Char Development and Settlement Project Phase IV
Bangladesh

Annual Outcome Survey 2017

Technical Report No. 19

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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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1. Introduction

The M&E system of CDSP-IV includes Annual Outcome Surveys (AOS) which gather information on log frame objective and outcome indicators as well as on a number of output indicators. These surveys also cover CDSP I, II and III areas (the three earlier phases of CDSP) and incorporate indicators that have been covered in past CDSP III monitoring surveys. This enables the CDSP data-set to measure the long-term development benefits and their sustainability in the older CDSP chars. As conditions in CDSP I, II and III areas are better than in CDSP IV, they act as control areas, with survey results showing the extent to which CDSP IV has caught up with the earlier CDSP phases.

As its title indicates, the survey is carried out on an annual basis. The Baseline Survey was done at the end of 2011, but covered only the CDSP IV area, as did the 2014 AOS. The other five AOS (2012, 2013, 2015, 2016 and 2017) cover all four CDSP areas. Hence changes in CDSP IV can be compared with the Baseline Survey of 2011 and the subsequent AOS, and with the current situation and changes in CDSP I/II and III since 2012. Being annual, it provides continued information on project outcomes and helps avoid relying on results from a single year with abnormal weather or other external events.

The objectives of the survey are:

1. To gather information on key purpose and goal level log frame indicators, to show, on an annual basis, progress towards these indicators.
2. Measurement of outcomes with the aim of collecting evidence for a "results chain" with changes in physical environment and/ or improved technology, leading to changes in cropping patterns, resulting in increased crop yields and/ or income, which in turn results in increased sales and improved food security, leading finally to reduced poverty.
3. Evidence for IFAD's RIMS level II performance indicators.
4. In addition, outcome surveys gather information on the project services received by respondents.

The current survey is the and final sixth round of annual outcome survey (the project ends in mid-2018). Data collection took place in October and November 2017.

2. Methodology

2.1 Sampling procedure

The design sample design for this survey is 200 households in each of the three areas (CDSP I/II, CDSP III and CDSP IV) making a total sample of 600. The sample is a 'panel sample' with the same households being visited each survey round, which minimises sample errors caused by changes in the sample composition in each survey round. In this round 30 sample households could not be located from their earlier addresses as recorded in the last rounds held in 2012, 2013, 2013, 2015 and 2016. The main reason is serious erosion in the river Meghna leading to loss of land. Of these 30 sample households, 25 are in Caring char (Krisnanagar somaj-14 and Shahebani somaj-11), two in Char Nangulia (West Char Bashar), and three are in Noler Char (Dakhin Mojlishpur-3). To keep the sample size at 600, 30 new sample households were selected as close as possible to the earlier locations.

Table 1: Sample distribution

Area	Total Number of samples	Union/ Char	Village/ Somaj	No. of Sample HH
CDSP I&II	200	Char Bata	Char Majid	22
			Purbo Char Bata	24
			Poshchim Char Bata	20
		Char Jabbar	Char Jabbar	14
		Char Jublee	Modhya Char Bagga	18
			Char Mohiuddin	20
		Char Elahi	Gangchil	20
			Char Kalmi	20
		Char Clark	Baisakhai	20
		Shudolpur	Nobogram	22
CDSP III	200	Horni Union	Poshchim Gabtoli Adorsho Gram	9
			Shahab Uddin Shop	20
			Mirajpur	21
			Mohammadpur	10
			Molla Gram	20
			Adorsho Gram	20
			East 10 Number	20
			Forest Center	20
			Ali Bazar	32
			South Katakhali	28
CDSP-IV	200	Char Nangulia	Alamin Somaj	14
			4 no. ward	14
			Haji Gram	7
			Nasirpur	14
			Rani Gram	7
			Poshchim Char Basar	14
			Ismail Bazar	14
		Noler Char	Al Amin Somaj	7
			Dokshin Azim Nagar	14
			Dokshin Mojlishpur Killer Bazar	14
			North Musapue	7
		Caring Char	Joy bazar/Adarsha pram Somaj	14
			Krishno Nagar/Md.pur Somaj	14
			Shahebani Bazar	14
		Char Ziauddin	Ziauddin Bazar	8
			Sofi Neta Somaj	8
		Urir Char	Coloni Bazar Moshjid Somaj	8
			Janata Bazar Moshjid Somaj	8

2.3 Survey questionnaire

Data was collected using a household questionnaire. This questionnaire is consistent with that in earlier rounds of AOS – to continue to build the annual data set of key indicators. A few indicators were dropped this round as they did not seem to be generating useful data. As this is the final round of AOS, some additional indicators were introduced to gather information on changes since the start of the project. The updated questionnaire is in Annex 1.

2.4 Field data collection and data analysis

Between October and December 2017 data was collected from the field by four (two men and two women) hired enumerators, along with the two M&E Officers of CDSP IV and a hired Survey Supervisor cum Data Entry Operator & Analyst. The enumerators were trained on filling up the survey questionnaire and on the interview techniques to be followed during field data collection. The data collection process took 34 days including two days for training, and four days for checking of completed questionnaires and verification at different field locations. After computer data entry using MS Access, further data checking took place and then the data was analysed using MS Excel.

3. Results and discussion

3.1 Household composition

The composition of households in all four CDSP areas are shown in Table 2. This shows that average household size is over six persons – larger than is usual in rural Bangladesh (typically 5 persons). Most children in the 5 to 16 age bracket are at school – and it should be remembered that children only legally have to go to school up to the age of 10. The fact that 12% of children are not going to school in the CDSP III and IV areas may reflect a scarcity of secondary schools. The table also shows that 29% of CDSP IV women are not earning (or elderly or in education). Although there is clearly an opportunity for increased female employment, the fact that there are 34% not earning in the more developed CDSP I and II area could be because fewer women choose to work as households become more prosperous.

Table 2: Household composition

	No. of people per household	Percentage of household members				
		Earning	elderly & disabled	in education	other	Total
CDSP I&II						
Men 16+	1.99	89%	6%	3%	1%	100%
Women 16+	1.93	56%	8%	2%	34%	100%
Child 5-16	1.76	0%	1%	95%	4%	100%
Child under 5	0.78	0%	0%	1%	99%	100%
Total member	6.46					
CDSP III						
3.1 Men 16+	2.01	88%	3%	4%	5%	100%
Women 16+	1.88	69%	9%	2%	21%	100%
Child 5-16	2.00	0%	1%	88%	12%	100%
Child under 5	0.83	0%	1%	3%	96%	100%
Total member	6.71					
CDSP IV						
Men 16+	1.94	94%	4%	2%	0%	100%
Women 16+	1.74	64%	6%	1%	29%	100%
Child 5-16	1.85	1%	0%	88%	12%	100%
Child under 5	0.69	0%	0%	2%	98%	100%
Total member	6.22					

3.2 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 3 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). Relatively few of these FLI were formed during CDSP I and II, but other programmes will have formed groups in these areas, and NGO microcredit groups are found throughout the area. 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. It is surprising that only around half of all CDSP IV 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. It seems that many people do not realise that they are members of TUG.

Table 3: Participation in Field Level Institutions (% of households)

Type of FLI	CDSP I&II		CDSP III		CDSP IV	
	Now	any time	now	any time	now	any time
WMG	2.5%	3.0%	3.5%	10.0%	13.0%	14.5%
FF	1.0%	4.5%	2.0%	10.0%	21.5%	23.0%
SFG	0.5%	1.0%	14.0%	20.0%	29.0%	29.5%
NGO	48.5%	61.0%	57.5%	84.0%	77.5%	91.0%
TUG	3.0%	6.0%	32.5%	41.0%	46.5%	51.0%
LCS	0.0%	6.5%	0.0%	0.5%	0.0%	1.0%

3.3 Settlement status

In the CDSP-IV area the settlement activities show good progress, with the AOS showing 71% of CDSP IV households now have khatian land titles (Table 4). There is no settlement program on Caring or Urir chars and on part of char Nangulia. In CDSP- I, II and III areas most people have land titles via CDSP, but some purchased land, and a few inherited. There has been an increase in this proportion since the first (2012) AOS in CDSP I&II and in CDSP III. As selling of newly received land titles is not allowed, it is assumed that these sales were mostly informal.

