	other	3.45	2.23	1.14	-	14.22	3.02
	total	242.99	223.43	274.59	193.03	527.77	261.48
Completion	Household assets	23%	20%	19%	23%	13%	19%
Share of total asset value	Non-farm enterprises	15%	12%	14%	7%	11%	12%
	Farm assets	43%	42%	45%	34%	36%	41%
	livestock	18%	25%	21%	37%	37%	26%
	other	1%	1%	0%	0%	3%	1%
	total	100%	100%	100%	100%	100%	100%

AOS data shows that value of households assets has also increased in older CDSP areas, and remains higher than for CDSP IV, but the increase in asset value has been faster for CDSP IV households than those in the older areas (since 2012 the increase has been 444% in CDSP I&II, 476% in CDP III and 597% in CDSP IV). Although the proportion of asset value accounted for by non-farm enterprises and farm assets has increased greatly in

CDSP IV, this share is still lower than in the older CDSP areas, while livestock have a smaller share in the older areas than in CDSP IV

The increase in ownership and value of trees is particularly noteworthy and can be attributed to: (i) secure land titles motivating investment in trees; (ii) the availability of tree saplings from the many plant nurseries established by enterprising households using loans from PNGOs; and (iii) the improvement in growing conditions for trees as a result of water management infrastructure. Trees now account for 38% of the total value of assets owned by households in CDSP IV.

3.11.4 Housing

With secure tenure of their land and increased income, many households have invested considerable sums (typically about Tk100,000) in building better and larger houses). Houses have not been included in the list of household assets. Baseline and impact surveys gathered data on the size of houses and materials used for floor, wall and roof construction (see Tables 15 and 16 in Appendix 2). The size of houses has increased by over 70%, and the proportion of houses with solid materials (brick, concrete, tin sheet) for walls and roofs has increased by multiple times (Table 62). There has been little change in floors – almost all households still have earth/mud floors – rural Bangladesh has not yet moved to solid flooring, even for better-off households. It should be noted that, prior to the start of CDSP IV, houses on Urir char were larger than on other chars, and more of them had tin/brick/concrete walls and roofs, and improvements in housing on this char have not been as dramatic as on other chars.

Table 62: Housing in CDSP IV

		Ziauddin	Nangulia	Noler	Caring	Urir	total
House size	baseline	268	247	256	185	297	253
sq.ft	impact	432	416	481	351	546	439
	change	61%	69%	88%	90%	84%	73%
Tin/brick walls	baseline	13%	10%	12%	6%	36%	13%
	impact	90%	82%	89%	64%	93%	84%
	change	592%	725%	639%	959%	159%	547%
Tin/pucca roof	baseline	20%	16%	20%	3%	38%	16%
	impact	88%	83%	86%	47%	90%	82%
	change	340%	419%	332%	1479%	137%	414%

Data from AOS shows that the size and quality of houses in the CDSP IV area have largely caught up with those on the older CDSP areas (Table 63).

Table 63: Housing in CDSP I, II, III and IV

		CDSP I&II	CDSP III	CDSP IV
House size	sq..ft.	515	542	439
Tin/brick walls	% of houses	91%	96%	84%
Tin/pucca roof	% of houses	98%	91%	82%
Sample n		199	199	1000

3.12 Health and well-being

3.12.1 Water supply

Prior to the start of CDSP IV most households (over 90% but with a lower proportion in char Ziauddin) were obtaining water from deep hand -pumped tubewells – this water should be of good quality (Table 64). With the installation of many more of these tubewells by CDSP IV, even more (over 96%) households were obtaining water from deep tubewells, with the exception of Urir char, where over one third of households now use shallow tubewells.

Table 64: Source of drinking water

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Baseline	shallow TW	17.0%	1.0%	4.0%	1.0%	2.0%	3.0%
	deep hand TW	79.0%	98.0%	94.0%	98.0%	92.0%	96.0%
	untreated pond	4.0%	1.0%	2.0%	1.0%	6.0%	2.0%
	total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Completion	shallow TW	3.0%	1.0%	1.8%	2.6%	37.8%	4.8%
	deep hand TW	97.0%	98.8%	97.7%	96.1%	62.2%	94.9%
	untreated pond	0.0%	0.2%	0.0%	1.3%	0.0%	0.2%
	total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Although CDSP IV may not have resulted in a major change in water source, the water source is now much nearer to home, with the average distance falling from 345 to 59 metres in the dry season and from 418 to 68 metres in the wet season (Table 65). Although prior to CDSP IV households may have used deep tubewells for drinking water, the long distance to these sources meant that other domestic water was taken from less hygienic sources – the baseline survey recorded that 79% of households used water from ponds, ditches, rivers and canals for washing and bathing.

Table 65: Distance to source of drinking water (metres)

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Baseline	dry season	487	398	286	331	221	345
	wet season	542	475	331	431	312	418
Completion	dry season	52	59	51	78	67	59
	wet season	61	70	61	87	72	68

Data in Table 66 on ownership of tubewells shows that many respondents have not differentiated between tubewells provided by CDSP IV (which are now used by the vast majority of char households) and those belonging to neighbours. There was also uncertainty over membership of Tubewell User Groups, which were set up covering almost all households to facilitate CDSP IV tubewells, but of which many households do not seem to be aware (Table 8). However Table 66 does show that many wells (28%) on Uirir char are owned by individual households, which may well explain why a larger proportion of households here use shallow rather than deep tunwells (Table 64). Households on Urir char, where incomes are higher, may prefer to have wells at their homes, but would still find deep tubewells very expensive to install.

Table 66: Ownership of drinking water wells

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Baseline	owned by HH	4.0%	6.0%	4.0%	3.0%	15.0%	5.0%
	jointly owned	3.0%	7.0%	3.0%	3.0%	0.0%	5.0%
	neighbour	34.0%	32.0%	36.0%	8.0%	12.0%	27.0%
	Government	58.0%	56.0%	57.0%	86.0%	73.0%	63.0%
	total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Completion	owned by HH	1.0%	0.8%	0.9%	1.3%	27.8%	3.3%
	jointly owned	0.0%	0.8%	0.0%	0.0%	1.1%	0.5%
	neighbour	3.1%	0.8%	0.0%	1.3%	7.8%	1.5%
	Government	8.2%	7.1%	3.7%	10.4%	25.6%	8.4%
	CDSP	87.8%	89.9%	95.4%	87.0%	37.8%	85.9%
	Other/NGO	0.0%	0.6%	0.0%	0.0%	0.0%	0.3%
	total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

AOS data shows that many households in the older CDSP areas also get drinking water from deep tubewells, although, compared with CDSP IV, more households use shallow tubewells (54% in CDSP I&II and 28% in CDSP III). As in Urir char it may be that, as incomes increase, people prefer to have a shallow well at their own home. It is also possible that, with declining salinity levels, water in the shallow aquifer is becoming more potable and there is less need to use the deep aquifer. The distance to a source of drinking water is similar to that in CDSP IV.

3.12.2 Sanitation

The programme of CDSP IV to provide each household with a hygienic (water sealed) latrine has resulted in a major improvement to sanitation arrangements. Prior to CDSP IV very few (6%) of households had hygienic latrines (rather more – 13% - on Urir char). Now 98% of households have hygienic latrines (Table 67).

Table 67: Household sanitation

		Percentage of households with different types of latrine					
		Ziauddin	Nangulia	Noler	Caring	Urir	total
Baseline	No latrine	7.0%	3.0%	8.0%	4.0%	0.0%	5.0%
	Hanging / open	65.0%	79.0%	77.0%	76.0%	62.0%	76.0%
	Ring slab (not hygienic)	21.0%	13.0%	10.0%	14.0%	24.0%	14.0%
	Hygienic latrine	7.0%	5.0%	4.0%	7.0%	13.0%	6.0%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Impact	No latrine	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Hanging / open	0.0%	1.2%	0.5%	1.3%	2.2%	1.0%
	Ring slab (not hygienic)	1.0%	1.2%	1.4%	0.0%	0.0%	1.0%
	Ring slab (water sealed)	99.0%	95.9%	94.1%	98.7%	97.8%	96.2%
	Sanitary latrine	0.0%	1.7%	4.1%	0.0%	0.0%	1.8%
	total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Over 90% of households (but only 61% on Urir char) have obtained their latrines from CDSP IV (Table 68).

Table 68: Suppliers of slab and hygienic latrines

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Baseline	Purchased in market	68.0%	85.0%	72.0%	9.0%	65.0%	61.0%
	Buy through NGO /other	18.0%	7.0%	18.0%	1.0%	0.0%	8.0%
	Donated by NGO / GO	14.0%	8.0%	10.0%	89.0%	35.0%	31.0%
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Impact	Purchased in market	2.0%	4.5%	6.4%	2.6%	38.6%	7.5%
	Buy through NGO /other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Donated by NGO / GO	0.0%	0.4%	0.0%	0.0%	0.0%	0.2%
	From CDSP	98.0%	95.1%	93.6%	97.4%	61.4%	92.3%
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

AOS data shows that in CDSP 1&II only 13% of households got their latrines were supplies by CDSP, with 68% in CDSP III – with other households almost all buying their latrines on the open market. Many more CDSP IV households got their latrines from CDSP, but no doubt in future these will gradually be replaced or supplemented with latrines from other sources.

3.12.3 Health and family planning

CDSP IV provided training and awareness raising on a range of health and hygiene issues. Data in Table 69. Shows that most households now report using soap to wash their hands before meals and after using the latrine – very few did before the project started. Almost all children are now vaccinated, as against little more than half

before CDSP IV, while family planning is almost universally adopted compared with only being used by one third of eligible couples prior to the project.

Table 69: Hygiene and health practices

			Ziauddin	Nangulia	Noler	Caring	Urir	total
Base	Wash before meal	with only water	85%	98%	96%	99%	93%	96%
		with soap	15%	2%	4%	1%	7%	4%
	Wash after latrine	with only water	85%	94%	93%	98%	88%	94%
		with soap	14%	3%	5%	1%	2%	4%
		with ash	1%	3%	2%	1%	10%	2%
Impact	Wash before meal	Yes	99%	100%	100%	99%	100%	100%
		with only water	50%	21%	23%	39%	8%	25%
		with soap	50%	79%	77%	61%	92%	75%
		with ash	0%	0%	0%	0%	0%	0%
	Wash after latrine	Yes	99%	100%	100%	100%	100%	100%
		with only water	6%	4%	4%	19%	1%	5%
		with soap	76%	90%	87%	77%	98%	88%
		with ash	18%	5%	9%	4%	1%	7%
Base	Children vaccinated	Yes	52%	49%	41%	63%	62%	52%
	Health visitors	Yes	91%	95%	91%	98%	94%	94%
	Family planning	Used	30%	37%	28%	40%	20%	34%
Impact	Children vaccinated	Yes	100%	97%	100%	100%	100%	99%
	Health visitors	Yes	97%	98%	99%	100%	100%	99%
	Family planning	Used	100%	100%	100%	100%	98%	100%

AOS data shows that these indicators are now similar in CDSP IV to the older CDSP areas.

3.12.4 Wealth ranking

Survey respondents were asked to place their own households in one of four wealth ranks – at the present time and five years ago. Table 70 shows that five years ago almost all households were in the poor and very poor categories, now there are virtually no very poor households and only 10% are poor. Households on Urir char are significantly better off. Fewer respondents from Urir char reported being very poor five years ago, and now more than half class themselves as being rich. Amongst the other chars, households from Ziauddin also appear relatively better off – although, unlike Urir, this is not reflected in income data (Table 55). However data on some other indicators – such as house materials, household assets (but not other assets), recourse to migration to find employment, and borrowing micro-credit loans, suggests that households on Ziauddin may be better off than those in Nangulia, Noler and Caring chars.

Table 70: Wealth ranking

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Now	Rich	17%	13%	9%	10%	52%	16%
	Medium	79%	79%	75%	68%	43%	74%
	Poor	4%	8%	15%	22%	5%	10%
	Very poor	0%	0%	1%	0%	0%	0%
		100%	100%	100%	100%	100%	100%
5 years ago	Rich	0%	0%	0%	0%	0%	0%
	Medium	3%	1%	2%	6%	9%	3%
	Poor	67%	73%	64%	58%	65%	69%
	Very poor	30%	26%	34%	35%	26%	29%
		100%	100%	100%	100%	100%	100%
Sample size	n	100	515	217	77	88	997

Similar data from AOS shows that in all CDSP areas there has been a general move up wealth ranks, with almost no households saying that they are still very poor. However CDSP III now seems to have a higher proportion of poor households than either CDSP I&II or CDSP IV. Given that these are self-assessments, caution should be used in drawing conclusions in comparing this data for different areas.

3.12.5 Food security

Survey respondents were asked how many months of a year they can meet their basic food (i.e. rice) needs from their own production. Table 71 shows that, on average, CDSP IV households can meet household basic food needs from their own production for 10.6 months, 3.6 months more than in the baseline situation. With larger farms, 90% of households on Urir char now produce enough basic food to last the entire year, while households on char Ziauddin produce less of their own food.

Table 71: Food security

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Months able to meet basic food needs from own production	**Baseline**						
	Average months	6	7	6	7	9	7
	Impact						
	Average months	8.92	10.78	10.27	10.68	11.67	10.58
	Percent of h'holds						
	3 and under	7%	2%	3%	1%	0%	3%
	4 to 6 months	28%	10%	15%	10%	0%	11%
	7 to 11 months	20%	15%	22%	21%	10%	17%
	12 months	45%	73%	60%	68%	90%	69%
	total	100%	100%	100%	100%	100%	100%
Face acute food crisis	Baseline - % of HH	76%	86%	73%	91%	59%	82%
	Impact - % of HH	4%	4%	5%	6%	0%	4%

There has been a dramatic improvement in food security. Prior to CDSP IV most (82%) of households faced an acute food crisis in the last year, while now this has fallen to only 4%. It is interesting that, prior to the project, in char Ziauddin, the period that production met basic food needs was a bit less than other chars, yet slightly fewer households than average reported an acute food crisis – possibly because of slightly higher income levels or better employment opportunities in this better-connected char.

AOS data shows that food security has also improved in the older CDSP areas, but the improvement in CDSP IV has been greater, and slightly fewer households here now face an acute food crisis than in CDSP III.

3.13 Shocks and crises

Just over one third (36%) of households report suffering a shock or crisis during the last 12 months (Table 72). Although this is a significant reduction from the 78% reported in the baseline survey, the baseline data refers to shocks over the last five years rather than one year, but does not include flood damage to houses and "other" types of loss – so impact data is not directly comparable with that from the impact survey.