Table 4: Settlement status of households

% of households	CDSP IV baseline	CDSP-I & II	CDSP-III	CDSP-IV
Settlement programme / land title	1.2	58	87	71
Occupying *khas* land	91	7	8	32
Purchased land	8	42	28	6
Inherited land		18	6	1
Sample size (n)	1400	200	200	200

Although 71% of CDSP IV households have khatian land titles, Table 5 shows many also occupy other land informally, and almost one third of land (32%) is occupied informally and another 20% via some form of leasing (mortgaging in, sharecropping and cash rent). The average area operated (net of leasing land in and out) is almost two acres (196 decimals = 0.79 ha) in CDSP IV, with slightly smaller areas being operated in the older CDSP areas.

Table 5: Area of land acquired through different means

	CDSP1&2		CDSP 3		CDP 4	
	decimals per HH	percent of area	decimals per HH	percent of area	decimals per HH	percent of area
Area occupied	193	100%	167	100%	209	100%
Land acquired by						
Khatian settlement	88	46%	117	70%	97	47%
Inherited	9	5%	4	3%	0	0%
Purchased	44	23%	19	11%	3	1%
Occupy informally	12	6%	4	3%	66	32%
Lease in	40	21%	23	14%	42	20%
sub-total	193	100%	167	100%	209	100%
Lease out	35	18%	26	15%	13	6%
Net area operated	158	82%	141	85%	196	94%
Sample size (n)	200		200		200	

3.4 Occupational profile

A comparison of principal occupation of the household heads between CDSP-IV baseline and present status of CDSP phases is shown in Table 6. The principal occupation in the CDSP IV areas is day labour, but this is only marginally ahead of farming. There has been a general decline in the importance of farming as the principal occupation in all areas, but in the last year this has seen something of a revival. Day labour is little changed - in CDSP IV falling from 31% at baseline to 29% now (having dropped to 20% in 2014 and then rising to 36% in 2015). What has increased significantly for CDSP IV households is petty trade, which has increased from 9% at baseline and is now 20%. The increase in petty trading across all CDSP areas, but, in particular in CDSP IV, seems to be due to improved communications and markets. Occupations in jobs (services), along with driving (especially CNG), is also an increasing trend across all CDSP areas.

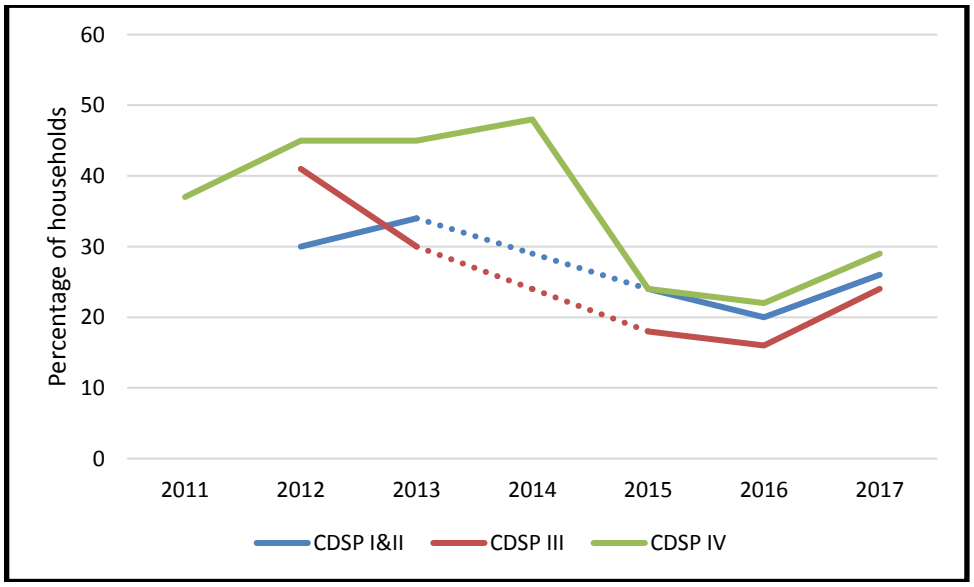
Table 6: Occupation of household head percentage of household heads

Occupation	CDSP IV		CDSP I & II 2017		CDSP III 2017		CSP IV 2017	
	Baseline 2011	2016	primary	second	primary	second	primary	second
Agric/crop farming	37%	22%	26%	29%	24%	40%	28%	48%
Livestock			0%	3%	0%	5%	1%	8%
Day labour	31%	30%	22%	11%	28%	6%	29%	11%
Salaried job	3%	7%	14%	1%	8%	0%	3%	1%
Fish/PL catch/dry	3%	5%	3%	1%	6%	1%	5%	0%
Small trade	9%	19%	17%	2%	21%	3%	20%	1%
Rickshaw / boat	4%	2%	2%	0%	6%	1%	2%	0%
Driver	0%	3%	5%	1%	3%	0%	3%	0%
Handicraft			2%	0%	0%	0%	1%	1%
Housekeeping	3%	4%	3%	1%	3%	1%	5%	1%
Other	5%	6%	8%	2%	3%	2%	5%	4%
Total sample size (n)	1400	200	200	200	200	200	200	200

Note: not all household heads reported having a secondary occupation.

Figure 1 shows trends in the percentage of household heads reporting agriculture as their principal occupation. This shows that initially agriculture became more important in CDSP IV, but has now aligned with the older areas where agriculture is becoming less important.

Figure 1: Agriculture as principal occupation of household head



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

The occupation of the spouse (almost always the wife) of the household head is shown in Table 7. In all areas the primary occupation is overwhelming that of housewife, with livestock as a secondary occupation – evidence that women see themselves as primarily having a domestic role, but also look after livestock (which may or may not earn them an income).

Table 7: Occupation of spouse of household head (percentage of households)

Occupation	CDSP I & II		CDSP III		CDSP IV	
	primary	second	primary	second	primary	second
Agric/crop farming	0%	1%	0%	0%	0%	0%
Livestock	2%	74%	7%	79%	6%	81%
Day labour	1%	1%	1%	0%	1%	0%
Salaried job	1%	1%	1%	1%	1%	1%
Fish/PL catch/dry	2%	1%	1%	1%	0%	0%
Small trade	1%	0%	1%	0%	0%	0%
Rickshaw / boat	0%	0%	0%	0%	0%	0%
Driver	1%	0%	1%	0%	0%	0%
Handicraft	0%	2%	1%	2%	0%	2%
Housekeeping	91%	2%	87%	7%	86%	7%
Other	0%	1%	1%	1%	1%	1%

Not all households reported an occupation for the spouse (there may be no spouse in some households)

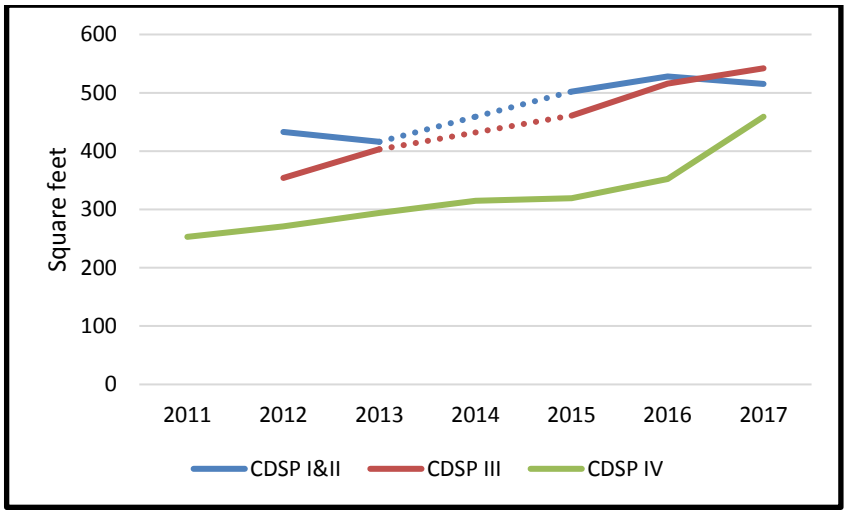
3.5 Housing

The average size of the main houses observed in the CDSP-I&II, CDSP-III and CDSP-IV areas is shown in Table 8 below. At the start of the project houses in CDSP I&II and III were double the size of those in CDSP IV but, with an 80% increase in average size of CDSP IV houses, the gap has now closed to a difference of only 15%. The progress in closing this gap is shown in Figure 2. In all CDSP areas, floors are predominant mud, but brick and cement are starting to be used. Over 80% of CDSP IV households now report tin (and sometimes brick/cement) walls and roofs now being tin, compared to only 13% of walls and 16% of roofs at baseline. In terms of use of tin/brick/cement for walls and roofs, CDSP IV is now not far behind CDSP I&II and III households, where over 90% use these materials.