Table 72: Type and severity of shocks and crisis

	Percentage of households reporting shock in last 12 months						Severity of shock		
Cause of shock or crisis	Ziauddin	Nangulia	Noler	Caring	Urir	total	severe	moderate	low
Death of earning hh member	1.0%	1.5%	0.9%	2.6%	2.2%	1.5%	53%	47%	0%
Serious illness	**29.0%**	14.3%	10.5%	5.2%	10.0%	**13.8%**	17%	76%	6%
Displacement due to flood/cyclone	0.0%	1.2%	1.4%	3.9%	2.2%	1.4%	43%	29%	29%
Erosion of land	0.0%	1.4%	1.4%	9.1%	2.2%	1.9%	95%	5%	0%
Loss of crop from flood/drought	8.0%	7.1%	3.7%	**18.2%**	**14.4%**	8.0%	14%	84%	3%
Loss of livestock / poultry	2.0%	9.1%	6.8%	2.6%	**18.9%**	8.3%	17%	77%	6%
House damage from flood/storm	1.0%	0.4%	0.5%	1.3%	1.1%	0.6%	17%	83%	0%
Theft to house or business	2.0%	0.8%	1.8%	0.0%	0.0%	1.0%	20%	80%	0%
Business / investment loss	1.0%	1.2%	0.0%	0.0%	3.3%	1.0%	30%	60%	10%
Divorce or separation	1.0%	0.4%	0.0%	0.0%	0.0%	0.3%	100%	0%	0%
Dowry	6.0%	2.9%	2.3%	2.6%	6.7%	3.4%	29%	71%	0%
Socio-political harassment	0.0%	0.8%	2.7%	5.2%	2.2%	1.6%	19%	69%	13%
Women harassment (violence)	1.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0%	100%	0%
House destroyed by fire / other	0.0%	0.6%	0.0%	0.0%	0.0%	0.3%	100%	0%	0%
Other (mostly loss of fish pond)	3.0%	1.2%	0.5%	0.0%	**18.9%**	2.7%	11%	85%	4%
HH suffering any shock – impact	47.0%	34.2%	24.7%	35.1%	62.2%	36.0%			
- baseline	69.0%	78.0%	80.0%	76.0%	86.0%	78.0%			

The major type of shock was ill health, reported by almost 14% of households, followed by losses livestock due to death or theft (8.3%) and losses of crops due to floods or drought (8.0%). Shocks (i.e. serious illness) from ill heath affected relatively more households on char Ziauddin (29%), while loss of crops were reported by more households on Caring char (18%) and Urir char (14%) – these are the two chars without protective embankments. Losses of livestock are also higher on Urir char (reported by 19% of households – reflecting the larger numbers of animals owned), where a similar proportion also report other shocks – which are very largely losses from fish ponds due to flooding – again linked to the lack of embankment protection. A higher proportion of households (9%) on Caring char report being adversely effected by erosion – this is where the major erosion has taken place.

The severity of shocks is mostly rated as moderate. Those shocks that were mostly rated as severe (house fire, divorce, land erosion, death of earning household members) were not widely reported. The most widely reported shocks (ill health, loss of livestock and loss of crops) are rated as severe in less than 20% of cases.

Shocks and crisis reported in the baseline survey are shown in Table 73. This shows the major source of shocks were loss of crops and displacement due to flood and cyclone. With the development of flood control works and protective tree plantations the occurrence of these shocks has now been greatly reduced. The baseline survey reported that 15% of households had suffered from thefts – this has now reduced to only 1% with the development of community institutions, road communications and the rule of law.

Table 73: Baseline survey - shocks and crisis

Cause of shock or crisis	Percentage of households reporting shock in last 12 months					
	Ziauddin	Nangulia	Noler	Caring	Urir	total
Death of earning hh member	1	5	5	1	6	4
Serious illness	**33**	22	22	11	17	20
Displacement due to flood/cyclone	33	35	39	67	36	42
Erosion of land	13	7	13	5	1	8
Loss of crop from flood/drought	29	37	41	68	76	47
Loss of livestock / poultry	6	17	7	19	20	15
Theft to house or business	6	9	7	36	26	15
Business / investment loss	1	1	1	0	0	1
Divorce or separation	1	2	1	1	1	1
Dowry	0	3	3	3	0	3
Socio-political harassment	0	1	2	0	0	1
Women harassment (violence)	0	1	0	1	0	1
House destroyed by fire / other	1	2	0	2	0	2

Households adopt a range of coping actions in response to these shocks and crises. The main coping actions (Table 74) are the use of savings (used in 35% of shocks) and taking cash loans (in 25% of shocks). But in 38% of shocks nothing is done – although this varies widely according to the type of shock (Appendix 2, Table 17). Coping actions are almost always used to cope with illness, house damage and fire, dowry and harassment of women, but rarely in the case of loss of animals, divorce/separation or loss of land to erosion. A comparison with the baseline data in Table 75 shows that savings have become much more important (as people now have more savings). People are now more inclined not to take any coping actions – but we do not know if the shocks now are less severe than they used to be. People also take fewer coping actions – on average 0.9 per shock, as against 1.5 prior to CDSP IV. Although credit is now more widely available, there seems to be less recourse to loans.

Table 75: Coping actions in response to shocks

	Baseline	Impact
sell land	3%	2.0%
sell animals	15%	8.3%
Sell trees	1%	1.3%
Use savings	14%	35.2%
Mortgage land	12%	1.7%
Mortgage other properties	2%	0.2%
Help from relatives	28%	10.0%
Cash credit	67%	25.2%
Materials on credit	3%	5.0%
Aid / relief	2%	0.9%
Go to police / UP / NGO etc	0%	0.2%
Do nothing	10%	38.0%
Other		1.5%

Data from AOS shows that shocks/crises, their severity, and coping strategies are now broadly similar across the three CDSP areas.

3.14 Additional analysis

Additional analysis has been carried out to identify links between indicators and attempt to explain the factors behind improvements in livelihoods and ling standards.

3.14.1 Wealth ranking

The self-assessed wealth ranks are based on the subjective evaluation of individual households, and so are open to bias and mis-reporting. However data in Table 76 shows that these ranks correlate quite well with quantified data on household income, the value of assets, and sales of farm products. Richer households have also taken more loans and have more savings.

Table 76: Wealth ranking and other indicators

		Wealth category				
		Rich	Medium	Poor	Very poor	Average
Number of households		158	737	98	4	997
Household income Tk per year		475,594	277,987	164,643	96,633	296,925
Asset value Tk per HH	Household	41,658	26,696	12,638	5,075	27,511
	Non-farm enterprise	71,747	28,161	2,459	-	32,203
	Farm	165,951	102,044	66,278	14,125	107,926
	Livestock	162,080	54,264	30,412	4,550	68,841
	other	13,331	1,252	12	-	3,018
	Total asset value	454,767	212,417	111,800	23,750	239,499
Area farmed (decimals operated)		351	168	107	46	190
Percentage with land title (khatian)		56%	62%	56%	50%	60%
Cropping intensity		1.44	1.16	0.93	0.50	1.17
House size sq.ft.		573	430	294	154	439
Paddy production (maunds)		99	43	23	4	49
Sales	Crops (paddy+other)	60,396	19,295	7,096	5,000	24,389
Tk per year	Homestead veg	16,400	15,378	7,588	7,000	14,764
	Eggs	3,967	2,985	2,438	1,545	3,081
	Poultry	7,584	5,162	4,321	2,738	5,447
	Milk	12,732	2,951	1,167	-	4,348
	Cattle	51,625	17,356	8,500	2,000	21,920
	Sheep / goat	2,630	890	541	1,000	1,124
	Pond fish	20,787	8,804	5,144	1,000	10,270
	TotaL sales	176,120	72,821	36,795	20,283	85,343
Total loans	Tk per household	71,082	58,502	39,704	11,500	58,231
Savings	Tk per household	37,176	8,449	5,428	-	12,606

However there are significant variations in individual indicators between the overall average and that for rich category households and for poor category households (data from very poor category should be treated with caution as there are only four households in this category). These are shown in Table 77. Rich category households have at least double the average of all households in terms of assets for non-farm enterprises and livestock, sales of farm products (especially crops, sheep/goats, milk and cattle), and savings. Poor category households do relatively better (i.e. they are not so far below the overall average) in cropping intensity, sales of eggs and poultry and loan amount borrowed.

Table 77: Indicators for wealth categories as percentage of the average.

		Percent of average			
		Rich	Medium	Poor	Very poor
Household income		160%	94%	55%	33%
Asset value	Household	151%	97%	46%	18%
	Non-farm enterprise	223%	87%	8%	0%
	Farm	154%	95%	61%	13%
	Livestock	235%	79%	44%	7%
	other	442%	41%	0%	0%
	Total asset value	190%	89%	47%	10%
Area farmed (decimals)		184%	88%	56%	24%
Cropping intensity		123%	99%	79%	43%
House size		131%	98%	67%	35%
Paddy production		200%	87%	46%	8%
Sales	Crops (paddy+other)	248%	79%	29%	21%
	Homestead veg	111%	104%	51%	47%
	Eggs	129%	97%	79%	50%
	Poultry	139%	95%	79%	50%
	Milk	293%	68%	27%	0%
	Cattle	236%	79%	39%	9%
	Sheep / goat	234%	79%	48%	89%
	Pond fish	202%	86%	50%	10%
	TotaL sales	206%	85%	43%	24%
Total loans		122%	100%	68%	20%
Savings		295%	67%	43%	0%

3.14.2 Land title

There is no evidence that poor households were disadvantaged in the distribution of legal titles to land. The proportion of households with these titles (*khatians*) is similar across all wealth ranking groups (Table 76). Although there are reports (and it would be rationale to assume) that getting a secure title to land provides an incentive for investment in housing and agriculture, leading to better livelihoods, the survey does not produce evidence that households with *khatians* have invested in more assets (although they do have more non-farm enterprise assets – which are mainly shops), sell more farm produce, or are any better off in terms of household income and housing (their houses are not significantly larger)- see Table 78. It may well be that many households who do not have *khatians* are confident of getting these in future and are basing investment decisions on the assumption that they will be getting a *khatian.*

Table 78: Indicators related to land title status

		Status of land title		
		Khatian	No khatian	All HH
Number of households		611	393	1,004
Household income Tk per year		292,400	303,959	296,925
Asset value Tk per HH	Household	28,398	26,133	27,511
	Non-farm enterprise	37,871	23,392	32,203
	Farm	103,028	115,541	107,926
	Livestock	70,936	65,583	68,841
	other	1,796	4,918	3,018
	Total asset value	242,029	235,567	239,499
Area farmed (decimals)		179	209	190
Cropping intensity		1.22	1.10	1.17
House size sq.ft.		443	432	439
Paddy production (maunds)		45	57	49
Sales	Crops (paddy+other)	21,983	28,129	24,389
Tk per year	Homestead veg	14,624	14,980	14,764
	Eggs	2,954	3,278	3,081
	Poultry	5,454	5,436	5,447
	Milk	4,102	4,732	4,348
	Cattle	20,596	23,979	21,920
	Sheep / goat	1,082	1,190	1,124
	Pond fish	9,031	12,198	10,270
	TotaL sales	79,825	93,921	85,343
Total loans	Tk per household	57,517	59,341	58,231
Savings	Tk per household	13,461	11,276	12,606

3.14.3 Women headed households

Around 4% of sample CDSP IV households are headed by women and it would be expected that these households are relatively poor. However, 11% of sample households on Urir char are female headed (Table 4), and as incomes on the char are significantly higher, this may at least partly offset the lower income of female headed households. Despite this, data in Table 79 shows female headed households (FHH) to be. On average, significantly poorer than other (male headed) households. FHH have an average household income of less than two-thirds (64%) of the overall average for all households. FHH households also have fewer assets (55% of average), less land (71% of average) and produce less paddy (67% pf average). Only 43% of FHH have *khatian* land titles compared with 61% of other households – partly because there are more FHH are on Urir char where land tiling has not yet taken place.

Sales of farm produce by FHH are only 68% of average, being particularly low for field crops and homestead vegetables (both 59% of average) but relatively high for sheep and goats (101% of average – maybe reflecting the larger number of FHH on Urir char which has a high population of sheep), pond fish (86% of average) and poultry/eggs (80% of average). The cumulative amount of borrowing from NGOs etc. by FHH is only a little below (93% of average) the overall average.

Table 79: Female headed households and other indicators

		Female headed households	Male headed households	Overall average	FHH as % of average
Number of households		44	960	1004	4.4%
Household income Tk per year		189,910	301,830	296,925	64%
Asset value Tk per HH	Household	19,907	27,860	27,511	72%
	Non-farm enterprise	12,500	33,106	32,203	39%
	Farm	62,745	109,997	107,926	58%
	Livestock	35,586	70,365	68,841	52%
	other	35	3,155	3,018	1%
	Total asset value	130,774	244,482	239,499	55%
Area farmed (decimals)		135	193	190	71%
Percentage with land title (khatian)		43%	61%	60%	72%
Cropping intensity		1.23	1.17	1.17	106%
House size sq.ft.		340	443	439	77%
Paddy production (maunds)		33	50	49	67%
Sales	Crops (paddy+other)	14,330	24,850	24,389	59%
Tk per year	Homestead veg	8,689	15,042	14,764	59%
	Eggs	2,506	3,107	3,081	81%
	Poultry	4,345	5,498	5,447	80%
	Milk	2,936	4,413	4,348	68%
	Cattle	14,977	22,239	21,920	68%
	Sheep / goat	1,136	1,123	1,124	101%
	Pond fish	8,825	10,337	10,270	86%
	TotaL sales	57,745	86,608	85,343	68%
Total loans	Tk per household	54,432	58,405	58,231	93%
Savings	Tk per household	9,286	12,758	12,606	74%

A major reason why FHH have relatively lower incomes is that these households are relatively small, with fewer working members (especially men). However, the smaller household size partly offsets lower household income and income per head is Tk40,173, 88% of the overall average (Table 80).

Table 80: Number of earners in female headed households

		Female headed households	Male headed households	Overall average	FHH as % of average
Household size (persons)		4.73	6.48	6.48	73%
Number of working members	Female	0.98	1.15	1.15	85%
	Male	1.05	1.76	1.76	59%
	Total	2.02	2.91	2.91	70%
Total income per person Tk/yr		40,173	46,600	45,842	88%

3.14.4 Household labour force

As expected, households where more members are engaged in some form of income generation tend to have higher incomes (Table 81). Although households with more earners tend to be larger households, these households have a higher proportion of earning members and a higher income per person – although there is a stronger relationship between the number of men earning and income per head. This suggests that women contribute relatively little to overall household income – although with the vast majority of adult men now earn an income, so the potential is both to bring more women into the labour force and make them more productive and higher earning.

Table 81: Number of persons earning per household

	no of HH	women earners	men earners	total earners	HH size persons	% of HH earning	HH income Tk/year	Income per head TK/yr
No of persons earning								
0-1	48	0.38	0.48	0.85	4.67	18%	155,215	33,384
2	452	0.97	1.03	2.00	5.41	37%	233,498	45,885
3	248	1.05	1.95	3.00	6.36	47%	308,100	51,224
4	151	1.41	2.59	4.00	7.72	52%	412,171	54,678
5+	105	2.10	3.50	5.61	9.67	58%	442,614	47,891
total	1004	1.14	1.73	2.87	6.40	45%	296,925	45,842
No. of men earning								
0	25	0.72	0.00	0.72	4.16	17%	112,213	25,937
1	484	1.01	1.00	2.01	5.38	37%	228,228	45,241
2	294	1.17	2.00	3.17	6.51	49%	315,664	50,929
3	153	1.40	3.00	4.40	8.42	52%	433,244	53,915
4+	48	1.79	4.21	6.00	10.71	56%	536,529	53,411
total	1004	1.14	1.73	2.87	6.40	0.45	296,925	45,842

The proportion of household members who earn an income increases as household income increases (Table 82). In the lowest income category (under Tk20,000 per head per year), only one third of household members earn and income, while in the highest income band (over Tk90,000 per head per year), 55% of household members earn an income. The increase as incomes rise in the proportion of household members earning an income is mirrored by the fall in proportion of children (i.e. aged 16 and under) from 51% in the lowest income band to 36% in the highest band.

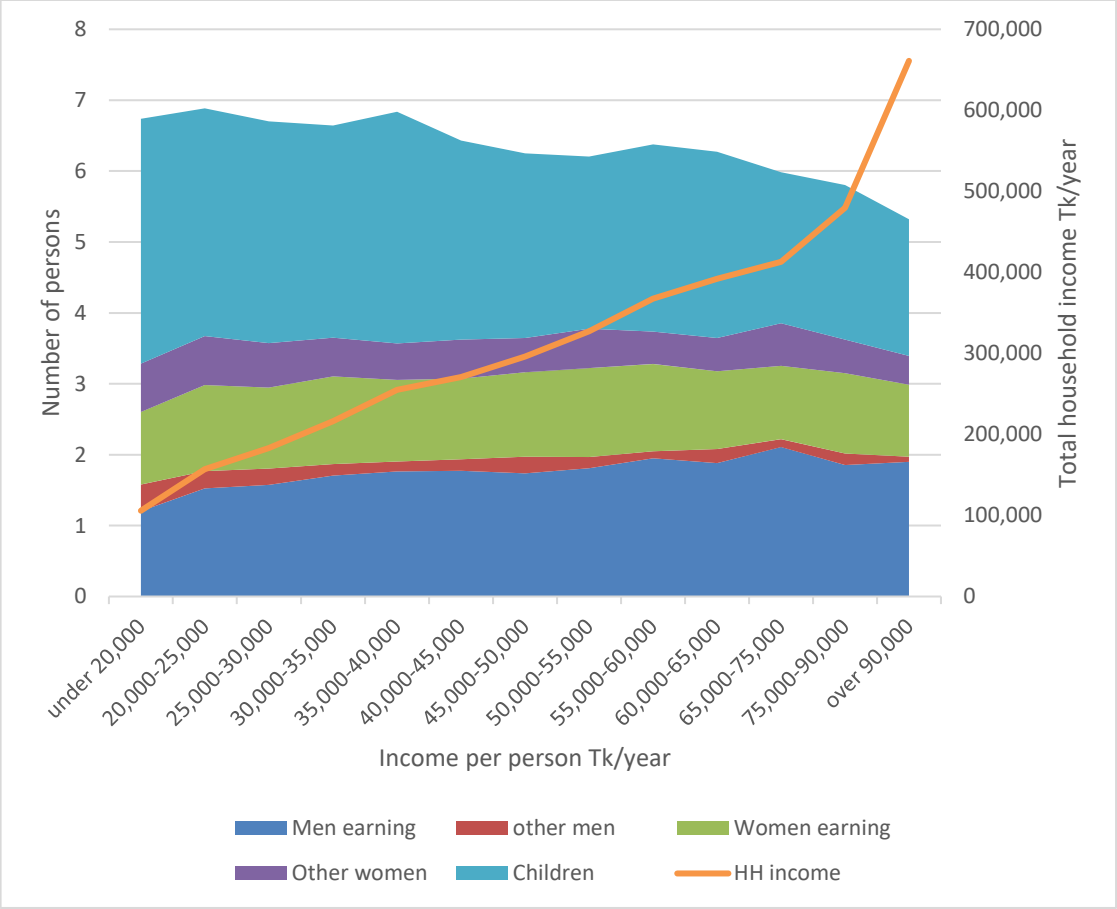
Table 82: Number of earners by income band

Income band: Tk per head per year	Number of income earners per household				HH size persons	Number of earners as % of total HH	Children as % of total HH	Percent of adults earning	
	women	men	total	% women in total earners				women	men
under 20,000	1.02	1.20	2.23	46%	6.74	33%	51%	60%	76%
20,000-25,000	1.21	1.52	2.74	44%	6.89	40%	47%	64%	86%
25,000-30,000	1.14	1.57	2.71	42%	6.70	40%	47%	64%	87%
30,000-35,000	1.23	1.70	2.94	42%	6.64	44%	45%	69%	91%
35,000-40,000	1.15	1.76	2.91	39%	6.84	43%	48%	69%	93%
40,000-45,000	1.14	1.77	2.91	39%	6.43	45%	44%	67%	92%
45,000-50,000	1.19	1.74	2.93	41%	6.25	47%	42%	71%	88%
50,000-55,000	1.25	1.81	3.06	41%	6.21	49%	39%	69%	92%
55,000-60,000	1.23	1.95	3.18	39%	6.38	50%	41%	73%	95%
60,000-65,000	1.10	1.88	2.98	37%	6.27	48%	42%	70%	91%
65,000-75,000	1.04	2.11	3.15	33%	5.98	53%	36%	63%	95%
75,000-90,000	1.13	1.85	2.98	38%	5.80	51%	38%	70%	92%
over 90,000	1.01	1.90	2.91	35%	5.32	55%	36%	71%	96%

In fact the average number of income earning individuals does not increase much over Tk40,000/head/year – it remains around 2.9 to 3.1 persons – but above this level of income the size of households falls – from around 6.7 to 6.8 persons to 5.3 in the highest income band. As the proportion of household members earning an income increases, the share of women in the household labour force falls steadily from 46% in the lowest income band to

35% in the highest. It is also seen that above the Tk60,000 band the absolute number of woman earners per household starts to fall – from 1.2 to 1.0 per household. However there is no real evidence that women in richer households choose not to work as the proportion of adult women earning an income increases from 60% to around 70% and then stays more or less constant from the Tk30,000-35,000 income band and upwards. The proportion of adult men who earn an income also increases as income rises, but goes on increasing up to the Tk55,000-60,000 income band. The overall change in the proportion of adults earning an income from lowest to highest income bands is 11 percentage points for women (from 60% to 71%) and 20 percentage points for men (from 76% to 96%). This suggests that there are constraints on women's employment and income generation potential[4].

Figure 2: Household labour force and income



Although the size of households fall as income per person rises, as Figure 2 shows, there is a far sharper increase in total household income – in other words income per person is primarily driven by total household income, with the number of people in the household being a secondary factor. Efforts (such as family planning service) to allow people to limit the size of their families do help increase income per head (and have many other benefits), but the primary strategy must be to increase total household income.

3.14.5 Water constraints to crop production.

Survey respondents were asked to about damage to key crops caused by flooding, waterlogging and salinity. Damage was graded on a scale of one to four. Data in Table 83 is based on damage to HYV aman as this is the most widely grown crop and so elicited more responses than other field crops. The damage score is the sum of flood, waterlogging and salinity damage – and so has a maximum of 12 points (heavy damage from all three causes). A total of 730 respondents graded damage between 0 and 12 points. The table does not provide evidence that farmers reporting greater damage have significantly lower yields of HYV aman, but there may be some link between the proportion of non-HYV aman (which is more tolerant of poor growing conditions) and the amount of

[4] Constraints on women's employment and self-employment are described in Technical Report 18, Gender Impact Assessment.

damage reported for HYV aman. Farmers who report less damage also had larger increases in total paddy production over the last five years – maybe because they switched more land from lower yielding local varieties to HYVs. Cropping intensity also increases as less damage is reported (although those that reported no damage had the lowest c.i. – but there was only a sample of 8 farms in this group). However there does not seem to be a link between the severity of damage and total crop sales or total household income (or to farm income although this is not shown in the table) – as many other factors are involved in these indicators such as the area farmed and other crops grown.

Table 83: Crop damage and productivity indicators

Damage score	Number reporting	HYV aman yield kg/ha	% of total aman HYV	Increase in paddy production	Cropping intensity	Crop sales Tk/year	HH income Tk/year
0	8	2942	100%	166%	93%	11,075	393,840
2-4	40	4053	89%	80%	146%	29,779	310,844
5	68	4091	94%	66%	150%	33,218	338,681
6	419	4874	88%	68%	130%	20,782	296,711
7	83	3644	74%	58%	141%	33,211	329,168
8	69	4069	69%	77%	127%	34,846	317,342
9+	43	3165	62%	24%	113%	30,100	308,712
Total	730						

3.14.6 Area of land farmed

Lack of land has long been considered to be a major driver of poverty in Bangladesh. Wealth rank data in Table 76 shows that very poor households only operate 46 decimals, compared with 350 decimals for rich households. In Table 84 households have been divided into eight bands according to the area of land operated (which includes area informally occupied and leased in). As some of this land is used for a homestead, fish ponds etc, households with only a small operated area, cultivate very little land – which is only partly offset by a higher cropping intensity. As a result households in the four lower land areas bands (going up to 150 decimals) sell more homestead vegetables than field crops, and livestock sales (including milk) exceed those of field crops for all except the largest land operating band.

Total household income per person does not change much up to and including the fifth land operation band (150 to 175 decimals). Although the average area operated between the band 1 and band 5 increases by over 3.5 times (and the cultivated area by 23 times), income per head only goes up by 13%. This suggests that there is a growing disconnect between rural income and land ownership as the importance of agriculture declines in the national economy.

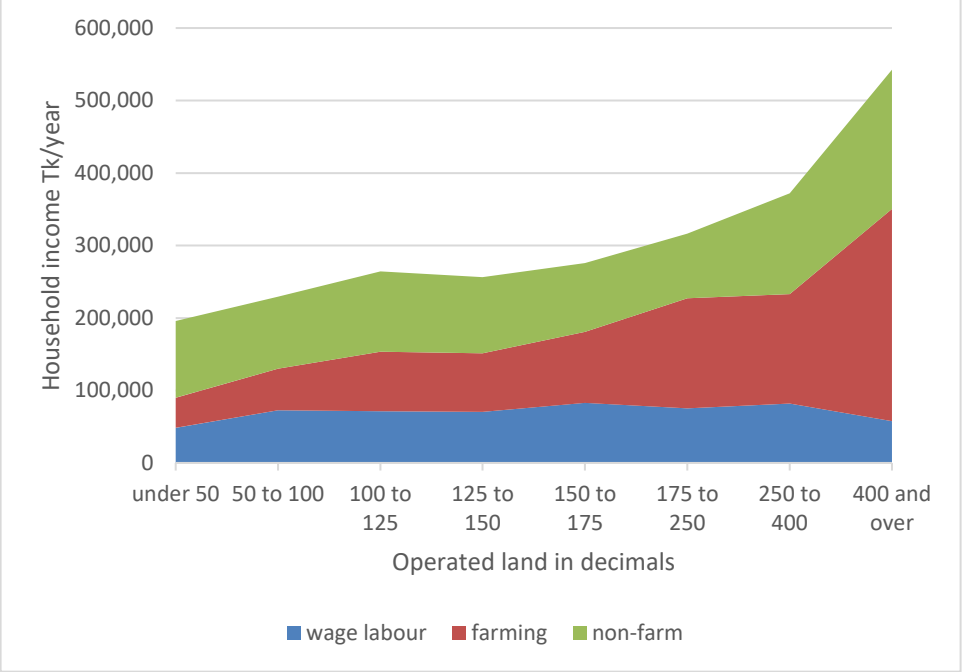
Table 59 and Figure 1 show that as income rise, a smaller proportion comes from labour wages, and more from other non-farm income – as well as somewhat more from farming. But analysis in Table 84 shows that as the area of land operated increases, the proportion of income from labour wages in remarkably stable between band 1 and band 7 (moving from 25% to 22%), and that those with less land (band 1 to band 4) have a higher proportion of income from other non-farm sources than those with more land – but the proportion of income farming increases steadily as the land area increases. The picture is complex – the share of income from other non-farm sources increases as income rises, as the area of land operated, incomes also rise, BUT the proportion income from of non-farm sources falls as the area of land increases.

This data is also shown in Figure 3. It shows how income from farming increases with expansion in operated area – although this increase in farm income is not steady – it changes little from band 3 to 4 and from 6 to 7. In contrast income from labour wages and other non-farm income is relatively constants through all the land area bands.

Table 84: Area of land farmed, sales and income

		Area of land operated in decimals							
		Band 1 under 50	Band 2 50 to 100	Band 3 100 to 125	Band 4 125 to 150	Band 5 150 to 175	Band 6 175 to 250	Band 7 250 to 400	Band 8 400 and over
Area of land (decimal)	operated	33	74	110	137	153	206	300	659
	cultivated	4	30	54	80	94	134	209	500
	Total crops	6	42	72	103	123	186	262	643
Cropping intensity		165%	140%	134%	128%	131%	139%	125%	129%
Farm sales Tk per year	Crops	3,136	10,475	8,736	9,737	17,045	38,091	30,184	100,347
	Homestead vegetable	8,364	10,225	12,756	14,264	15,275	17,630	20,826	18,366
	poultry	6,346	6,834	7,968	8,098	8,782	8,934	10,031	11,418
	livestock	12,439	10,963	21,736	20,440	20,951	38,834	41,147	69,506
	Pond fish	2,999	5,490	8,338	5,879	8,828	12,524	14,531	28,525
	total farm	33,284	43,988	59,534	58,419	70,880	116,014	116,720	228,163
Total HH income Tk/head/year		39,691	41,686	46,527	42,356	44,797	51,214	53,356	75,365
Sources of income	wages	25%	32%	27%	27%	30%	24%	22%	11%
	farming	21%	25%	31%	32%	36%	48%	41%	54%
	non-farm	54%	43%	42%	41%	34%	28%	37%	35%
	total	100%	100%	100%	100%	100%	100%	100%	100%
Number of households		92	138	105	78	264	128	115	82

Figure 3: Operated area and income



3.14.7 Borrowing

Data from 849 households who borrowed from PNGOs and other financial institutions has been categorised into seven bands in Table 84 according to the total amount borrowed over a number of loans. Households who borrowed larger amounts have more assets (especially assets for non-farm enterprises), have more sales of farm produce, and higher incomes. However it would be wrong to conclude that borrowing larger amounts in itself leads to higher

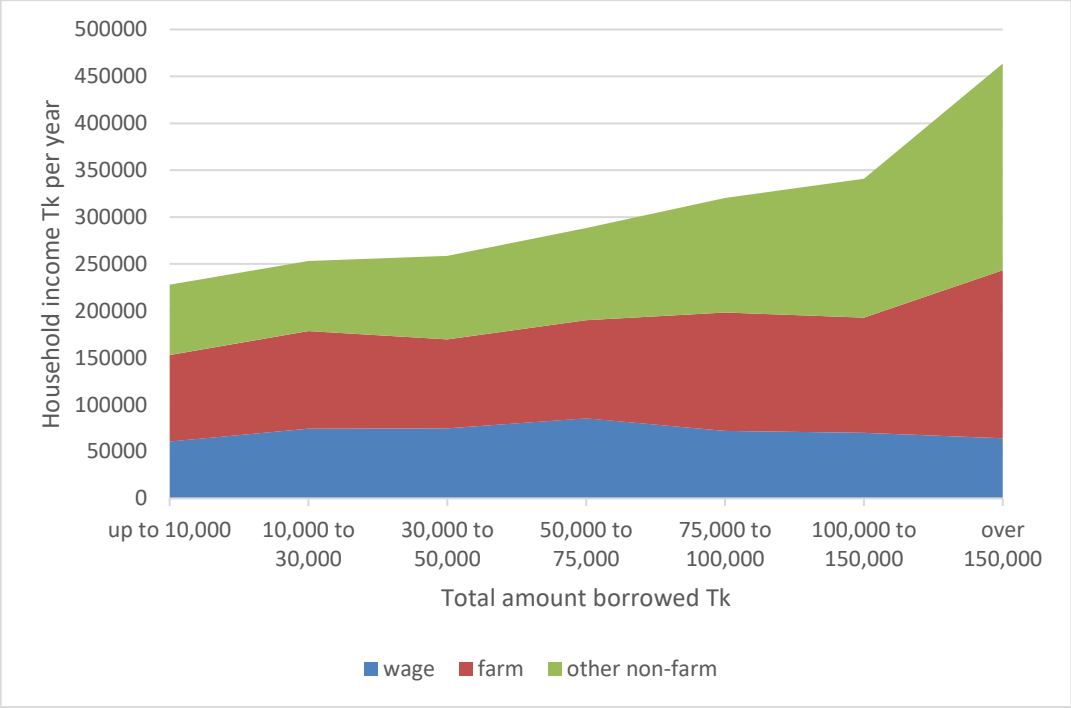
incomes – households with higher incomes are likely to have a greater capacity to take risks with larger investments. It is also worth noting that, as borrowing increases, a greater proportion of income comes from non-farm sources such as trade and business (see Figure 4).