Table 8: Housing

	CDSP IV Baseline	**CDSP I & II**	**CDSP III**	**CDSP IV**
Average size of main house (sq. ft)	253	515	542	459
Type of floor (% of HH)				
Mud	99	93	95	99
Bricks	1	1	0	0
Pacca	0	6	5	1
Type of Wall (% of HH)				
Leaf	4	1	1	0
Straw	34	1	1	4
Mud	0	1	0	0
Bamboo	50	8	3	16
Tin	13	86	89	80
Pacca/brick	0	6	7	2
Type of Roof (% of HH)				
Leaf	2	0	1	1
Straw	82	2	6	19
Tin	16	97	91	80
Pacca	0	1	0	1
sample size (n)	1400	199	199	200

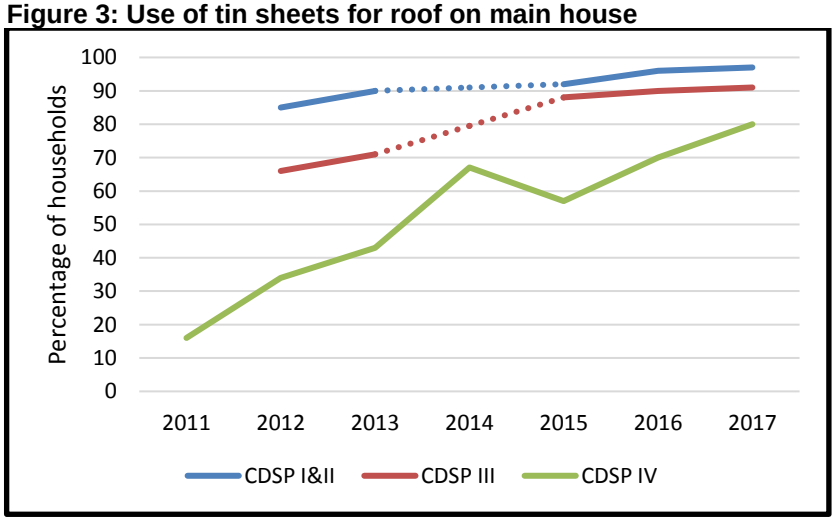
Figure 2: Size of main house



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

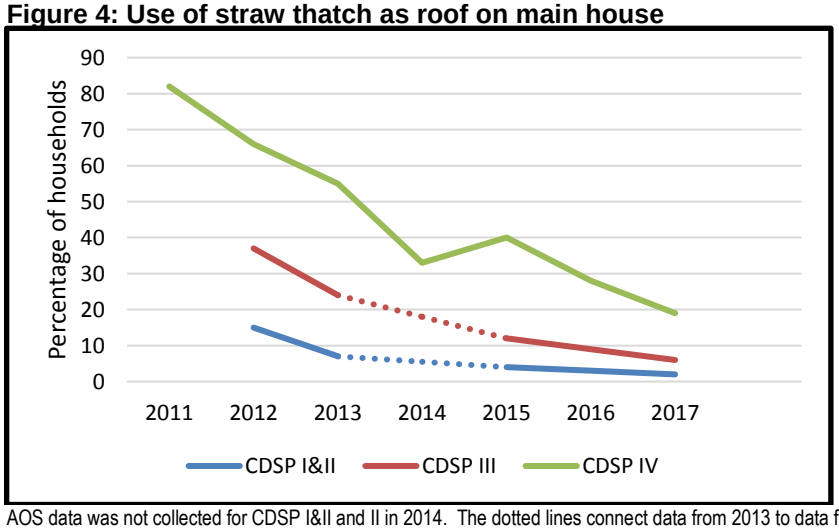
The older CDSP areas have themselves made remarkable progress. In 2012, only 55% of CDSP I&II walls were tin, and while CDSP III had 40% tin walls and 63% tin roofs. Such changes are due to better socio-economic condition of households and the fact of having permanent settlement through receiving 'khatians'. The easy availability of building materials with lower transport costs due to improved communications may also be a factor. The trend in the use of straw and tin sheets as roofing materials across the three CDSP areas are illustrated in Figures 3 and 4.

Figure 3: Use of tin sheets for roof on main house



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

Figure 4: Use of straw thatch as roof on main house



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

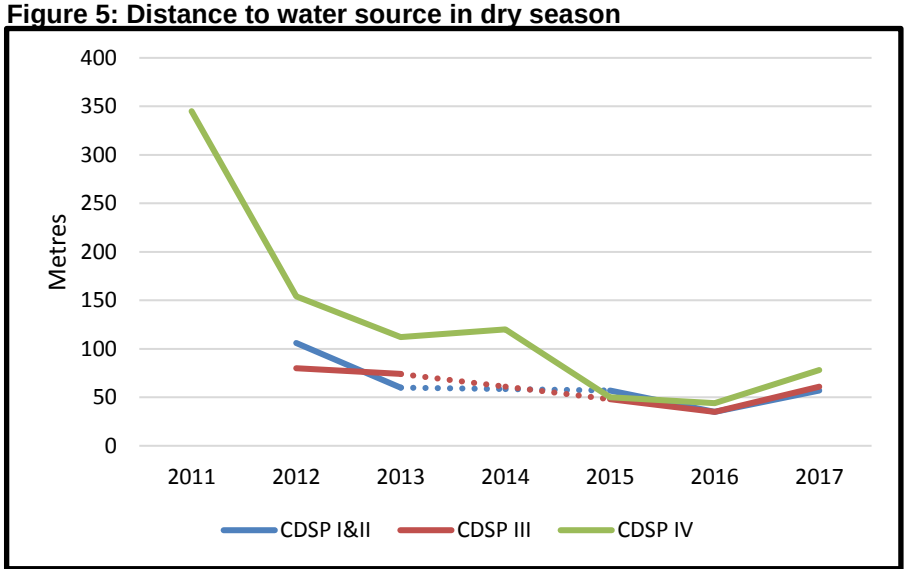
3.6 Water supply and sanitation

From data in Table 9 shows how access to drinking water has changed in CDSP IV compared to the baseline situation. Although almost all households have been getting water from tubewells, the access to water has greatly improved in the CDSP IV area, with sources now being around 80 metres from the home as against 350 metres in the baseline situation (more in the rainy season)[1]. This saves much time in collecting drinking water, especially for the women of the households who usually perform this task. Figures 5 and 6 show how CDSP IV households have caught up with those in the older areas in terms of distance to a source of drinking water in the wet and dry seasons.

Table 9: Water and sanitation

	Baseline CDSP IV	CDSP-I,II	CDSP-III	CDSP-IV
Source of drinking water				
Shallow Tube well	3	54	28	9
Deep Tube well	96	45	71	91
Untreated pond water	2	1	2	1
Ownership of tubewell				
Owned by HH	5	28	23	6
Jointly owned	5	6	1	0
Neighbour	27	23	7	4
Govt./Community	63	17	4	7
From CDSP	-	27	6	81
Distance from water source				
Dry Season (metre)	345	57	61	78
Rainy Season (metre)	418	63	70	87
Type of latrine used				
No latrine	5	2	2	0
Hanging/open	77	0	1	1
Ring slab (unhygienic)	14	5	9	2
Ring slab (water sealed)	6	88	84	98
Hygienic		5	4	0
Source of latrine				
Purchased from market	61	87	33	5
Purchased from NGO/other organization	8	1	0	0
Donated by GO/NGO/other organization	31	0	0	0
Installed by CDSP	-	13	68	95