Table 84: Amount borrowed, assets, sales and income

Total amount borrowed Tk	Number of households	Total value of assets Tk	Total value of farm sales Tk	Annual income by source Tk			
				wages	Farm income	other non-farm	total
up to 10,000	63	172,305	68,546	60,562	92,365	74,906	227,833
10,000 to 30,000	167	202,908	77,231	74,449	104,032	74,586	253,067
30,000 to 50,000	181	200,909	72,600	74,772	94,809	88,880	258,460
50,000 to 75,000	168	212,709	78,983	85,380	104,773	98,080	288,233
75,000 to 100,000	122	253,277	91,513	71,975	126,187	122,088	320,250
100,000 to 150,000	95	258,237	97,052	70,011	122,624	148,269	340,904
over 150,000	53	399,373	147,467	64,038	179,236	220,364	463,638

It should also be noted that the difference between households borrowing increasing amounts becomes more marked when total loans exceed Tk75,000 to Tk100,000 – below this amount the differences are not so great, and that the 53 households borrowing over Tk150,000 have significantly higher assets, farm sales, and income from farming and no-farm sources. All this suggests that there is a take-off point for investment in more commercial enterprises that yield significant returns. It also suggests that increasing amounts of borrowing is linked to increasing investment in non-farm enterprises rather than in agriculture. That said, some non-farm enterprises are closely linked to agriculture (buying farm products, selling inputs, transporting inputs and outputs), while others benefit from the money injected into the local economy by sales of farm products (shops, petty trade, transport of people, construction of houses).

Figure 4: Total borrowing and household income



4. Conclusion

CDSP IV has transformed the project chars from being isolated and unproductive with a desperately poor population into a productive and prosperous part of the district economy. The impact survey provides evidence of this change. Apart from the improvement in livelihoods and living standards, the following conclusions can be drawn from the survey data:

(a) Household size and workforce. Despite more or less universal adoption of family planning households remain larger than is now expected for rural Bangladesh (as they also do in the older CDSP areas). Although larger households have more working members, they also have more dependent (non-working) members (i.e, children), and so tend to have lower incomes per person. However the main determinant of income per head is total household income.

(b) Women headed households have lower income, with lower sales of field crops and homestead vegetables, although their income from pond fish and poultry is not so far behind male-headed households – suggesting these are good enterprises for FHH. FHH also have good access to loans from PNGOs. A major factor in their poverty is the lack of labour, but these households tend to be relatively small, so income per person is not so low – 88% of the average. This fairly small difference with average income may be because a disproportionate number of FHH are from Urir char where incomes are higher.

(c) Women's participation in income generation: CDSP IV has resulted in considerable expansion in homestead-based farming and in the non-farm sector. Despite this, women's participation in the workforce (including working on their own farms and homestead enterprises) appears to fall as incomes rise – but this more from increases in the number of men earning an income than a fall in the proportion of women working. However, compared with men, a significantly lower proportion of women work. In fact, the proportion of women who earn an income increases as incomes start to rise, but this does not continue to increase through higher income bands, so the overall increase in labour force participation is much lower for women than for men – confirming the constraints that exist in women's employment and self-employment.

(d) Out-migration Despite the transformation of the economy of the chars and expansion of the agricultural sector, the number of people out-migrating to find work has only fallen a little. There is still a lack of year-round employment opportunities in the CDSP IV area.

(e) Access to land and income: The survey data confirms of the growing disconnect between access to land and poverty. The area of land owned / operated by a household has long been seen as the key indicator for rural poverty – with the poverty line sometimes being defined by those having less than 0.5 acres of land (the functionally landless). Overall, as land holdings increase, average income goes up, but the increase in income is, especially at the lower end of the land holding categories, relatively small, with income sometimes falling as land holdings increase. Moreover, although higher income households get an increasing share of their income from non-farm sources excluding wage labour, households with smaller land holdings (who tend to be poorer) also get a larger share of income from non-labour and non-farm sources.

(f) Reduced flooding and better drainage is linked to switch from local varieties of paddy to more productive HYVs, and to increases in total paddy production and cropping intensity. Although these improvements will be linked to increased farm sales and household income, there is no direct link between these impact indicators and reports of reduced flooding, waterlogging and salinity – as many other factors influence these downstream impacts. Households in chars without protective embankments (Caring and Urir) are more likely to report damage to crops, especially homestead vegetables, and are also more likely to report shocks and crisis due to loss of crops Plus, on Urir, loss of livestock and pond fish.

(g) Homestead production Compared with other parts of rural Bangladesh, there are few landless households. Virtually all families have some land, and 86% cultivate field crops. However in terms of income from farming, homestead-based enterprises – homestead fruit and vegetables, poultry, livestock and small fish ponds, generate considerably more in sales than field crops. The lesson from this is that

homestead production can play a significant role in raising income (but this is qualified in the following paragraph). In addition homestead production is an avenue towards greater involvement of women.

(h) Non-farm sources of income, other than wage labour, are becoming as important as farming – especially as incomes increase and for households with only a little land. This means that efforts to increase farm income (including homestead based farm enterprises) will have a reduced impact on total household income. It also means that efforts to increase incomes will need to support activities in the non-farm as well as farm sectors.

(i) Investment in non-farm enterprises is an increasingly important use of loans, and reinforces the point about the growing importance of the non-farm sector. Increasing amounts of total borrowing (over a number of loans) is linked to increased income – but more so once cumulative borrowing exceeds Tk75,000 to Tk100,000 – and with more of this income coming from non-farm and non-wage sources. However most non-farm activities depend on farming or benefit from the income injected into the economy by sales of farm products.

(j) Formal loans are almost all provided by NGO-MFIs – reaching about 85% of households. Although some households (3.6%%) have savings accounts with banks, very few (0.2%) have bank loans Having a bank account does not seem to enable access to bank loans.

(k) Informal borrowing Almost one third of households took informal loans in the past year – borrowing significant sums that probably exceed the value of formal loans for that year. Informal loans are mainly provided by relatives, or as advance sales of crops and/or labour. These do not seem to be used as an alternative to formal loans as they are as likely to be taken by formal loans borrowers as by non-borrowers. It is clear that informal loans have an important role in financing farming and managing household expenditure, and more account needs to be taken of this source of credit when assessing the credit needs of farmers.

(l) Financial services make households more resilient. Use of savings followed by cash loans are reported to be the coping actions that are used most to overcome shocks and crisis.

Appendix 1: Sample and Questionnaire

Table 1: Sample samaj and households

CDSP-IV Chars		Somaj/Community	Baseline Samples	Impact Samples
Char Ziauddin	1001	Shafi Neta somaj	27	27
	1004	Mustafa Somaj	11	11
	1007	Shahabuddin Somaj	26	26
	1010	Ziar Bazaar Somaj	36	36
Sub-total			100	100
Char Nangulia	2001	Rasulpur/Kabir Ahmed Shomaj	25	
	2003	Hajigram Somaj	30	30
	2007	Char No. Ward somaj	25	40
	2010	Poshchim Belal Bazar Somaj	20	20
	2014	Rani Gram Somaj	25	17
	2016	Mollagram Somaj	30	29
	2020	Nasirpur somaj	30	34
	2022	Dhakhin Purbo Chowdhurygram Somaj	20	25
	2025	Mohammedpur somaj	15	20
	2028	Pashchim Charbazar Somaj	40	45
	2031	Purba Faridpur	20	
	2034	Tara Mrket Somaj	20	9
	2038	Fakir market Somaj	10	10
	2040	Babri Mosjid samaj	10	
	2043	Kabir Chaowdhury Shomaj	10	
	2046	Bishnupur	15	15
	2048	Tuba Market Somaj	25	25
	2051	Rickshapara Somaj	15	20
	2055	Siraj Colony Somaj	15	10
	2059	Al-amin Somaj	30	32
	2061	Chhan khola Somaj	25	30
	2064	Nur Mohammad Shomaj	20	
	2067	Dakshin Char Noman Masjid Shomaj	20	
	2070	Muzam Market Somaj	20	19
	2073	Ponchash Acore Mosjid Somaj	25	28
	2076	Shamsuddin Dipty Somaj	15	20
	2080	Char Lakshmi Mojam Shomaj	20	
	2082	Ismail Bazar Somaj	25	32
Sub-total			600	517
Noler Char	3001	Islampur	25	
	3004	Molla Gram	25	
	3007	Al Amin Somaj	30	28
	3010	Rasulpur Daroga Bazar Somaj	25	25
	3013	Poshchim Ghat Somaj	15	16
	3016	Dakhin Azim Nagar Somaj	40	37
	3018	Purbo-Azim Nagar		19
	3019	Uttor Musapur somaj	31	31
	3022	Purbo Mojlishpur Somaj	24	21
	3025	Dakhin Mojlishpur Killer Bazar Somaj	25	23
	3028	Dakshin Shantipur	20	
	3031	Tazimpur	20	
	3032	Sabnaz Mosjid (Project Part) Somaj	20	20
Sub-total			300	220
Caring Char	4001	Krishnonagar samaj	25	14
	4004	Adarsho gram Leski	25	

CDSP-IV Chars		Somaj/Community	Baseline Samples	Impact Samples
	4007	Mohammedpur Somaj	20	20
	4010	Rasulpur	25	
	4013	Mowlobi Gram	25	
	4014	Adarshagram	-	14
	4016	Shahebani Bazar Somaj	30	15
	4019	Jorpur samaj	70	14
	4021	Poshchim Mojib Nagar	10	
	4023	Uttar Mojib Nagar	10	
	4025	Nijampur samaj	60	
Sub-total			300	77
Urir char	5001	Caloni Bazar Somaj	20	20
	5004	No. 5 Digi Mosjid samaj	7	
	5007	Mostafiz Somaj	10	10
	5010	Maolana Idris Shaheb Mosjid Somaj	10	10
	5012	Din Mohammed Somaj	12	12
	5013	Janata Bazar Somaj	17	15
	5014	Bangla Bazar Somaj	12	12
	5015	Miar Bazar Somaj	12	11
Sub-total			100	90
Grand Total			1400	1004

Final Impact Survey Questionnaire-2017

CDSP Phase: IV only Sample ID: ☐☐☐☐☐☐☐☐ Baseline Sample ID: ☐☐☐☐☐☐☐☐

1. Name of Respondent:…… Relation with HH Head: …….

Sex: M/F

Address: Vill/Somaj:……..……..,

Char:……Union:…….. Mobile number ……..

2. Number of years living at this location ……..

3. Member of CDSP Field Level Institutions (FLI):[tick all that apply]

	WMG	FF	SFG	NGO	TUG	LCS
At present time						
At some time in last 5 years						

4. Household head: male / female

5. Occupation

	Primary	Secondary
Household Head		
Spouse		
Occupation Code: *Student-1, Unemployed-2, Agriculture/ Crop farming -3, Day Labor-4, Housekeeping-5, Fishing-6, Salaried Job-7, Fish drier-8, Small trade-9, Rickshaw/Van puller-10, Boat man-11, Retired person/ old man-12, Beggar-13, Disable-14, PL Catching-15, poultry/cow rearing-16, Handicraft-17, Driver-18, business-19, Tailoring-20 and Others (Specify). . . . . -99*		

6. Household composition

	Number of persons			
	Total	Earning income	Disabled/elderly	In education
Men (16+)				
Women (16+)				
Children – school age (5-16)				
Children under school age (<5)				
Total HH members				

7. Land holding:

7a. What area of land do you own, lease or occupy without a formal title? …… decimals

How did you acquire this land?	***Decimals***
Khatian from government settlement programme	
Inherited the land	
Purchased the land	
Occupy informally	
Bondok/lease/cod/share-crop in	
sub-total	
less Bondok/lease/cod/share-crop out	
= Net land area occupied	***A***

7b. What type of land is it?

	Decimals

Homestead	
Pond/ditch	
Cultivable / agricultural land	
Fallow land	
Total (should = A in table above)	

<< *CHECK THIS*

8. Housing:

Type of House	Size (Length X Width) Feet	Type of Floor	Type of Wall	Type of Roof
Main House				

Floor Type Code: *Mud-1, Bricks-2, Pacca-3,* ***Wall Type Code:*** *Leaf-1, Straw-2,Mud-3, Bamboo-4, Tin-5, Brick wall-6* ***Roof Type Code:*** *Leaf-1, Straw-2, Tin-3, Pacca-4, Others-5*

- *Please note: 1 hat=1.5 ft.*

9. Drinking Water and Sanitation:

Sources of drinking water:	Shallow Tube Well -1, Deep Hand Tube Well-2, Dug Well-3, Rain Water-4, Protected Pond Water (PSF)-5, Treated-boiled water-6, Untreated Pond Water-7, Untreated River/Canal Water-8, Others (specify)……..9.	
Ownership:	Own by HH-1, Jointly Owned-2, Neighbour-3, Govt./Natural Sources-4, CDSP-5, others specify 6	
How far do you go for collecting Water:	Dry Season…….. Metres	Rainy season……..Metres
Type of latrine used by HH:	No Latrine-1, Hanging/Open-2, Ring-slab (unhygienic)-3, Ring-slab (water sealed)-4, Sanitary Latrine -5.	
If the type of latrine is Ring-slab (unhygienic) or Ring-slab (water sealed) or Sanitary Latrine, where did you collect?	Buy myself from market-1, Buy through NGO/other organization-2, Donated by NGO/other organization-3 CDSP IV-4	

10. Health and Family Planning:

Do you wash hands before taking a meal ? Yes / no	
If yes - How do you wash hand before taking meal? By only water-1, by soap-2, by ash-3	
Do your family members wash hand after using latrine? Yes / no	
If yes - How do your family members wash hand after using latrine? By water-1, by soap-2 & ash-3	
Do all the children of your family properly immunize? (min.5 vaccines) Yes-1 and No-2	
If yes, how you managed it?	Upazila Health Center-1, Union Health Center-2, Local Doctor-3, From NGO/Voluntary organization-4, Through government special program-5
Is there any Health Worker (Govt/NGO) visited regularly in your area? Yes-1/No-0	
Do you use any family planning method? Yes-1, No-0 and not applicable-9, If yes, which method: Permanent-1, Temporary-2	

11. Household Assets:

Sl	Type of Assets	Own[Tick]	Quantity	Present Value (Taka)
1	Cot/ *Khaat*			

Sl	Type of Assets	Own[Tick]	Quantity	Present Value (Taka)
2	Almira			
3	Showcase			
4	Chair/table			
5	*Shinduk* (Wooden box/Trunk-Tin)			
6	*Alna*			
7	Ceiling/Table Fan			
8	Radio/Cassette Player			
9	B&W TV			
10	Color TV			
11	Mobile Phone			
12	Sewing machine			
13	Ornaments			
14	Bicycle			
15	*Rickshaw*/Van			
16	*Motor cycle*			
17	Auto rickshaw battery operated			
18	Sprayer			
19	Laptop			
20	Bullock cart			
21	Solar			
22	Shop with land ownership			
23	Tractor for cultivation			
24	Boat			
25	Mechanized boat			
26	Thresher			
27	Water pump			
28	Fishing net (Type:……)			
29	Fruit/timber trees			
30	Cow			
31	Buffalos			
32	Goat			
33	Sheep			
34	Chicken			
35	Duck / goose			
36	Pigeon			
37	Rice husking machine			
38	Trolley motorized			

Sl	Type of Assets	Own[Tick]	Quantity	Present Value (Taka)
39	CNG Auto			
40	Others (specify			

12. Crops grown

	Area Cultivated				Area Cultivated	
Cereals	In field (decimal)	In homestead (decimal)/Tick		Vegetables	In field (decimal)	In homestead (decimal)/Tick
Aus				Country Bean		
Amon				Long Bean		
Boro				Other type of bean		
Maize				*JaliKumra* (ridge gourd)		
Cheena (millet)				Bottle Gourd		
Pulses				Sweet Gourd		
Keshari				*Korola* (Bitter gourd)		
Mung				*Jinga* (Ribbed gourd)		
Felon				Dhundul (Sponge gourd)		
Moshuri				Okra (ladies finger - *bhindi)*		
Mash Kolai				Cucumber		
Oilseeds				Radish		n
Soybean				Carrot		
Mustard				Cauliflower		
Groundnut				Cabbage		
Sesame (*(til)*				Spinach		
Spices				*Lal Shak (Red* amaranth)		
Chilli				*Puishak*		
Onion				Tomato		
Garlic				Brinjal		
Coriander				Melons		
Turmeric				Water melon		
Roots and tuber				Musk melon		
Sweet potato						
Sugarcane				Total area of *sojon*		
Fodder crops				Total area of homestead crops		

13. Crop production

13a. Paddy production in last 12 months -

What types do you grow in each season?

	Area decimal	Production maunds	Did you grow this 5 years ago
Aus – local			yes / no
Aus – HYV			yes / no
Aman – Razashail			yes / no
Aman – HYV/IRRI			yes / no
Aman – other			yes / no
Boro – HYV, hybrid			yes / no
total production			

Use of paddy of all types	maunds
Consumed at home	
Kept for seed	
Sold	
total (= total production)	
total Taka for production	
Total production 5 years ago	

Boro transplanted after 15 March should be classified as Aus HYV

13b. Other field crop production in last 12 months

	Area decimals	Income from crop sales Tk	Approx Tk & % consumed	Approx % of production sold*	Did you grow these crops 5 years ago?
Wheat, maize and millet (*cheena)*					yes / no
Pulse crops					yes / no
Oilseeds (til, mustard, soya, g-nut)					yes / no
Root crops (potato, sweet potato, alum, cassava, yam)					yes / no
Spices (onion, garlic, chilli, turmeric, coriander)					yes / no
Vegetables and melons grown in the field (NOT homestead)					yes / no

* remainder of production consumed at home

13c. Homestead vegetables

Do you grow homestead vegetables?	yes / no		
if yes	do you sell some of these vegetables	yes / no	
	if yes	a) Income from sales in last 12 months	Tk
		b) Approx percentage of production that is sold	%

IN ABOVE QUESTIONS ENTER VALUE OF SALES NOT VALUE OF TOTAL PRODUCTION

13d. Cropping intensity - over last 12 monthsincluding leased in land

	Decimals of cultivable land	Include all land used by farmer at some time over last 12 months.
Single cropped		
Double cropped		
Triple cropped		
Four crops		
Five crops		

14. Adoption of new technologies What have you tried and adopted during the last 5 years?

Sector	**Technology**	**Have you tried it?**	**Will you continue to adopt?**

Paddy	New variety of paddy	Yes /no	Yes / no
	Line sowing	Yes /no	Yes / no
	Jala gocha (young seedling)	Yes / no	Yes / no
	USG (gumti urea)	Yes /no	Yes / no
	Zinc	Yes / no	Yes / no
	TSP	Yes / no	Yes / no
	Potash/(red fertilizer)	Yes / no	Yes / no
	Perching(use of stick)	Yes / no	Yes / no
Fruit and vegetable	New varieties	Yes / no	Yes / no
	Rainwater harvesting	Yes / no	Yes / no
	Pheromone traps	Yes / no	Yes / no
	Soap (Wheel powder) spray	Yes / no	Yes / no
	Neem leaf spray	Yes / no	Yes / no
	Bordeaux mixture spray	Yes / no	Yes / no
	Cow urine spray	Yes / no	Yes / no
	Vermi-compost	Yes / no	Yes / no
	Quick compost	Yes / no	Yes / no
	Organic/compost	Yes / no	Yes / no
Cattle / goats etc	Vaccination	Yes / no	Yes / no
	Deworming	Yes / no	Yes / no
	Improved breeding / AI	Yes / no	Yes / no
Poultry	Vaccination	Yes / no	Yes / no
	Improved shed	Yes / no	Yes / no
	Improved breeds	Yes / no	Yes / no
Aquaculture	Single sex tilapia	Yes / no	Yes / no
	Mixed carp	Yes / no	Yes / no

ADD ANY OTHER NEW TECHNOLOGIES IDENTIFIED DURING INTERVIEW

15. Mechanisation(IMPACT only)

Operation	**Method / machine**	**Use**
Land preparation	Power-tiller/tractor	Yes / no
	Draught animals	Yes / no
Pest control	Hand sprayer	Yes / no
	Knapsack sprayer	Yes / no
	Power (engine) sprayer	Yes / no
	No pest control	Yes / no
Weed control	Push weeder	Yes / no
	Spray herbicide	Yes / no
	Manual weeding	Yes / no
Post-harvest	Power thresher	Yes / no
	Pedal thresher	Yes / no
	Power tiller	Yes / no
	Manual/animal threshing	Yes / no

ADD ANY OTHER MACHINES USED FOR FARM OPERATIONS

16. Trees and fruits

Sector	Name of tree	Number of trees owned	
Fruit trees	Guava		
	Mango		
	Banana		
	Papaya		
	Lemon		
	Jamrul		
	Starfruit		
	Kul		
	Total		
Palm trees	Beetle		
	Coconut		
	Total		
Timber and fuel wood	Karoi		
	Jhau		
	Mehogoni		
	Akshmoni		
	lombo		
	Others		
	Total		

In last 12 months

Income from sales of all fruits and nuts	Tk
Approx percentage of production that was consumed at home	

17. Crop damage. Have you suffered losses from salinity, flooding and poor drainage?

Loss from:	Crops that were damaged	Damage in last 12 months	Change in damage compared with last year	Trend in damage over last 5 years
Salinity	Aus			
	Aman			
	Boro			
	Rabi field crops			
	Homestead veg			
	Trees			
Flooding	Aus			
	Aman			
	Boro			
	Rabi field crops			
	Homestead vegetable			
	Trees			
Drainage	Aus			
	Aman			
	Boro			
	Rabi field crops			
	Homestead vegetable			
	Trees			

Damage in last 12 months: 1=no damage, 2=slight damage, 3=moderate damage, 4=heavy damage, 5=total loss
Change/trend in damage: 1 = damage reducing, 2 = no change in damage, 3 = damage increasing

18. Poultry

	Chickens	Ducks & Geese	Pigeon
Number of birds owned at current time			
In last 12 months for both chickens,pegion & ducks			
Eggs Total number of eggs produced			
Number of eggs consumed at home			
Number of eggs sold			
Average price per egg	Tk		
Total income from sale of eggs	Tk		
Meat Number of birds consumed at home			
Number of birds sold			
Average price per bird			
Total income from sale of birds			

19. Cattle and buffalo

	Cattle		Buffalo	
	own	shared	own	shared
Number of animals owned at current time				
Of these – number of milking cows & buffalo				
In last 12 months (for both cattle and buffalo)				
Milk Total milk produced (kg/litre)				
Milk consumed at home (kg/litre)				
Milk sold (kg/litre)				
Average price per litre/kg	Tk			
Total income from sale of milk	Tk			
Meat Number of animals killed at home				
Number of animals sold				
Average price per animal	Tk			
Total income from sale of animals	Tk			

20. Goats and sheep

	Goat		Sheep	
	own	shared	own	shared
Number of animals owned at current time				
In last 12 months (for both goat and sheep)				
Number of animals killed at home				
Number of animals sold				
Average price per animal	Tk			
Total income from sale of animals	Tk			

21. Aquaculture

	Pond	Sorjon
Total area in decimals		
Area used for fish cultivation		
In last 12 months (for both pond and sorjon)		
Total fish produced (kg)		
Fish consumed at home (kg)		
Fish sold (kg)		
Average price per kg	Tk	
Total income from sale of fish	Tk	
Present stock in pond	Kg.	

22. Loans and savings

22a. In the last 5 years have you taken any loans from micro-finance NGOs or other financial institutions?
Yes / No - if yes:

Details of loans taken over the last 5 years

	Source of loan (NGO/GB/bank/leasing co)	**Size of loan**Tk	**Main purpose** of loan [code]	**Repaid or still outstanding**
1st loan				Repaid / outstanding
2nd loan				Repaid / outstanding
3rd loan				Repaid / outstanding
4th loan				Repaid / outstanding
5th loan				Repaid / outstanding
6th loan				Repaid / outstanding
7th loan				Repaid / outstanding
8th loan				Repaid / outstanding

Loan purpose code: 1. Inputs and expenses for crop production, 2. lease in land, 3. Buy land, 4. Farm machinery / equipment, 5. Vegetable production, 6. Livestock production, 7. Aquaculture/fish pond, 8. Capture fishery (nets, boat etc.) 9. Non-farm IGA/ business/trading/vehicle for business, 10. Lending out money, 11. Repay old loan, release mortgage land, 12. Health expenses, 13. Education expenses, 14. House building and repair. 15. Wedding, 16. other consumption related including household assets

22b. Have you had any other informal loans in the last 12 months? yes / no

if yes	**Who has provided the loan?**	**Amount borrowed Tk**
	Relatives and neighbours	
	Local samity	
	Crop sales in advance	
	Labour wages in advance	
	Moneylender	

22c. Do you have any savings? Yes / no. If yes:

Savings with:	**Current balance Tk**
NGO/GB credit group	
Fixed deposit / pension	
Bank or Post Office	
Local samity	
Other / cash	

23. New Income Generating Activity started in last 5 years

List	Sector	Describe IGA or tick all that apply	Main HH person responsible
1	New types of crops that were not grown before		male/female
2	Sorjon vegetable and fish system		male/female
3	New homestead agriculture		male/female
4	New tree nursery		male/female
5	New types of livestock enterprise	beef fattening	male/female
		milk production	male/female
		goat rearing	male/female
4	New poultry enterprise		male/female
5	New fish pond cultivation		male/female
6	New fruit tree plantation		male/female
7	New non-farm enterprise	Tailoring	male/female
		Cap sewing	male/female
		Quilt making	male/female
		Mat making	male/female
		Cane & Bamboo	male/female
		Cap sewing	male/female
		Other handicrafts	male/female
		Petty trade	male/female
		Small food processing	male/female
		Shop	male/female
		Hire out farm machinery	male/female
		Sell irrigation water	male/female
		Health services	male/female
		Other ……..	male/female

Code: Paddy-BR 11-1, 22-2, 23-3, BRRI 27-4, 40-5, 41-6, 42-7, 48-8, 52-9, Hira 2-10, Swarna 11, others-12,

Vegetable code: Cucumber-1, Bitter gourd-2, long bean-3, Chichinga-snake gourd-4, ribbed gourd-5, sponge gourd-6, okra-7, tomato-8, Coliflower-9, cabbage-10, carot-11, raddish-12, brinjal-13, country beans-14, others-15

Fish code: Telapia-1, rui-2,katol-3, silver carp-4, grass carp-5, mrigel 6.

Tree code: Guava-1, Papya-2, banana-3, mango-4, orange-5, kul-6, ester fruit-7, amra-8, amroj-9, dalim-10, batabi-11, amloki-12, olieve-13, ata fruit-14, black barry-15, jack fruit-16, coconut-17, bittle nut-18, others-19

24. Household Annual Income:in last 12 months

Sources of Income	Amount (Taka)	Sources of Income	Amount (Taka)
Wage from daily labour		Tailoring	
Field Crops		Poultry Rearing	
Petty Trading		Job/salary	
Business		Skilled work/driver/mechanic	
Homestead Gardening including fruit and timber trees		Remittance	
Rickshaw/van/boat/vehicle		Handicrafts	
Pond Aquaculture		Pension & social benefits	

Forestry/Trees		Begging and relief	
Fishing/PL catching		Date juice	
Livestock Rearing		Others……	

All these should be recorded net of expense incurred on inputs, raw materials and other costs.

25. Seasonal migration IMPACT only

	male	Female
Number of hh members who leave home for part of the year to find work		

26. Food Security:

- How many months you are able to meet the basic food (Rice/Pulse) needs from your own production:…….
- Does it happen that in certain months of the year your family members have to take less amount or low quality of food than usual? Yes/No
- If yes – how many months of food shortage …….

27. Wealth category (self-assessed): Now: rich / medium / poor / very poor
Five years ago: rich / medium / poor / very poor

28. Mobility: Access to Institutions

[Please ask the question in the 1st column for each institution. if applicable, then ask next column]

SL	Institutions	Distance from your household (Km)	Type of Road	Rainy season	Winter/dry season
				Usual time taken to reach..... *(minutes)*	Usual time taken to reach ..... *(minutes)*
1	Primary School/ Madrasha				
2	Nearby Bazar/Hat				

Road Code: *No Road-1, Kancha-2, Brick-3, Pacca-4, Canal & River ways-5*

29. Shocks and coping strategy

Did your household experience any kind of shocks or crisis during the last one year?Yes/No

If yes, What type of shocks were faced by your household or household members and how werethey coped with.

List of shocks		Indicate shocks specifying magnitude **(*Code)**	How it was coped with **(**Code)**
1	Death/invalidity of earning member		
2	Serious disease of any member		
3	Displacement due to Flood/cyclone/ tornado		
4	River erosion		
5	Loss of crop due to flood/drought		
6	Loss/ death/theft of livestock/poultry		
7	Damage to house from flood or storm		
8	Dacoity/ Theft/ Mastanies in house/business		
9	Loss of business/investment		
10	Divorce/separation		
11	Dowry		
12	Socio-political harassment, including bribe and tolls		
13	Women harassment (Violence)		
14	House destroyed by fire or other reason		
15	Others (specify)		

***Code:**1-Severe, 2- moderate, 3-Low

****Code:** 01- By selling land, 02- By selling domestic animals/birds, 03- By selling trees
04- With own savings, 05- By mortgaging land, 06- By mortgaging other properties
07- With help from relatives, 08- By taking cash credit, 09- By taking materials in credit
10- Aid/relief, 11- Complain with police, *Salish* with the UP, By mobilization of community groups/CBO/ NGOs, 12- Did nothing, 13. Others (specify).....