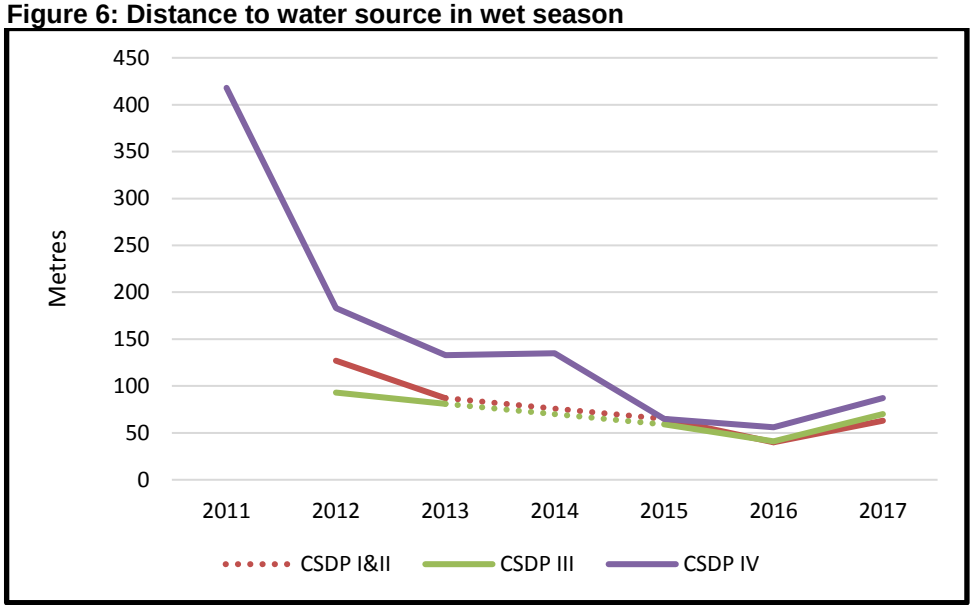
Figure 5: Distance to water source in dry season



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

[1] The distance to the water source has increased in all CDSP areas relative to that reported in the 2016 AOS. The reason for this increase is not known – there are no reports of DTW failing and people needing to go further to find water.

Figure 6: Distance to water source in wet season



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

Table 9 shows that the use of water sealed ring slab and hygienic latrines in CDSP IV have hugely increased compared to the baseline situation (from 6% to 100%). It is worrying that in the CDSP older phase areas some 5% to 10% of households are still using open/hanging latrines, although this has improved since 2012 when around 14% of these households did not have hygienic or ring slab latrines. Ninety-five percent of the CDSP IV households have received sanitary latrines from this project.

3.7 Health and family planning

The study investigated four areas of health practices of the char dwellers: washing hands before taking food and after returning from latrine, immunization of children, visits of Community Health Workers, and use of family planning methods (see Table 10 below).

Table 10: Washing hands before taking food and after return from latrine (% of HH)

	CDSP-IV Baseline	CDSP-I,II	CDSP-III	CDSP-IV
Washing hands before taking food				
Do wash hands		100	100	100
Wash with plain water	96	47	46	44
Wash with soap	4	53	54	57
Washing hands after return from latrine				
Do wash hands		100	99	100
Wash with plain water	94	9	11	16
Wash with soap	0	89	82	84
Wash with ash	6	2	7	1
Sample size (n)	1400	199	200	200

All households said that they washed their hands before meals. Compared to the AOS of 2012 in the CDSP I/II and III areas, the percentage of people washing hands by soap before taking food shows a significant improvement - from around 18% to about 54%, but the improvement in CDSP IV is larger - from only 4% to 57%. Washing hands after return from the latrine has also significantly improved across all CDSP areas – but more so in CDSP IV. In CDSP I&II only 28% of households reported using soap or ash to wash hands in 2012, but now it is 91%. In CDSP III it was 34% in 2012, and now is 89%. For CDSP IV use of soap or ash was only 6% at baseline against 85% now.

Table 11 shows that households across all CDSP areas have improved immunization of their children. Almost all (99%) of the households have ensured immunization of their children, a big improvement from only 52% at CDSP IV baseline, but also in the CDSP I, II and III areas, where the figures were just above 70% in 2012. The visits of Health Workers to the community have increased compared to the CDSP-IV baseline situation (6% to 100%), obviously because of the project, but also in the older CDSP areas the situation has improved since 2012 (from around 30% to 100%). The government health agencies have intensified their support in an organised way with the support of Save the Children through the Ma Moni programme, focusing on maternal and child health.

The use of family planning methods has improved significantly across all CDSP areas. In CDSP IV this is due to the intensive support from the PNGOs, with use of FP increasing from 34% to 100%. In CDSP I, II and III, the situation was already better in 2012, and increased general awareness, improved government services, and easy availability of FP materials must be the reason for the further improvement in those areas (from around 40% to almost 100%).

Table 11: Health and family planning

% of hh	**CDSP-IV Baseline**	**CDSP-I,II**	**CDSP-III**	**CDSP-IV**
Immunization of the children	52	99	99	99
how vaccinated: upazila health centre		1	0	0
special government program		98	99	99
Regular visit of Govt./NGO health worker	6	100	100	100
Use of family planning (% of eligible couples)	34	99	98	98
of users Temporary method	94	95	97	95
Permanent method	6	5	3	5
Sample size (n)	1400	199	196	196

3.8 Household and productive assets

A long list of family assets is examined yearly, see Table 12. Average total asset value in CDSP IV is over eight times (increase of 757%) the value during the baseline survey of 2011. Although the value of household assets has also increased in older CDSP areas, and remains higher than for CDSP IV, 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 588% in CDSP IV. As a result, the value of assets for CDSP IV households has increased from 60%-67% of the value for households in the older areas in 2012 to 77%-81% now.

Table 13 compares the shares of different categories of assets in total asset value. For CDSP IV households, at the time of baseline in 2011, livestock was the main asset, accounting for 62% of total asset value. Now the value of assets is more evenly divided between the four categories of: (i) household assets (furniture, domestic electrical goods, bicycles, motorcycles and ornaments/jewellery); (ii) productive assets for non-farm enterprises (boats, nets, shops, sewing machine, transport vehicles); (iii) productive assets for farm enterprises (trees, farm machinery); and (iv) livestock (including poultry). Households in the older CDSP areas have a higher proportion of farm assets with livestock being a lower proportion.

In CDSP IV there has been a general increase in household assets with an increasing proportion of households reporting ownership of fans (0.2% to 23% of households), almira (5% to 36%), chair/table (28% to 84%), bicycle (7% to 21%), mobile phone (46% to 96%), and ornaments/jewellery (54% to 96%). In 2011 no households reported ownership of solar systems, but now these are owned by 69% of households. Ornaments and solar systems are now the two most valuable household assets, accounting for over half of the total value of household assets.

Table 12: Household assets (households in percent and value in Taka)

Asset		CDSP I & II		CDSP III		CDSP IV	
		% of hh	Avg Tk	% of hh	Avg Tk	% of hh	Avg Tk
1	Cot/ *Khaat*	100%	7,633	100%	7,068	100%	4,736
2	Almira	49%	5,563	47%	3,441	36%	3,793
3	Showcase	56%	5,369	50%	4,797	28%	6,545
4	Chair/table	95%	2,886	91%	2,925	84%	2,307
5	*Shinduk* (Wooden box/Trunk-Tin)	53%	3,755	58%	5,032	67%	4,242
6	*Alna* (clothes rack/wardrobe)	52%	893	36%	1,068	33%	730
7	Ceiling/Table Fan	33%	1,482	28%	1,476	23%	784
8	Radio/Cassette Player	1%	4,000	2%	2,000	0%	-
9	B&W TV	2%	4,750	1%	3,500	0%	-
10	Colour TV	6%	9,091	4%	5,500	2%	7,500
11	Mobile Phone	94%	4,091	94%	5,272	96%	3,052
12	Sewing machine	14%	9,354	10%	5,484	13%	6,977
13	Ornaments	91%	26,821	89%	27,808	91%	20,535
14	Bicycle	38%	6,503	25%	5,450	21%	4,607
15	*Rickshaw*/Van	4%	45,643	3%	11,750	2%	9,333
16	*Motor cycle*	10%	74,316	8%	56,625	8%	72,667
17	Auto rickshaw battery operated	2%	40,000	0%		1%	120,000
18	Sprayer	14%	782	21%	956	41%	856
19	Laptop	1%	1,500	0%		1%	1,500
20	Bullock cart	0%		0%		1%	10,000
21	Solar	77%	20,025	73%	18,806	69%	18,478
22	Shop with land ownership	17%	500,030	20%	233,077	17%	376,667
23	Tractor for cultivation	3%	76,000	2%	50,000	5%	90,000
24	Boat	0%		0.5%	80,000	1%	54,000
25	Mechanized boat	2%	135,000	6%	227,083	2%	130,000
26	Thresher	1%	4,000	9%	5,853	7%	4,131
27	Water pump	5%	11,580	3%	8,500	6%	22,850
28	Fishing net	66%	6,550	77%	18,065	82%	7,811
29	Fruit/timber trees	100%	130,970	99%	175,501	99%	87,971
30	Cow	48%	89,525	58%	70,722	78%	77,446
31	Buffalos	1%	330,000	0.5%	180,000	2%	336,667
32	Goat	21%	6,321	40%	5,353	26%	6,327
33	Sheep	3%	7,275	3%	6,883	2%	62,667
34	Chicken	95%	2,577	95%	3,840	99%	3,209
35	Duck / goose	95%	4,335	91%	3,730	97%	3,245
36	Pigeon	21%	2,129	13%	2,575	12%	1,988
37	Rice husking machine	1%	120,000	3%	14,833	2%	70,000
38	Trolley motorized	1%	120,000	1%	2,500	1%	150,000
39	CNG Auto	1%	380,000	0.5%	4,900	0%	-
40	Others	15%	240,448	7%	86,593	8%	62,120
	Average total asset value		393,873		374,242		301,418