Annex 3: Additional data tables

Table 1: Damage to crops

Cause	Crop	Extent	Ziauddin	Nangulia	Noler	Caring	Urir	All
Salinity	Aus	no damage	0%	0%	0%			0%
		Slight	100%	100%	100%			100%
		moderate	0%	0%	0%			0%
		Heavy	0%	0%	0%			0%
		total loss	0%	0%	0%			0%
		Total	100%	100%	100%			100%
		no. reporting	3	1	1	0	0	5
	Aman	no damage	8%	6%	7%	9%	3%	7%
		Slight	80%	90%	87%	79%	90%	87%
		moderate	7%	3%	4%	13%	8%	5%
		Heavy	4%	0%	2%	0%	0%	1%
		total loss	0%	0%	0%	0%	0%	0%
		Total	100%	100%	100%	100%	100%	100%
		no. reporting	71	326	176	70	77	720
	Boro	no damage	0%	7%	0%		0%	6%
		Slight	100%	90%	100%		100%	91%
		moderate	0%	3%	0%		0%	2%
		Heavy	0%	1%	0%		0%	0%
		total loss	0%	0%	0%		0%	0%
		Total	100%	100%	100%		100%	100%
		no. reporting	2	182	17	0	1	202
	Rabi crops	no damage	0%	4%	2%	9%	0%	3%
		Slight	93%	80%	89%	68%	82%	82%
		moderate	5%	13%	2%	21%	16%	12%
		Heavy	2%	3%	6%	3%	2%	3%
		total loss	0%	0%	0%	0%	0%	0%
		Total	100%	100%	100%	100%	100%	100%
		no. reporting	41	135	47	34	61	318
		no damage	5%	4%	6%	4%	0%	4%
	Homestead	Slight	91%	93%	93%	88%	98%	93%
	veg	moderate	3%	3%	1%	8%	2%	3%
		Heavy	0%	0%	0%	0%	0%	0%
		total loss	0%	0%	0%	0%	0%	0%
		Total	100%	100%	100%	100%	100%	100%
		no. reporting	94	505	212	73	88	972
	Trees	no damage	24%	16%	22%	38%	7%	19%
		Slight	75%	81%	77%	55%	92%	79%
		moderate	2%	3%	1%	7%	1%	3%
		Heavy	0%	0%	0%	0%	0%	0%
		total loss	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%
		no. reporting	63	341	159	56	89	708
Flooding	Aus	no damage	0%	0%	0%			0%
		slight	100%	100%	100%			100%
		moderate	0%	0%	0%			0%
		heavy	0%	0%	0%			0%
		total loss	0%	0%	0%			0%
		total	100%	100%	100%			100%
		no. reporting	2	1	1	0	0	4
	Aman	no damage	7%	4%	2%	1%	1%	3%
		slight	59%	77%	83%	80%	64%	76%
		moderate	26%	16%	11%	16%	8%	15%
		heavy	7%	3%	4%	3%	27%	6%
		total loss	0%	0%	0%	0%	0%	0%

Cause	Crop	Extent	Ziauddin	Nangulia	Noler	Caring	Urir	All
		total	100%	100%	100%	100%	100%	100%
		no. reporting	69	325	174	70	77	715
	Boro	no damage	0%	8%	10%		0%	8%
		slight	100%	87%	80%		100%	86%
		moderate	0%	5%	0%		0%	4%
		heavy	0%	1%	5%		0%	1%
		total loss	0%	0%	5%		0%	0%
		total	100%	100%	100%		100%	100%
		no. reporting	2	181	20	0	1	204
	Rabi crops	no damage	2%	5%	0%	0%	0%	3%
		slight	73%	77%	91%	76%	64%	76%
		moderate	15%	10%	4%	21%	13%	11%
		heavy	10%	7%	4%	3%	23%	10%
		total loss	0%	1%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%
		no. reporting	41	133	46	34	61	315
	Homestead veg	no damage	5%	5%	5%	0%	1%	4%
		slight	92%	93%	93%	90%	64%	90%
		moderate	3%	2%	1%	10%	10%	3%
		heavy	0%	1%	1%	0%	24%	3%
		total loss	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%
		no. reporting	95	502	211	72	87	967
	Trees	no damage	39%	16%	19%	33%	3%	19%
		slight	61%	81%	79%	55%	63%	74%
		moderate	0%	2%	2%	12%	10%	4%
		heavy	0%	1%	0%	0%	24%	4%
		total loss	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%
		no. reporting	59	344	156	58	88	705
Waterlogging	Aus	no damage	67%		0%			40%
		slight	33%		50%			40%
		moderate	0%		50%			20%
		heavy	0%		0%			0%
		total loss	0%		0%			0%
		total	100%		100%			100%
		no. reporting	3		2			5
	Aman	no damage	23%	15%	16%	19%	18%	17%
		slight	52%	62%	69%	80%	40%	62%
		moderate	17%	19%	13%	0%	36%	17%
		heavy	8%	5%	2%	1%	5%	4%
		total loss	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%
		no. reporting	71	327	174	70	77	719
	Boro	no damage	0%	24%	29%		0%	24%
		slight	100%	60%	59%		100%	60%
		moderate	0%	11%	12%		0%	11%
		heavy	0%	5%	0%		0%	5%
		total loss	0%	0%	0%		0%	0%
		total	100%	100%	100%		100%	100%
		no. reporting	2	176	17		1	196
	Rabi crops	no damage	29%	18%	30%	21%	10%	20%
		slight	61%	63%	65%	79%	52%	63%
		moderate	7%	13%	4%	0%	33%	13%
		heavy	2%	5%	0%	0%	5%	4%
		total loss	0%	1%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%
		no. reporting	41	130	46	34	61	312

Cause	Crop	Extent	Ziauddin	Nangulia	Noler	Caring	Urir	All
	Homestead veg	no damage	20%	14%	15%	20%	9%	15%
		slight	73%	77%	81%	80%	46%	75%
		moderate	6%	7%	4%	0%	36%	8%
		heavy	0%	2%	0%	0%	9%	2%
		total loss	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%
		no. reporting	98	497	211	71	87	964
	Trees	no damage	47%	27%	34%	60%	13%	31%
		slight	45%	62%	61%	40%	43%	56%
		moderate	9%	7%	5%	0%	34%	10%
		heavy	0%	3%	0%	0%	9%	3%
		total loss	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%
		no. reporting	58	339	155	60	90	702

Table 2: Trend in crop damage

Note: Trend in year is trend over last one year, trend in 5 yr is trend over last five years

			Ziauddin		Nangulia		Noler		Caring		Urir		Total area	
			last year	5 year trend	last year	5 year trend	last year	5 year trend	last year	5 year trend	last year	5 year trend	last year	5 year trend
Salinity	Aus	reducing	33%	100%	100%	100%	100%	100%					60%	100%
		no change	67%	0%	0%	0%	0%	0%					40%	0%
		increasing	0%	0%	0%	0%	0%	0%					0%	0%
		total	100%	100%	100%	100%	100%	100%					100%	100%
		no. reporting	3	3	1	1	1	1					5	5
	Aman	reducing	56%	99%	70%	95%	65%	97%	40%	81%	13%	75%	58%	93%
		no change	42%	1%	30%	5%	34%	3%	60%	19%	87%	25%	41%	7%
		increasing	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	71	71	326	327	176	175	70	69	77	77	720	719
	Boro	reducing	50%	100%	71%	99%	65%	100%			0%	100%	70%	99%
		no change	50%	0%	29%	1%	35%	0%			100%	0%	30%	1%
		increasing	0%	0%	0%	0%	0%	0%			0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%			100%	100%	100%	100%
		no. reporting	2	2	182	182	17	17			1	1	202	202
	Rabi crops	reducing	46%	100%	56%	87%	57%	94%	21%	71%	8%	61%	42%	83%
		no change	54%	0%	44%	13%	40%	4%	79%	29%	92%	39%	58%	17%
		increasing	0%	0%	0%	0%	2%	2%	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	41	41	135	135	47	47	34	34	61	61	318	318
	Homestead vegetable	reducing	62%	98%	73%	95%	68%	98%	41%	82%	11%	74%	63%	93%
		no change	38%	2%	27%	5%	32%	2%	59%	18%	89%	26%	37%	7%
		increasing	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	94	93	504	503	212	212	73	72	88	88	971	968
	Trees	reducing	60%	97%	71%	94%	72%	99%	54%	77%	26%	74%	63%	91%
		no change	40%	3%	29%	6%	28%	1%	46%	23%	74%	26%	37%	9%
		increasing	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	63	64	341	340	159	159	56	56	89	89	708	708
Flooding	Aus	reducing	100%	100%	100%	100%	100%	100%					100%	100%

			Ziauddin		Nangulia		Noler		Caring		Urir		Total area	
			last year	5 year trend	last year	5 year trend	last year	5 year trend	last year	5 year trend	last year	5 year trend	last year	5 year trend
		no change	0%	0%	0%	0%	0%	0%					0%	0%
		increasing	0%	0%	0%	0%	0%	0%					0%	0%
		total	100%	100%	100%	100%	100%	100%					100%	100%
		no. reporting	1	1	2	3	1	1					4	5
	Aman	reducing	55%	97%	64%	93%	65%	97%	45%	81%	21%	49%	57%	89%
		no change	41%	3%	32%	7%	33%	1%	54%	19%	51%	51%	37%	11%
		increasing	4%	0%	4%	0%	2%	2%	1%	0%	28%	0%	6%	1%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	69	69	325	322	173	172	69	69	76	76	712	708
	Boro	reducing	50%	100%	71%	97%	60%	90%			0%	100%	70%	97%
		no change	50%	0%	29%	3%	35%	5%			100%	0%	30%	3%
		increasing	0%	0%	0%	0%	5%	5%			0%	0%	0%	0%
		total	100%	100%	100%	100%	100%	100%			100%	100%	100%	100%
		no. reporting	2	2	181	181	20	20			1	1	204	204
	Rabi crops	reducing	46%	100%	61%	89%	59%	89%	21%	79%	21%	44%	47%	81%
		no change	54%	0%	39%	11%	37%	7%	79%	21%	54%	56%	48%	19%
		increasing	0%	0%	0%	0%	4%	4%	0%	0%	25%	0%	5%	1%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	41	41	133	133	46	46	34	34	61	61	315	315
	Homestead vegetables	reducing	71%	97%	75%	96%	69%	98%	46%	82%	18%	51%	66%	91%
		no change	28%	3%	25%	4%	30%	2%	54%	18%	59%	49%	31%	9%
		increasing	1%	0%	0%	0%	1%	0%	0%	0%	24%	0%	2%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	95	95	501	501	211	211	72	72	85	87	964	966
	Trees	reducing	78%	97%	73%	95%	69%	99%	55%	78%	20%	52%	64%	89%
		no change	22%	3%	26%	5%	31%	1%	45%	22%	57%	48%	32%	11%
		increasing	0%	0%	0%	0%	1%	0%	0%	0%	23%	0%	3%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	59	59	344	344	156	155	58	58	87	87	704	703
Waterlog	Aus	reducing	100%	100%			100%	100%				100%	100%	100%
		no change	0%	0%			0%	0%				0%	0%	0%
		increasing	0%	0%			0%	0%				0%	0%	0%

			Ziauddin		Nangulia		Noler		Caring		Urir		Total area	
			last year	5 year trend	last year	5 year trend	last year	5 year trend	last year	5 year trend	last year	5 year trend	last year	5 year trend
		total	100%	100%			100%	100%				100%	100%	100%
		no. reporting	3	3			3	3				1	6	7
	Aman	reducing	66%	93%	63%	91%	62%	99%	56%	94%	30%	70%	59%	91%
		no change	27%	7%	31%	9%	37%	1%	43%	6%	65%	30%	37%	9%
		increasing	7%	0%	6%	0%	1%	0%	1%	0%	5%	0%	4%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	71	71	326	323	173	172	70	70	77	76	717	712
	Boro	reducing	50%	100%	65%	94%	59%	100%			100%	100%	64%	94%
		no change	50%	0%	30%	6%	41%	0%			0%	0%	31%	6%
		increasing	0%	0%	5%	0%	0%	0%			0%	0%	5%	0%
		total	100%	100%	100%	100%	100%	100%			100%	100%	100%	100%
		no. reporting	2	2	176	176	17	17	0	0	1	1	196	196
	Rabi crops	reducing	66%	98%	62%	86%	74%	100%	38%	88%	25%	62%	54%	85%
		no change	34%	2%	35%	14%	26%	0%	62%	12%	70%	38%	44%	15%
		increasing	0%	0%	3%	0%	0%	0%	0%	0%	5%	0%	2%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	41	41	130	130	46	46	34	34	61	61	312	312
	Homestead vegetable	reducing	77%	93%	72%	94%	67%	98%	59%	94%	24%	63%	66%	92%
		no change	22%	7%	25%	6%	32%	2%	41%	6%	67%	37%	31%	8%
		increasing	1%	0%	3%	0%	0%	0%	0%	0%	9%	0%	2%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	98	98	496	496	211	211	71	71	87	86	963	962
	Trees	reducing	79%	91%	67%	92%	68%	100%	78%	95%	30%	67%	64%	91%
		no change	19%	9%	29%	8%	32%	0%	22%	5%	61%	33%	32%	9%
		increasing	2%	0%	4%	0%	0%	0%	0%	0%	9%	0%	3%	0%
		total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
		no. reporting	58	58	339	339	155	155	60	60	90	90	702	702

Table 3: Percentage of households growing different field crops

	Ziauddin	Nangulia	Noler	Caring	Urir	total
Cereals						
aus	3.0%	0.2%	0.5%	0.0%	0.0%	0.5%
aman	72.0%	62.9%	80.4%	89.6%	85.6%	71.7%
boro	1.0%	34.4%	7.8%	0.0%	1.1%	19.6%
millet	1.0%	0.2%	0.0%	0.0%	0.0%	0.2%
Pulses						
keshari	16.0%	7.7%	3.7%	3.9%	41.1%	10.4%
mung	2.0%	0.6%	0.0%	0.0%	1.1%	0.6%
felon	6.0%	4.8%	1.4%	2.6%	3.3%	3.9%
moshuri	0.0%	0.4%	0.0%	0.0%	5.6%	0.7%
mash kolai	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
Oilseeds						
soybean	17.0%	0.8%	0.9%	5.2%	0.0%	2.7%
mustard	0.0%	0.2%	1.4%	3.9%	0.0%	0.7%
groundnut	5.0%	0.4%	0.5%	2.6%	0.0%	1.0%
sesame	0.0%	2.3%	4.6%	9.1%	3.3%	3.2%
Spices						
chilli	25.0%	11.6%	20.1%	40.3%	38.9%	19.4%
onion	1.0%	0.0%	0.0%	0.0%	0.0%	0.1%
garlic	1.0%	2.7%	1.4%	10.4%	0.0%	2.6%
coriander	0.0%	0.0%	0.0%	1.3%	0.0%	0.1%
turmeric	1.0%	0.2%	0.0%	0.0%	0.0%	0.2%
Roots & tuber						
Sweet potato	4.0%	2.5%	6.8%	15.6%	4.4%	4.8%
Cassava	1.0%	0.6%	0.9%	0.0%	4.4%	1.0%
Vegetables						
country bean	1.0%	14.9%	3.7%	7.8%	0.0%	9.2%
long bean	1.0%	9.7%	1.4%	1.3%	0.0%	5.5%
other bean	0.0%	0.2%	0.5%	0.0%	0.0%	0.2%
bottle gourd	0.0%	0.8%	0.0%	0.0%	0.0%	0.4%
sweet gourd	2.0%	1.4%	0.5%	0.0%	0.0%	1.0%
bitter gourd	0.0%	2.9%	0.5%	0.0%	0.0%	1.6%
ribbed gourd	0.0%	2.7%	0.0%	0.0%	0.0%	1.4%
Okra	2.0%	0.4%	0.0%	6.5%	2.2%	1.1%
Cucumber	2.0%	9.8%	2.7%	0.0%	0.0%	5.9%
Radish	1.0%	0.2%	0.9%	1.3%	0.0%	0.5%
cauliflower	2.0%	0.0%	0.0%	0.0%	0.0%	0.2%
cabbage	1.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Spinach	0.0%	0.0%	0.0%	1.3%	0.0%	0.1%
lal shak	1.0%	0.2%	0.5%	3.9%	1.1%	0.7%
Puishak	1.0%	0.0%	0.0%	1.3%	0.0%	0.2%
tomato	2.0%	0.6%	0.9%	2.6%	7.8%	1.6%
brinjal	2.0%	0.4%	1.4%	3.9%	5.6%	1.5%

	Ziauddin	Nangulia	Noler	Caring	Urir	total
Melons						
Water melon	0.0%	0.2%	0.0%	3.9%	0.0%	0.4%
Musk melon	0.0%	0.0%	0.0%	1.3%	0.0%	0.1%
Other	0.0%	0.4%	0.0%	0.0%	0.0%	0.2%

Table 4: Percentage of cultivated area used by different field crops

	Ziauddin	Nangulia	Noler	Caring	Urir	total
Cereals						
aus	3.6%	0.1%	0.6%	0.0%	0.0%	0.4%
aman	99.3%	72.4%	97.5%	98.7%	100.0%	87.2%
boro	0.5%	33.6%	8.2%	0.0%	0.3%	16.3%
millet	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
total	103.7%	106.2%	106.2%	98.7%	100.3%	103.9%
Pulses						
keshari	14.8%	7.2%	2.5%	1.7%	25.7%	11.2%
mung	1.4%	0.4%	0.0%	0.0%	0.3%	0.3%
felon	1.7%	1.5%	0.4%	0.5%	0.6%	1.0%
moshuri	0.0%	0.1%	0.0%	0.0%	1.0%	0.3%
total	17.9%	9.1%	2.9%	2.2%	27.5%	12.8%
Oilseeds						
soybean	14.7%	0.3%	0.2%	3.0%	0.0%	1.3%
mustard	0.0%	0.1%	1.6%	2.2%	0.0%	0.5%
groundnut	2.3%	0.1%	0.1%	0.6%	0.0%	0.3%
sesame	0.0%	2.0%	3.9%	7.7%	1.2%	2.5%
total	17.1%	2.5%	5.8%	13.5%	1.2%	4.6%
Spices						
chilli	4.8%	1.7%	3.0%	4.4%	2.1%	2.4%
garlic	0.0%	0.4%	0.1%	0.3%	0.0%	0.2%
turmeric	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
total	4.9%	2.1%	3.0%	4.7%	2.1%	2.6%
Roots & tuber						
Sweet potato	0.7%	0.2%	0.8%	1.0%	0.1%	0.4%
Cassava	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%
total	0.7%	0.3%	0.9%	1.0%	0.2%	0.4%
Vegetables						
country bean	0.4%	4.7%	1.4%	0.3%	0.0%	2.3%
long bean	0.4%	2.0%	0.2%	0.0%	0.0%	0.9%
other bean	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
sweet gourd	0.4%	0.1%	0.0%	0.0%	0.0%	0.1%
bitter gourd	0.0%	0.5%	0.1%	0.0%	0.0%	0.2%
ribbed gourd	0.0%	0.4%	0.0%	0.0%	0.0%	0.2%
okra	0.2%	0.0%	0.0%	0.3%	0.1%	0.1%
cucumber	0.5%	3.6%	1.1%	0.0%	0.0%	1.8%
radish	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%

	Ziauddin	Nangulia	Noler	Caring	Urir	total
cauliflower	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
cabbage	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
spinach	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
lal shak	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
tomato	0.1%	0.0%	0.1%	0.1%	0.2%	0.1%
brinjal	0.1%	0.0%	0.2%	0.1%	0.1%	0.1%
total	2.9%	11.4%	3.1%	1.1%	0.3%	5.9%
Melon						
Water melon.	0.0%	0.1%	0.0%	1.3%	0.0%	0.2%
Musk melon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	0.0%	0.1%	0.0%	1.3%	0.0%	0.2%
Other	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Total	147.2%	131.9%	121.9%	122.5%	131.6%	130.4%

Table 4a: Cropping patterns at baseline and impact by char

	Ziauddin	Nangulia	Noler Char	Caring Char	Urir Char	total
Baseline						
Aus	20.3%	1.5%	5.1%	4.9%	1.3%	3.8%
Aman	94.8%	89.6%	100.2%	93.0%	88.9%	91.7%
Boro	0.0%	0.7%	0.4%	0.0%	0.5%	0.6%
total rice	115.0%	91.8%	105.7%	97.8%	90.7%	96.2%
Other crops	31.6%	7.1%	10.6%	2.5%	12.2%	8.3%
Vegetable	2.17%	0.06%	0.41%	0.00%	0.00%	0.02%
total	148.8%	98.9%	116.7%	100.3%	102.9%	104.4%
Impact						
Aus	3.6%	0.1%	0.6%	0.0%	0.0%	0.4%
Aman	99.3%	72.4%	97.5%	98.7%	100.0%	87.2%
Boro	0.5%	33.6%	8.2%	0.0%	0.3%	16.3%
total rice	103.4%	106.2%	106.2%	98.7%	100.3%	103.9%
Pulses	17.9%	9.1%	2.9%	2.2%	27.5%	12.8%
Oilseeds	17.1%	2.5%	5.8%	13.5%	1.2%	4.6%
Spices	4.9%	2.1%	3.0%	4.7%	2.1%	2.6%
Root+tuber	0.7%	0.3%	0.9%	1.0%	0.2%	0.4%
sub-total	40.6%	14.0%	12.6%	21.4%	31.0%	20.4%
Vegetable	2.9%	11.7%	3.1%	2.4%	0.3%	6.1%
total	147.0%	131.9%	121.9%	122.5%	131.6%	130.4%

Percentage of cultivatable land

Table 5: Other field crops

	growers	% of hh	area per hh	% sellers	Sales/hh	Sale/grower	% sold
Ziauddin					Tk/all hh	Tk/grower	
Wheat, maize, millet	2	2.0%	20.0	50%	10	500	35%
Pulses	20	20.0%	68.7	95%	1502	7508	60%
Oilseeds	21	21.0%	66.5	100%	1973	9395	89%
Root crops	4	4.0%	13.0	50%	46	1150	15%
Spices	24	24.0%	15.3	63%	518	2158	27%
Field vegetables	8	8.0%	28.4	100%	2565	32063	68%
Nangulia							
Wheat, maize, millet	7	1.4%	35.4	57%	28	2036	41%
Pulses	59	11.4%	82.5	93%	760	6675	65%
Oilseeds	16	3.1%	84.3	94%	198	6416	86%
Root crops	15	2.9%	11.3	80%	226	7820	47%
Spices	69	13.3%	22.2	80%	1300	9761	46%
Field vegetables	76	14.7%	54.7	100%	8464	57691	75%
Noler							
Wheat, maize, millet	0						
Pulses	10	4.6%	44.4	100%	190	4160	63%
Oilseeds	13	5.9%	80.7	100%	192	3238	77%
Root crops	17	7.8%	10.6	94%	765	9853	54%
Spices	47	21.5%	15.9	85%	1187	5530	48%
Field vegetables	8	3.7%	24.3	113%	507	13875	61%
Caring							
Wheat, maize, millet	0						
Pulses	5	6.5%	48.0	100%	260	4000	68%
Oilseeds	15	19.5%	98.3	100%	556	2853	91%
Root crops	12	15.6%	9.8	67%	458	2938	39%
Spices	31	40.3%	16.3	100%	1679	4169	58%
Field vegetables	13	16.9%	23.2	100%	1903	11269	68%
Urir							
Wheat, maize, millet	1	1.1%	150.0	100%	40	3600	50%
Pulses	42	46.7%	202.5	100%	3921	8402	65%
Oilseeds	3	3.3%	126.7	100%	171	5133	85%
Root crops	9	10.0%	10.8	100%	488	4878	56%
Spices	32	35.6%	18.8	100%	1974	5553	55%
Field vegetables	9	10.0%	14.9	100%	1330	13300	71%
All							
Wheat, maize, millet	10	1.0%	43.8	60%	19	1885	41%
Pulses	136	13.5%	113.5	96%	955	7048	64%
Oilseeds	68	6.8%	83.1	99%	399	5886	86%
Root crops	57	5.7%	10.8	82%	367	6466	46%
Spices	203	20.2%	18.4	85%	1287	6365	47%
Field vegetables	114	11.4%	44.0	101%	4998	44019	72%

Table 6: Percentage of households growing different homestead crops

	Ziauddin	Nangulia	Noler	Caring	Urir	total
Oilseeds						
sesame	0%	0%	0%	3%	2%	0%
Spices						
chilli	18%	16%	21%	14%	19%	18%
onion	0%	1%	1%	0%	0%	0%
garlic	7%	4%	11%	8%	3%	6%
coriander	24%	15%	14%	12%	9%	15%
turmeric	28%	17%	18%	8%	41%	20%
Roots & tuber	0%	0%	0%	0%	0%	0%
Sweet potato	6%	3%	4%	4%	6%	4%
Cassava	2%	2%	1%	3%	2%	2%
Vegetables						
country bean	99%	94%	94%	88%	96%	94%
long bean	86%	86%	86%	75%	89%	85%
other bean	1%	2%	2%	4%	1%	2%
ridge gourd	11%	6%	5%	6%	7%	7%
bottle gourd	54%	50%	52%	42%	48%	50%
sweet gourd	51%	46%	43%	40%	39%	45%
bitter gourd	32%	46%	52%	34%	43%	45%
ribbed gourd	59%	60%	65%	55%	66%	61%
sponge gourd	46%	43%	47%	42%	42%	44%
Okra	17%	14%	15%	9%	13%	14%
Cucumber	68%	59%	63%	45%	88%	62%
Radish	39%	28%	30%	22%	17%	28%
Carrot	2%	2%	1%	1%	0%	1%
Cauliflower	0%	0%	1%	1%	1%	1%
Cabbage	0%	0%	1%	1%	2%	1%
Spinach	22%	7%	7%	5%	10%	9%
lal shak	58%	43%	46%	39%	20%	43%
Puishak	27%	16%	12%	5%	19%	16%
Tomato	59%	52%	62%	39%	43%	53%
Brinjal	54%	52%	61%	45%	41%	52%
Melons						
Water melon	1%	0%	0%	1%	0%	0%

Table 7: Ownership of trees

		Percentage of households					
		Ziauddin	Nangulia	Noler	Caring	Urir	total
Fruit	Guava	97%	93%	96%	95%	90%	94%
	Mango	97%	93%	97%	88%	99%	94%
	Banana	86%	85%	90%	97%	91%	88%
	Papaya	81%	59%	74%	84%	79%	68%
	Lemon	70%	52%	55%	47%	64%	55%
	Jamrul	53%	27%	41%	26%	27%	32%
	Starfruit	54%	33%	41%	21%	41%	36%
	Kul	90%	90%	92%	90%	96%	91%
	Other	47%	44%	41%	42%	72%	46%
	Total	100%	98%	100%	100%	100%	99%
Palm	Beetle nut	93%	72%	79%	64%	91%	77%
	Coconut	98%	93%	95%	86%	98%	94%
	Other	21%	36%	33%	21%	86%	37%
	Total	99%	95%	97%	92%	99%	96%
Timber	Karoi	99%	96%	98%	87%	99%	96%
	Jhau	76%	64%	60%	49%	60%	63%
	Mahogony	82%	69%	75%	57%	76%	71%
	Akshmoni	66%	58%	58%	48%	64%	58%
	Lombo	42%	28%	20%	18%	41%	28%
	Other	21%	43%	43%	26%	70%	42%
	Total	100%	98%	99%	95%	99%	98%
Get income from sale of fruit		92%	85%	86%	90%	92%	87%

Table 8: Number of trees per household

		Average number of trees for all households					
		Ziauddin	Nangulia	Noler	Caring	Urir	total
Fruit	Guava	4.6	5.3	5.5	6.2	4.7	5.3
	Mango	9.6	9.9	8.6	7.6	31.0	11.3
	Banana	46.2	47.6	60.8	103.1	71.9	56.7
	Papaya	2.7	1.6	2.2	3.2	1.8	2.0
	Lemon	1.8	1.0	1.4	0.9	1.1	1.1
	Jamrul	1.0	0.5	0.6	0.4	0.5	0.6
	Starfruit	0.9	0.5	0.6	0.4	0.6	0.6
	Kul	2.9	3.1	2.9	3.9	2.6	3.0
	Other	1.8	1.8	1.6	3.9	2.1	2.0
	Total	71.3	71.3	84.2	129.6	116.3	82.6
Palm	Beetle nut	34.4	11.6	13.8	6.7	25.7	15.3
	Coconut	10.7	10.8	11.0	6.8	14.1	10.8
	Other	1.2	3.7	3.8	3.3	10.2	4.1
	Total	46.2	26.3	28.6	16.8	50.0	30.2
Timber	Karoi	47.0	43.0	48.2	28.9	93.2	48.0
	Jhau	25.6	13.6	12.6	8.3	16.3	14.4
	Mahogony	17.5	12.2	16.2	5.9	23.1	14.1
	Akshmoni	11.6	8.3	7.2	6.1	13.8	8.7
	Lombo	4.6	4.2	4.9	1.7	9.9	4.7
	Other	16.2	10.6	8.7	3.8	22.3	11.3
	Total	122.5	92.0	97.8	54.7	178.6	101.2
Income from sale of fruit Tk per year		4652.0	4156.9	4842.5	4490.3	7452.2	4676.7
Approximate percentage consumed at home		55.8	52.8	57.5	50.5	59.0	54.5

Table 9: Poultry – percentage of households

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Chickens	own birds	97%	97%	99%	97%	100%	98%
	Produce eggs	97%	98%	99%	97%	100%	98%
	Consumed eggs	86%	82%	84%	81%	100%	84%
	Sell eggs	96%	98%	99%	96%	99%	98%
	Consume birds	98%	98%	100%	97%	100%	98%
	Sell birds	95%	96%	97%	97%	99%	97%
Ducks	own birds	92%	94%	93%	90%	100%	94%
	Produce eggs	91%	95%	95%	95%	100%	95%
	Consumed eggs	90%	94%	94%	95%	100%	94%
	Sell eggs	91%	94%	93%	94%	100%	94%
	Consume birds	92%	96%	96%	97%	100%	96%
	Sell birds	93%	93%	94%	95%	98%	94%
Pigeon	own birds	17%	12%	7%	12%	19%	12%
	Consume birds	13%	10%	5%	9%	19%	10%
	Sell birds	14%	10%	5%	9%	18%	10%