Asset value is the average per household for those households reporting the asset

Table 13: Share of different asset categories in total asset value

Category of assets	Baseline CDSP IV	CDSP I & II	CDSP III	CDSP IV	Change for CDSP IV	Major CDSP IV assets 2016 (% of category total)
Household assets	21%	19%	18%	18%	642%	ornaments (34%), solar system (23%)
Non-farm enterprises	7%	24%	20%	24%	2872%	shop with land (85%)
Farm assets	10%	34%	47%	31%	2580%	trees (92%)
Livestock	62%	14%	14%	25%	242%	cows (81%)
Other assets	0%	9%	2%	2%		
Total	100%	100%	100%	100%	757%	
Total value per household Taka'000	35.2	393.9	374.2	301.4		

The proportion of productive farm and non-farm assets has increased in CDSP IV from 17% to 55% (but CDSP I/II and III have 58% of assets in these two categories, while for CDSP II it is 67%). The most valuable non-farm productive asset are shops with land - these now account for 85% of asset value in this category and are owned by 17% of CDSP IV households. The farm productive asset category is dominated by timber and fruit trees[2], which account for 92% of asset value in this category and are now owned by 99% of households compared to 24% at baseline. In livestock, cows account for 81% of total asset value and are owned by 78% of households. The five main assets from the four categories (ornaments, solar systems, shops, trees and cows) together account for 80% of total asset value - with the latter three assets being two-thirds of the total value.

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 28% of the total value of assets owned by households in CDSP IV.

3.9 Annual household income

The proportion of households reporting income from a range of farm and non-farm sources in CDSP IV equals or exceeds that for the older CDSP areas (Table 14). The only sources where fewer CDSP IV households report getting an income are business and skilled work in the non-farm sector and date juice tapping in the farm sector. The wide range of income sources for CDSP IV households may reflect that individual sources still have limited potential and, as the economy develops, households will increasingly specialise. The diversity of income sources could also reflect the range of different livelihoods that were supported by CDSP IV – which encouraged households to get involved in additional activities.

Table 15 shows the average annual income of the households from different sources. The total average annual incomes of the sampled households in CDSP IV is Tk.280,243, with CDSP I&II and CDSP III households earning about 10% more. Although income in all CDSP areas continues to rise, since the 2016 AOS, the increase in CDSP IV has been 48%, greater than in CDSP I&II (34%) and CDSP III (24%).

For CDSP IV, income is split between 40% from the farm sector and 60% from the non-farm sector (compared with a 42%-58% split last year). The share from the farm sector is somewhat higher than at baseline in 2011 (38%). In the older CDSP areas the share of income from the farm sector is lower at 28%-30% - and this share has also declined from 38-48% since 2012.

[2] Timber and fruit trees are valued by respondents in terms of their value for timber and firewood

Table 14: Sources of income

Sector	Source of income	Percentage of households reporting income source		
		CDSP I & II	CDSP III	CDSP IV
Agriculture related	Field crops	70%	78%	87%
	Homestead veg.	88%	94%	98%
	Aquaculture	74%	57%	75%
	Forestry/trees	2%	14%	16%
	Livestock	51%	52%	75%
	Poultry	95%	98%	97%
	Date juice	30%	30%	20%
Non-farm sectors	Daily labour	52%	52%	63%
	Jobs	29%	22%	28%
	Skilled work	14%	6%	7%
	Petty trade	15%	21%	22%
	Business	10%	11%	6%
	Rickshaw etc	3%	7%	2%
	Fishing	28%	26%	45%
	Remittance	8%	6%	10%
	Handicrafts	42%	42%	66%
	Pension & social	5%	3%	6%
	Begging	4%	2%	4%
	Other	66%	69%	69%

Within the farm sector for CDSP IV, the share of crops has declined since 2011 - from 60% to 37%, with growth in the other, higher value, farm sub-sectors apart from aquaculture. In both the CDSP IV and III areas livestock rearing contributes more, and crops slightly less, than in the CDSP I&II area. Within the non-farm sector, the proportion of income from wages and salaries has fallen, although this still accounts for almost half of non-farm income, with growth of other sources, especially petty trade. Although overall average income for CDSP IV households has not yet caught up with those in CDSP I/II and III, total income from agriculture is now higher, but CDSP IV households still have significantly less non-farm income.

Table 15: Annual household income from different sources

Income source	Annual income Taka				Share of annual income				CDSP IV increase
	CDSP IV Baseline	CDSP I &II	CDSP III	CDSP IV	CDSP IV Baseline	CDSP I &II	CDSP III	CDSP IV	
Agriculture-related									
Field crops	15,617	41,408	32,337	41,976	60.1%	44.3%	37.9%	37.7%	169%
Homestead veg.	3,115	13,995	13,140	16,921	12.0%	15.0%	15.4%	15.2%	443%
Aquaculture	2,713	7,765	5,954	8,391	10.4%	8.3%	7.0%	7.5%	209%
Forestry/trees		45	324	312	0.0%	0.0%	0.4%	0.3%	
Livestock	2,666	21,649	24,427	31,676	10.3%	23.1%	28.6%	28.5%	1088%
Poultry	1,887	7,361	8,018	11,085	7.3%	7.9%	9.4%	10.0%	487%
Date juice		1,293	1,170	886		1.4%	1.4%	0.8%	
sub-total	25,998	93,515	85,369	111,247	100.0%	100.0%	100.0%	100.0%	328%
Non-farm									
Daily labour	33,378	44,208	49,150	55,897	72.6%	20.6%	22.0%	33.1%	132%
Jobs		58,754	25,710	14,510		27.3%	11.5%	8.6%	
Skilled work		18,375	7,585	7,106		8.5%	3.4%	4.2%	
Petty trade	6,879	24,270	30,555	28,254	15.0%	11.3%	13.7%	16.7%	521%
Business		19,565	17,005	14,492		9.1%	7.6%	8.6%	
Rickshaw etc	2,749	1,090	10,345	1,722	6.0%	0.5%	4.6%	1.0%	-37%
Fishing	2,093	7,227	22,065	13,598	4.6%	3.4%	9.9%	8.0%	550%
Remittance	601	16,143	42,760	15,445	1.3%	7.5%	19.1%	9.1%	2470%
Handicrafts	252	4,376	2,281	3,916	0.5%	2.0%	1.0%	2.3%	1454%
Pension & social		1,100	90	352		0.5%	0.0%	0.2%	
Begging		249	397	582		0.1%	0.2%	0.3%	
Other		19,636	15,407	13,122	0.0%	9.1%	6.9%	7.8%	
sub-total	45,952	214,989	223,349	168,995	100.0%	100.0%	100.0%	100.0%	268%
Total farm	25,998	93,515	85,369	111,247	36.1%	30.3%	27.7%	39.7%	328%
Total non-farm	45,952	214,989	223,349	168,995	63.9%	69.7%	72.3%	60.3%	268%
Total	71,950	308,504	308,718	280,243	100.0%	100.0%	100.0%	100.0%	289%

Income from farm and non-farm enterprises is estimated as being net of enterprise operating costs.
Average income in Taka is average for all sample households, not just the households with that income source

Survey respondents were asked to place their own households in one of four wealth ranks – at the present time and five years ago. Table 16 shows that five years ago most households were in the poor and very poor categories but, compared with the other areas, very few of the CDSP IV households were in the medium or rich categories. Now, there has been a general move up wealth ranks, with almost no households saying that they are still very poor. CDSP III seems to have a higher proportion of poor households than either CDSP I&II or CDSP IV. Since these are self-assessments, caution should be used in drawing conclusions from this data.