Table 9: Poultry – average per household*

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Chickens	number of birds	11.1	14.4	11.3	11.0	12.7	13.0
	eggs produced	291	232	225	189	397	248
	eggs consumed	127	72	66	55	173	84
	eggs sold	164	160	159	134	225	164
	price per egg	8.96	8.92	12.38	8.59	12.00	9.94
	Egg income Tk	1460	1430	1396	1173	2694	1519
	Birds consumed	9.6	8.5	8.3	7.9	8.0	8.5
	Birds sold	8.4	13.8	10.6	9.9	10.4	12.0
	Price per bird	242	254	255	253	300	257
	Bird income	1993	2800	2655	2510	3113	2694
Ducks	number of birds	7.8	7.6	6.3	6.2	11.6	7.6
	eggs produced	269	299	296	259	422	303
	eggs consumed	109	108	116	107	163	115
	eggs sold	160	191	180	156	259	189
	price per egg	8.24	8.04	8.06	8.15	10.00	8.26
	Egg income Tk	1282	1532	1439	1271	2591	1562
	Birds consumed	6.5	6.6	6.1	6.1	7.5	6.5
	Birds sold	6.6	8.5	8.1	7.3	10.1	8.2
	Price per bird	326	324	313	324	401	329
	Bird income	2136	2496	2511	2347	4036	2590
Pigeon	number of birds	1.1	0.9	0.5	1.0	1.3	0.9
	Birds consumed	0.7	0.5	0.2	0.6	0.7	0.5
	Birds sold	0.9	0.8	0.4	1.1	0.6	0.7
	Price per bird	224	222	192	204	212	216
	Bird income	194	197	72	184	133	163

'* average for all households, whether or not they keep poultry

Table 10: Cattle and buffalo

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Percent households	Owning cattle	42%	49%	53%	62%	62%	52%
(all households)	Sharing cattle	21%	34%	22%	16%	31%	28%
	Owning buffalo	1%	0%	1%	0%	16%	2%
	Sharing buffalo	0%	0%	0%	0%	0%	0%
	Keeping bovines	62%	79%	72%	75%	92%	77%
	Have milking animals	22%	34%	26%	39%	79%	35%
	Producing milk	28%	38%	28%	40%	79%	39%
	Consuming milk	28%	37%	27%	38%	79%	38%
	Selling milk	28%	36%	28%	39%	76%	37%
	Kill animals at home	0%	0%	1%	0%	8%	1%
	Sell animals	34%	50%	39%	43%	78%	48%
Average number	Own cattle	1.84	1.83	1.93	2.91	2.96	2.05
(per bovine keeper)	Shared cattle	0.66	1.07	0.63	0.48	1.31	0.93
	Own buffalo	0.03	0.01	0.29	0.00	1.75	0.26
	Shared buffalo	0.00	0.00	0.00	0.00	0.00	0.00
	All bovines	2.53	2.91	2.85	3.40	6.02	3.24
	Milk animals	0.50	0.55	0.47	0.79	1.60	0.66
Average per year	Milk produced (litres)	309	271	266	327	546	328
(per milk producer)	Milk consumed (litre)	119	99	85	108	176	113
	Milk sold (litres)	191	171	181	219	371	215
	Average milk price Tk	47	44	45	39	61	47
	Milk income (Taka)	9138	8144	8302	8655	24492	11281
Average per year	Animals killed at home	0.00	0.00	0.03	0.00	0.08	0.02
(per bovine keeper)	Animals sold	2.32	2.53	2.73	2.27	2.01	2.42
	Income from sales Tk	45196	51823	66903	57710	66197	56868
Average for all HH	Milk income (Taka)	2,559	3,066	2,350	3,484	19,322	4,348
	Income from sales Tk	12,655	19,509	18,941	23,234	52,222	21,920

Table 11: Sheep and goats

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Percentage	Own goats	14%	22%	23%	32%	30%	23%
of all	Share goats	3%	5%	4%	1%	1%	4%
households	Own sheep	0%	0%	0%	1%	20%	2%
	Share sheep	0%	0%	0%	0%	0%	0%
	Keeping ovines	17%	27%	26%	34%	42%	28%
	Consume at home	0%	0%	0%	0%	1%	0%
	Sell sheep/goats	8%	11%	11%	14%	31%	13%
Average	Own goats	1.41	1.86	1.93	1.88	1.82	1.84
number	Share goats	0.24	0.38	0.24	0.08	0.11	0.28
per ovine	Own sheep	0.00	0.03	0.00	0.04	5.87	0.82
household	Share sheep	0.00	0.00	0.00	0.00	0.00	0.00
	Total ovines	1.65	2.27	2.17	2.00	7.79	2.94
	Number consumed	0.00	0.01	0.00	0.00	0.03	0.01
	Number sold	0.88	0.78	0.97	0.88	1.68	0.96
	Total income Tk	3194	3271	3402	3423	8763	4059

Table 12: Aquaculture

		Ziauddin	Nangulia	Noler	Caring	Urir	total
Percentage	Fish pond	97%	99%	98%	99%	98%	98%
of all	Sorjon	1%	10%	1%	0%	0%	5%
households	total area	97%	99%	98%	99%	98%	98%
	cultivated	97%	98%	98%	96%	98%	98%
	Production	97%	97%	96%	94%	98%	97%
	Consumption	97%	97%	96%	94%	98%	97%
	Sales	87%	81%	53%	51%	97%	75%
	Avg price	92%	79%	55%	53%	98%	75%
	Income	87%	81%	53%	49%	97%	74%
	Stock	85%	85%	91%	70%	92%	86%
Average	Fish pond decimals	22.6	28.6	25.0	22.4	92.3	32.4
per fish	Sorjon area decimals	0.3	5.1	0.7	0.0	0.0	2.8
pond	total area decimals	22.9	33.7	25.7	22.4	92.3	35.2
household	Cultivated pond decimals	18.1	26.1	20.0	17.0	78.3	27.9
	Production kg/year	148	196	159	108	545	208
	Consumption kg/year	66	73	76	52	191	82
	Sales kg / year	46	73	37	33	211	72
	Avg price Tk/kg	149	146	143	174	151	148
	Income Tk/year	6803	10496	5253	4886	31675	10447
	Stock in pond kg at yr-end	36	50	46	23	143	54

Table 13: Assets – percentage of households owning

		Ziauddin	Nangulia	Noler	Caring	Urir	total
1	Cot/ *Khaat*	93%	100%	92%	100%	97%	100%
2	Almira	8%	33%	5%	27%	4%	30%
3	Showcase		35%		27%		26%
4	Chair/table	21%	91%	30%	82%	28%	88%
5	*Shinduk* (Wooden box/Trunk-Tin)	37%	64%	35%	55%	45%	74%
6	*Alna*	2%	23%	2%	20%	2%	17%
7	Ceiling/Table Fan	0%	10%	0%	10%	0%	11%
8	Radio/Cassette Player	2%	0%	1%	1%	1%	0%
9	B&W TV	1%	0%	0%	0%	1%	0%
10	Color TV	0%	2%	0%	1%	0%	1%
11	Mobile Phone	43%	97%	50%	96%	46%	97%
12	Sewing machine	3%	11%	1%	6%	2%	9%
13	Ornaments/jewellery	55%	97%	39%	94%	42%	94%
14	Bicycle	22%	30%	9%	20%	3%	14%
15	*Rickshaw*/Van	5%	3%	1%	1%	1%	1%
16	*Motor cycle*		8%		4%		4%
17	Auto rickshaw battery operated		3%		0%		1%
18	Sprayer		16%		34%		18%
19	Laptop		0%		1%		0%
20	Bullock cart	0%	0%	0%	0%	0%	0%
21	Solar power system		81%		66%		72%
22	Shop with land ownership		16%		8%		12%
23	Tractor for cultivation	1%	4%	1%	2%	3%	2%
24	Boat	0%	0%	1%	0%	1%	1%
25	Mechanized boat		2%		1%		2%
26	Thresher		2%		2%		5%
27	Water pump	0%	6%	0%	10%	0%	2%
28	Fishing net	22%	59%	36%	70%	34%	74%
29	Fruit/timber trees	24%	99%	26%	99%	24%	97%
30	Cow	52%	61%	66%	80%	66%	73%
31	Buffalos	4%	1%	0%	0%	1%	1%
32	Goat	28%	17%	34%	27%	30%	27%
33	Sheep	0%	0%	2%	0%	0%	0%
34	Chicken	88%	96%	90%	97%	90%	99%
35	Duck / goose	81%	91%	80%	94%	78%	94%
36	Pigeon		17%		13%		7%
37	Rice husking machine	5%	2%	3%	1%	2%	0%
38	Trolley motorized		0%		0%		0%
39	CNG Auto		0%		0%		0%
40	Others		2%		6%		0%

Table 14: Average value of assets per household

		Ziauddin	Tk'000 Nangulia	Noler	Caring	Urir	total
1	Cot/ *Khaat*	4.80	4.08	4.51	3.52	5.32	4.31
2	Almira	1.17	0.83	0.87	0.49	1.30	0.89
3	Showcase	1.90	1.23	1.54	0.68	3.46	1.52
4	Chair/table	1.96	1.43	1.67	1.43	2.05	1.59
5	*Shinduk* (Wooden box/Trunk-Tin)	2.67	2.10	3.41	3.12	2.14	2.52
6	*Alna*	0.22	0.15	0.14	0.14	0.42	0.18
7	Ceiling/Table Fan	0.08	0.06	0.10	0.12	0.14	0.08
8	Radio/Cassette Player	-	0.02	-	-	-	0.01
9	B&W TV	-	0.01	-	-	-	0.00
10	Colour TV	0.08	0.06	0.03	0.08	0.09	0.06
11	Mobile Phone	2.89	2.71	2.84	2.90	3.06	2.80
12	Sewing machine	0.54	0.53	0.52	0.86	0.72	0.57
13	Ornaments	17.98	17.09	19.75	15.92	25.05	18.38
14	Bicycle	1.39	0.82	1.05	0.22	2.10	0.99
15	*Rickshaw*/Van	0.38	0.08	0.08	0.10	-	0.11
16	*Motor cycle*	5.05	2.52	3.20	6.62	6.67	3.61
17	Auto rickshaw battery operated	1.50	0.21	0.28	-	-	0.32
18	Sprayer	0.18	0.34	0.18	0.29	0.13	0.27
19	Laptop	-	0.03	-	-	-	0.02
20	Bullock cart	-	-	0.05	-	-	0.01
21	Solar	14.20	11.11	13.34	8.58	13.80	11.95
22	Shop with land ownership	33.75	23.04	28.22	12.44	54.00	27.20
23	Tractor for cultivation	3.00	1.45	1.32	1.95	1.83	1.65
24	Boat	-	0.07	4.11	0.10	-	0.94
25	Mechanized boat	1.80	1.45	2.56	-	3.33	1.78
26	Thresher	0.14	0.11	0.19	0.62	1.11	0.26
27	Water pump	1.72	3.53	0.71	1.43	1.29	2.37
28	Fishing net	2.24	1.96	8.06	5.53	3.35	3.71
29	Fruit/timber trees	95.20	86.78	112.41	54.88	178.41	98.98
30	Cow	35.78	46.98	43.85	62.79	92.51	50.48
31	Buffalos	1.00	0.49	7.08	-	77.11	8.81
32	Goat	1.11	2.18	1.89	2.49	4.41	2.24
33	Sheep	-	0.04	-	0.06	13.82	1.26
34	Chicken	2.57	3.08	3.21	2.67	4.60	3.16
35	Duck / goose	2.55	2.47	2.30	2.16	4.60	2.61
36	Pigeon	0.41	0.31	0.12	0.42	0.27	0.28
37	Rice husking machine	1.30	0.38	0.23	0.39	3.11	0.68
38	Trolley motorized	-	0.29	-	-	3.33	0.45
39	CNG Auto	-	1.18	3.65	-	-	1.40
40	Others	3.45	2.23	1.14	-	14.22	3.02
	total	242.99	223.43	274.59	193.03	527.77	261.48

Table 15: House size and type – impact survey

		Ziauddin	Nangulia	Noler	Caring	Urir	total
House size	sq.ft	432	416	481	351	546	439
floor	mud	97.0%	99.2%	98.6%	100.0%	100.0%	99.0%
	brick	1.0%	0.0%	0.0%	0.0%	0.0%	0.1%
	pucca	2.0%	0.8%	1.4%	0.0%	0.0%	0.9%
wall	Leaf	0.0%	0.6%	0.5%	0.0%	0.0%	0.4%
	Straw	2.0%	2.6%	0.9%	10.8%	2.2%	2.8%
	mud	1.0%	0.4%	0.9%	0.0%	0.0%	0.5%
	bamboo	7.1%	13.9%	9.0%	25.7%	4.5%	12.2%
	tin	89.9%	82.1%	88.6%	63.5%	93.3%	83.9%
	brick	0.0%	0.4%	0.0%	0.0%	0.0%	0.2%
roof	leaf	0.0%	0.0%	1.4%	0.0%	0.0%	0.3%
	straw	6.0%	16.3%	11.4%	52.6%	10.0%	16.4%
	tin	87.0%	83.1%	85.8%	47.4%	90.0%	82.0%
	pucca	1.0%	0.0%	0.5%	0.0%	0.0%	0.2%
	other	6.0%	0.6%	0.9%	0.0%	0.0%	1.1%
Sample size (n)		100	515	219	76	90	1000

Table 16: House size and type – baseline survey

		Ziauddin	Nangulia	Noler	Caring	Urir	total
House size	sq.ft	268	247	256	185	297	254
floor	mud	96%	99%	98%	100%	99%	99%
	brick	0%	1%	2%	0%	1%	1%
	pucca	4%	0%	0%	0%	0%	0%
wall	Leaf	9%	1%	7%	5%	0%	4%
	Straw	23%	33%	29%	55%	4%	34%
	mud	0%	1%	1%	0%	0%	0%
	bamboo	55%	55%	50%	36%	59%	50%
	tin	13%	10%	12%	6%	36%	13%
roof	leaf	12%	1%	7%	5%	0%	4%
	straw	68%	83%	79%	95%	62%	82%
	tin	20%	16%	20%	3%	38%	16%
	pucca	0%	0%	0%	0%	0%	0%
Sample size (n)		100	600	300	300	100	1400

Table 17: Coping actions and types of shocks

Coping actions	Source of shocks and crisis															
	Death / invalidity	Illness in family	Flood/ cyclone	Erosion of land	Loss of crop	Loss of animals	house damage	Theft	business loss	Divorce/ separation	Dowry	Socio-political	Women harass	House fire	Other	Total
sell land	6.7%	3.6%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	0.0%	3.7%	2.0%
sell animals	0.0%	12.2%	14.3%	0.0%	1.3%	1.2%	0.0%	10.0%	0.0%	0.0%	38.2%	18.8%	0.0%	0.0%	0.0%	8.3%
Sell trees	0.0%	3.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	0.0%	1.3%
Use savings	20.0%	59.7%	28.6%	21.1%	17.5%	4.8%	66.7%	40.0%	40.0%	0.0%	70.6%	50.0%	100.0%	33.3%	14.8%	35.2%
Mortgage land	0.0%	3.6%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	1.7%
Mortgage other properties	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Help from relatives	26.7%	16.5%	7.1%	0.0%	7.5%	0.0%	16.7%	0.0%	0.0%	0.0%	14.7%	12.5%	0.0%	100.0%	3.7%	10.0%
Cash credit	53.3%	30.2%	28.6%	5.3%	35.0%	2.4%	50.0%	0.0%	20.0%	0.0%	58.8%	18.8%	100.0%	66.7%	0.0%	25.2%
Materials on credit	13.3%	10.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	8.8%	6.3%	0.0%	0.0%	3.7%	5.0%
Aid / relief	0.0%	2.2%	0.0%	0.0%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%
Go to police / UP / NGO etc	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.3%	0.0%	0.0%	0.0%	0.2%
Do nothing	33.3%	1.4%	35.7%	68.4%	46.3%	91.6%	0.0%	50.0%	30.0%	66.7%	5.9%	25.0%	0.0%	0.0%	77.8%	38.0%
Other	0.0%	1.4%	0.0%	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	1.5%