Table 16: Wealth ranking

	CDSP 1&2		CDSP 3		CDSP 4	
	now	5 years ago	now	5 years ago	now	5 years ago
Rich	29%	1%	22%	0%	22%	0%
Medium	60%	15%	61%	14%	67%	9%
Poor	11%	49%	18%	41%	12%	46%
Very poor	1%	37%	0%	46%	0%	46%
Total	100%	100%	100%	100%	100%	100%

3.10 Crop production

3.10.1 Damage to crops from salinity, flooding and waterlogging

In this AOS a new question was added to obtain the opinion of farmers on the extent of damage to different crops from salinity, flooding and waterlogging, and the extent to which is has changed over time. A core intervention of CDSP has been water management infrastructure to reduce such damage and improve the environment for crop growth.

Table 17: Damage to crops

Source of damage	Crop affected	Degree of damage	Percentage of farmers reporting damage		
			CDSP I&II	CDSP III	CDSP IV
Salinity	Aman	no damage	33%	28%	18%
		Slight	58%	69%	76%
		moderate/heavy	8%	3%	6%
	Rabi crops	no damage	4%	5%	5%
		Slight	74%	81%	70%
		moderate/heavy	22%	14%	25%
	Trees	no damage	67%	76%	47%
		Slight	33%	22%	47%
		moderate/heavy	0%	2%	7%
Flooding	Aman	no damage	19%	12%	7%
		Slight	58%	83%	78%
		moderate/heavy	23%	5%	16%
	Rabi crops	no damage	6%	9%	2%
		Slight	44%	63%	69%
		moderate/heavy	49%	28%	29%
	Trees	no damage	67%	66%	39%
		Slight	33%	30%	51%
		moderate/heavy	0%	4%	10%
Waterlogging	Aman	no damage	35%	29%	39%
		Slight	59%	70%	57%
		moderate/heavy	7%	1%	5%
	Rabi crops	no damage	26%	18%	30%
		Slight	54%	64%	58%
		moderate/heavy	21%	17%	12%
	Trees	no damage	75%	83%	70%
		Slight	19%	16%	27%
		moderate/heavy	6%	1%	3%

Data in Table 17 shows that most farmers report slight damage to aman paddy and rabi crops from salinity, flooding and waterlogging, but fewer report damage to trees. Damage to aman seems to be more common in the CDSP IV area than in the older areas, but there is less difference between the areas for rabi crops – although in CDSP IV there may be slightly more salt damage and less flood damage and waterlogging.

Respondents were also asked about the trend in this damage over the last one year and over a longer five year period. No respondents reported any increase in damage. Almost all CDSP I&II and III farmers said damage had reduced over the last five years, as did around two-thirds to three quarters of CDSP IV farmers. The reduction in damage over the last one year is, as would be expected, less dramatic, but with more improvement in salinity and flooding in the older CDSP areas. This information leads to the following conclusions: (i) the cropping environment is continuing to improve in the older CDSP areas – there is no evidence that water improvements are not being sustained: and (ii) much of the improvement is yet to take place in CDSP IV.

Table 18: Trends in crop damage

	CDSP I&II		CDSP III		CDSP IV	
	Trend in last one year	Trend over 5 years	Trend in last one year	Trend over 5 years	Trend in last one year	Trend over 5 years
Salinity reducing for						
Aman	56%	96%	31%	97%	28%	76%
rabi crops	56%	99%	30%	97%	18%	62%
Homestead veg.	76%	100%	35%	98%	32%	74%
Flooding reducing for						
Aman	49%	97%	31%	98%	29%	76%
rabi crops	48%	97%	34%	100%	24%	70%
Homestead veg.	77%	99%	38%	99%	37%	75%
Drainage improving for						
Aman	57%	99%	36%	99%	46%	85%
rabi crops	62%	97%	36%	97%	46%	77%
Homestead veg.	70%	93%	45%	98%	52%	82%

More detailed data is in Annex 3. This includes information on damage to boro – although the small number of farmers growing the crop mean the sample is too small to draw firm conclusions.

3.10.2 Cultivated area

Data in Table 19 shows that all sample households have homestead land, and almost all have a pond – so interventions in homestead agriculture and aquaculture have the potential to reach virtually all households. Between 62% (CDSP I&II) and 83% (CDSP IV) have cultivated land for field crop production. The average area per household of cultivated land is higher in the CDSP IV sample – as is the area of fish pond and total area operated per household. With a greater proportion of households cultivating a larger area of land, crop farming is more important in CDSP IV than in the older areas.

Table 19: Land utilisation

	Land type	**CDSP I&II**	**CDSP III**	**CDSP IV**
Percentage of households who operate	homestead	100%	100%	100%
	pond	98%	97%	99%
	cultivated	62%	70%	83%
	fallow	3%	9%	10%
Average are per household in decimal	homestead	33	30	31
	pond	24	24	29
	cultivated	100	85	132
	fallow	1	3	4
	total	158	141	196
	Total sample (n)	200	200	200

3.10.3 Crop area and cropping intensity

The 2016 AOS recorded a cropping intensity in CDSP IV of only 111% - not much of an increase compared to 105% at baseline, and lower than recorded in earlier AOS, and there were no reports from farmers that cropping intensity had fallen. A special effort was made in this AOS to accurately measure cropping intensity. An additional question was added to ask farmers the amount of land that was single, double and triple cropped – this was how cropping intensity data was obtained for earlier agricultural surveys of CDSP IV.

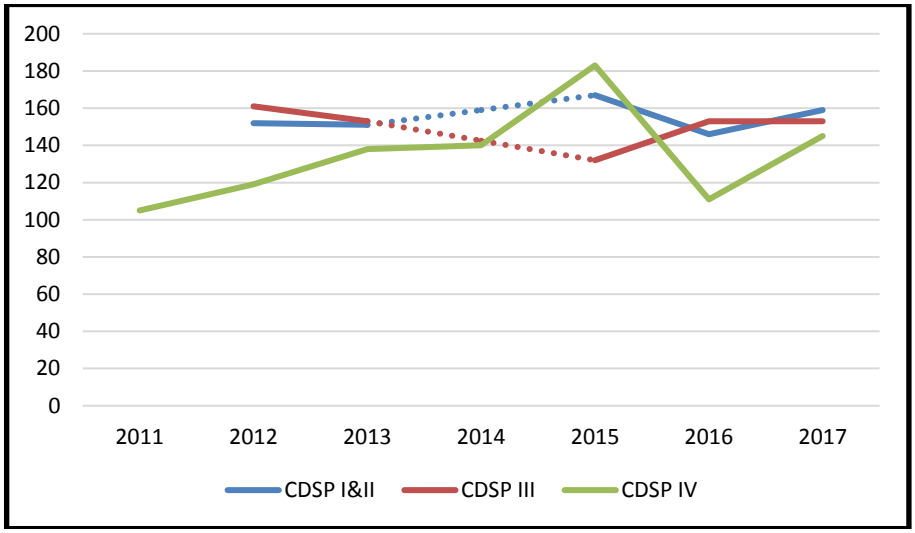
Calculations of cropping intensity in Table 20 use two methods. Method 1 is the same as earlier AOS – the total area of all crops grown divided by the total area of land cultivated. Method 2 is the area of land single, double and triple cropped – as described in the preceding paragraph. Cropping intensities calculated by these two methods give similar results (within the expected margin of error) for each of the three survey areas. Cropping intensity for CDSP I&II is 157% (method 1) or 158% (method 2), for CDSP the result is 152% / 153%, and for CDSP IV 145% / 145%. These results are consistent with data from earlier AOS – see Figure 7 (although some surveys have generated outlier numbers) and show a slow increase in the older areas (around 152% to

158% in CDSP I&II, 145% to 152% in CDSP III) and a slightly larger increase in CDSP IV (105% to 145%). This suggests that further increases in cropping intensity may be expected in CDSP IV, but the overall increase in cropping intensity is modest – and much less than the overall increase in crop production due to higher yields and a switch to more valuable crops.

Table 20: Average area cropped and cropping intensity.

			CDSP I&II	CDSP III	CDSP IV
Method 1	Total area of field crops	decimal/hh	257	184	229
	Total area cultivated	decimal/hh	164	122	158
	Cropping intensity		157%	152%	145%
	Sample size (n)		122	140	167
Method 2	Area cropped once	decimal/hh	55.3	50.5	84.2
	Area cropped twice	decimal/hh	71.1	51.4	57.8
	Area cropped thrice	decimal/hh	1.9	1.7	3.5
	Total area cropped	decimal/hh	128.3	103.5	145.5
	Total area of field crops	decimal/hh	203.3	158.3	210.5
	Cropping intensity		158%	153%	145%
	Sample size (n)		166	180	196

Figure 7: Cropping intensity



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

Cropping in all CDSP areas is dominated by paddy, which is cultivated by over 90% of farmers (Table 21). Paddy is predominantly rainfed transplanted aman, with very little aus now being grown. Boro is becoming significant in CDSP I&II and CDSP IV. This data refers to the 2016-17 boro crop and in the current 2017-18 season 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.*

Table 21: Cultivation of different crops

		percentage of farmers who grow				Percentage of cultivated area		
		CDSP 1&2	CDSP 3	CDSP 4		CDSP 1&2	CDSP 3	CDSP 4
Cereals	Aus	0%	0%	0%		0.0%	0.0%	0.0%
	Aman	89%	94%	90%		89.4%	92.4%	94.1%
	Boro	21%	5%	14%		16.4%	5.8%	8.4%
	Maize	2%	1%	0%		0.7%	0.5%	0.0%
	Millet	0%	1%	0%		0.0%	0.2%	0.0%
	Total					106.6%	98.9%	102.5%
Pulses	keshari[1]	20%	11%	17%		12.5%	8.0%	20.4%
	mung[2]	4%	5%	0%		1.1%	1.5%	0.0%
	felon[3]	19%	21%	9%		1.7%	3.6%	1.1%
	moshuri[4]	2%	1%	1%		0.4%	0.1%	0.0%
	mash kolai[5]	2%	0%	1%		0.2%	0.0%	0.0%
	Total					15.9%	13.1%	21.6%
Oilseeds	soybean	30%	36%	7%		17.8%	26.2%	2.6%
	mustard	1%	0%	4%		0.0%	0.0%	2.3%
	groundnut	16%	11%	4%		4.2%	3.0%	0.9%
	sesame	2%	1%	3%		0.4%	0.6%	1.7%
	Total					22.4%	29.8%	7.4%
Spices	Chilli	46%	47%	37%		4.5%	6.2%	3.7%
	Onion	0%	0%	0%		0.0%	0.0%	0.0%
	Garlic	1%	6%	7%		0.0%	0.3%	0.5%
	coriander	1%	1%	1%		0.0%	0.0%	0.0%
	turmeric	0%	0%	0%		0.0%	0.0%	0.0%
	Total					4.5%	6.5%	4.2%
Roots and tubers	Sweet pot	15%	11%	13%		0.9%	0.8%	0.8%
	Cassava	2%	0%	1%		1.2%	0.0%	0.1%
	Total					2.1%	0.8%	0.9%
Vegetables	country bean	12%	6%	31%		0.5%	0.3%	2.6%
	long bean	11%	7%	19%		0.5%	0.5%	1.8%
	other bean	2%	2%	1%		0.1%	0.1%	0.0%
	ridge gourd	0%	0%	0%		0.0%	0.0%	0.0%
	bottle gourd	1%	0%	0%		0.0%	0.0%	0.0%
	sweet gourd	2%	0%	3%		0.1%	0.0%	0.2%
	bitter gourd	3%	1%	1%		0.1%	0.2%	0.2%
	ribbed gourd	1%	1%	1%		0.0%	0.0%	0.2%
	Okra	5%	4%	4%		1.2%	0.5%	0.1%
	cucumber	5%	2%	10%		0.3%	0.2%	1.4%
	Radish	6%	4%	3%		0.1%	0.2%	0.1%
	Carrot	2%	1%	0%		0.1%	0.1%	0.0%
	cauliflower	0%	0%	1%		0.0%	0.0%	0.2%
	spinach	1%	0%	1%		0.0%	0.0%	0.0%
	lal shak	5%	3%	3%		0.1%	0.1%	0.1%
	puishak	1%	0%	1%		0.0%	0.0%	0.0%
	Tomato	5%	3%	4%		0.1%	0.1%	0.1%
	Brinjal	5%	4%	5%		0.2%	0.1%	0.2%
	Total					3.4%	2.3%	7.2%
Melon	Water melon	3%	0%	2%		1.7%	0.0%	1.0%
	Musk melon	0%	0%	1%		0.0%	0.0%	0.0%
Other	Other	0%	1%	1%		0.0%	0.1%	0.2%
Total	Total	0%	0%	0%		156.6%	151.5%	145.2%
	N	122	140	167	Total	20,029	17,031	26,333
	% of all hh	61%	70%	84%	decimal			

[1]Grass pea (Lathyrus sativus), [2]Green gram, [3]Cow pea, [4]Lentil, [5]Black gram

Apart from paddy, some farmers grow pulses, and keshari (grass pea) is still common in CDSP IV. This low-value crop is broadcast into the aman paddy prior to its harvest. 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 areas grow vegetables and spices on a field scale, but the area grown is relatively small – amounting to around 8% of cultivated land in CDSP I&II and III, and 11% in CDSP IV. Chilli is the most important spice crop, with beans (country and long bean) being important vegetables in CDSP IV and also CDSP III. In CDSP I&II okra is the most widely grown vegetable.

In CDSP IV, 3.2% of cultivated land is used by the sorjon system (integrated vegetable-fish production involving raised beds). The total area of field vegetables is equal to 7.2% of cultivated land. Sorjon is an intensive system, with multiple cropping, and so is likely to account for most of the field vegetable cultivation in CDSP IV. Moreover CDSP IV vegetables are predominantly the climbing vegetables (beans, gourds and cucumber) that are grown in sorjon systems. Sorjon cultivation was not reported in the older CDSP areas. The area of field vegetables (as a proportion of cultivated land) produced in the older CDSP zones is less than half of that in CDSP IV. Sorjon would seem to be an important factor in the expansion of field vegetables in CDSP IV.

3.10.4 Production, consumption and sale of field crops

Details of paddy production are in Table 22. The predominant type of paddy now grown in all three areas is HYV aman, but 12% of farmers in still grow a local aman variety, Rajashail. No other type of local aman was reported, nor was any local aus, although a very few farmers grow HYV aus.

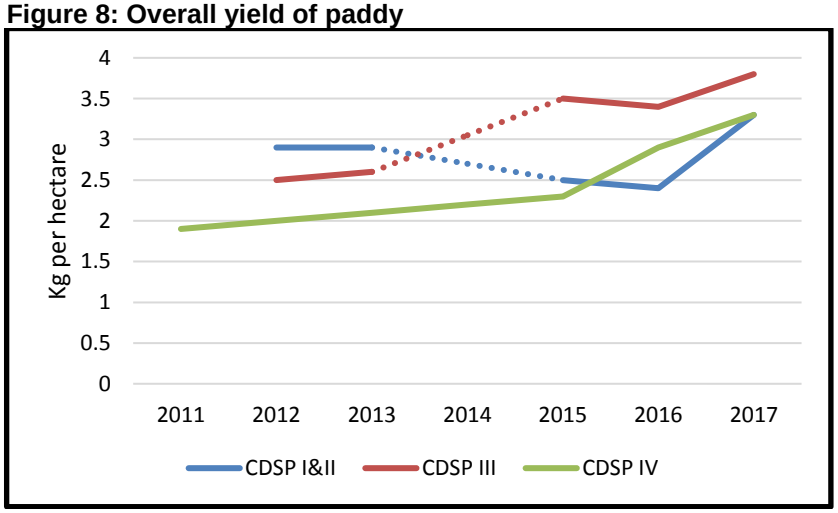
Table 22: Paddy production

Type of paddy	CDSP I and II				CDSP III				CDSP IV			
	no. of hh	% of hh[1]	decimals	dec./hh[2]	no. of hh	% of hh[1]	decimals	dec./hh[2]	no. of hh	% of hh[1]	decimals	dec./hh[2]
Aus HYV	0	0%	0	0	3	2%	296	99	1	1%	56	56
Aman Razashail	2	2%	356	178	6	4%	366	61	19	12%	5523	291
Aman HYV	108	88%	17887	166	128	93%	16206	127	138	85%	18390	133
Boro HYV/hybrid	27	22%	3367	125	4	3%	130	33	21	13%	2149	102
All types of paddy	123	100%	21610	176	138	100%	16998	123	162	100%	26118	161

[1] Percentage of all paddy producers. [2] Average area per farmer for those farmers who grow the crop.

Figure 8 shows trends for the overall yield of all types of paddy. This shows a moderate upward trend in yields in the older CDSP areas, and a stronger upward trend in CDSP IV, which has now caught up with CDSP I&II.

Figure 8: Overall yield of paddy



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

Based on data on the area grown and total production, the yield of HYV aman has been calculated (Table 23). Too few farmers grow other types of paddy to give an adequate sample.

Table 23: Yield of HYV aman paddy

	Kg per ha	sample n
CDSP I&II	3203	108
CDSP III	3779	127
CDSP IV	3417	133

Table 24 has data on paddy production and utilisation. In CDSP IV, 81% of all households grow paddy – with growers producing on average 2.16 tons per year. Average production per grower is higher in CDSP I&II, but with a smaller proportion of households producing paddy, total paddy production for all households is higher in CDSP IV than in the older areas. In all areas, a slightly larger proportion of households report consuming

and/or selling paddy – as well as producers this includes some households who obtain paddy from tenants who are sharecropping their land. On average, in CDSP IV, 85% of households have an average of 2.09 tons of paddy, of which 1.31 tons is consumed and 0.77 tons sold. Paddy is sold by 40% of all households (and less than half of all households who grow paddy or receive paddy as rent for land). Overall just over one third of total paddy production is sold in all the CDSP areas.

Table 24: Utilisation of paddy

	CDSP I and II				CDSP III				CDSP IV			
	no.of hh	% of hh[1]	Tons	ton/hh	no.of hh	% of hh[1]	tons	ton/hh	no.of hh	% of hh[1]	tons	ton/hh
Total paddy produced	124	62%	285.9	2.31[2]	138	69%	258.5	1.87[2]	161	81%	347.0	2.16[2]
Consumed at home	140	70%	197.0	1.40[3]	153	77%	193.9	1.25[3]	169	85%	222.1	1.31[3]
Kept for seed	6	3%	0.6	0.00[3]	11	6%	0.7	0.00[3]	18	9%	2.5	0.01[3]
Sold	75	38%	116.7	0.83[3]	57	29%	107.1	0.69[3]	79	40%	130.9	0.77[3]
Total paddy utilised	141	71%	314.9	2.23[3]	155	78%	301.7	1.95[3]	170	85%	355.6	2.09[3]
N	200	100%			200	100%			200	100%[1]		
Percent of paddy sold			37%				35%				37%	

[1] Percentage of all households. [2] Average for households producing paddy [3] Average for all households utilising paddy.

Production and sales of other field crops are shown in Table 25. This shows that, in CDSP IV, field vegetables are the most important crop in terms of the average value of sales for all crop producers. Oilseed are the principal crop sold in CDSP III, while oilseeds and field vegetables are of equal importance in CDSP I&II.

Table 25: Pulses, oilseeds and field vegetables

	% of hh grow[1]	Avg area decimal/hh[2]	% of hh who sell[2]	Avg sales Taka/year[3]	Avg all HH Taka/year[4]	% of crop sold[5]
CDSP I and II						
Wheat maize & millet	5%	47	100%	10383	511	67%
Pulse crops	34%	73	100%	4735	1630	62%
Oilseeds	40%	90	100%	9614	3861	83%
Root crops	16%	10	70%	4554	523	41%
Spices	47%	19	93%	3392	1474	44%
Field vegetable	24%	29	97%	17400	3993	68%
All crop producers (n)	122				122	
CDSP III						
Wheat maize & millet	1%	40	100%	2175	31	50%
Pulse crops	31%	52	77%	4864	1146	47%
Oilseeds	39%	88	100%	11941	4947	87%
Root crops	14%	16	80%	3450	394	34%
Spices	46%	17	78%	3356	1222	34%
Field vegetable	14%	15	100%	13219	1983	73%
All crop producers (n)	140				140	
CDSP IV						
Wheat maize & millet	1%	76	100%	1750	31	57%
Pulse crops	25%	132	100%	5472	1409	71%
Oilseeds	16%	72	100%	5094	824	89%
Root crops	13%	11	77%	4015	409	40%
Spices	40%	17	89%	3917	1384	49%
Field vegetable	40%	21	100%	17955	7204	62%
All crop producers (n)	167				167	

[1] Percentage of all crop producers. [2] Average/percentage of households who grow the crop. [3] Average sales value for those households who sell the crop. [4] Average value of sales for all crop producers (whether or not th grow or sell the crop), [5.] Percent of total volume produced that is sold.

3.10.5 Homestead vegetable production

Data in Table 26 shows that 95% of CDSP IV households cultivate vegetables, root crops and spices around their homesteads, compared with 86% in CDSP IV and 65% in CDSP I&II. The higher adoption of this activity in CDSP III and IV may be the result of the support that these projects have given to homestead production. The main spice grown is turmeric. The main vegetables cultivated around homesteads are climbing vegetables such as various types of beans and gourds. Leafy vegetables, tomatoes and brinjal are also widely grown.

Table 26: Types of homestead crops

		percent of homestead farmers who grow				Percentage of total area of homestead crops		
Homestead crops		CDSP 1&2	CDSP 3	CDSP 4		CDSP 1&2	CDSP 3	CDSP 4
Spices	Chilli	2%	2%	6%		0.9%	0.8%	2.2%
	Onion	0%	0%	0%		0.0%	0.0%	0.0%
	Garlic	1%	1%	1%		0.1%	0.2%	0.1%
	Coriander	3%	1%	2%		0.3%	0.2%	0.1%
	Turmeric	12%	10%	13%		1.3%	2.9%	1.3%
	sub-total					2.5%	4.1%	3.7%
Roots &	Sweet pot	0%	0%	1%		0.0%	0.0%	0.2%
Tuber	Cassava	0%	2%	1%		0.0%	0.7%	0.1%
	sub-total					0.0%	0.7%	0.3%
Vegetables	country bean	64%	49%	85%		17.2%	14.7%	27.3%
	long bean	83%	64%	65%		24.6%	22.2%	19.8%
	other bean	19%	27%	7%		6.7%	11.0%	1.9%
	ridge gourd	0%	1%	1%		0.0%	0.1%	0.0%
	bottle gourd	31%	14%	23%		2.3%	1.6%	2.0%
	sweet gourd	17%	8%	12%		1.6%	0.9%	1.3%
	bitter gourd	22%	17%	16%		4.0%	5.1%	3.3%
	ribbed gourd	40%	22%	36%		2.9%	4.7%	3.4%
	sponge gourd	40%	27%	35%		2.8%	3.0%	3.1%
	Okra	9%	14%	6%		1.6%	3.5%	0.8%
	Cucumber	35%	18%	39%		9.9%	6.6%	13.6%
	Radish	25%	19%	21%		5.6%	4.0%	3.8%
	Carrot	5%	2%	2%		0.5%	0.4%	0.2%
	cauliflower	1%	0%	0%		0.2%	0.0%	0.0%
	Cabbage	1%	0%	0%		0.1%	0.0%	0.0%
	Spinach	9%	11%	13%		1.2%	1.8%	1.5%
	lal shak	36%	38%	37%		4.6%	7.7%	5.1%
	Puishak	21%	11%	22%		2.2%	1.2%	2.3%
	Tomato	35%	10%	27%		4.6%	1.5%	2.9%
	Brinjal	36%	22%	27%		4.8%	5.1%	3.7%
	sub-total					97.5%	95.1%	95.9%
Total number of growers		130	171	190				
Total growers as % of all hh		65%	86%	95%	Total	100%	100%	100%
	All hh (n)	200	200	200	Decimals per HH	10	11	16

Over 90% of homestead vegetable growers sell some of their production (Table 27) – with more being sold in the in the CDSP IV area – where 99% of growers make sales and average sales are Tk11,234 per grower per year – this being about 62% of total homestead production. The total value of sales of homestead vegetables

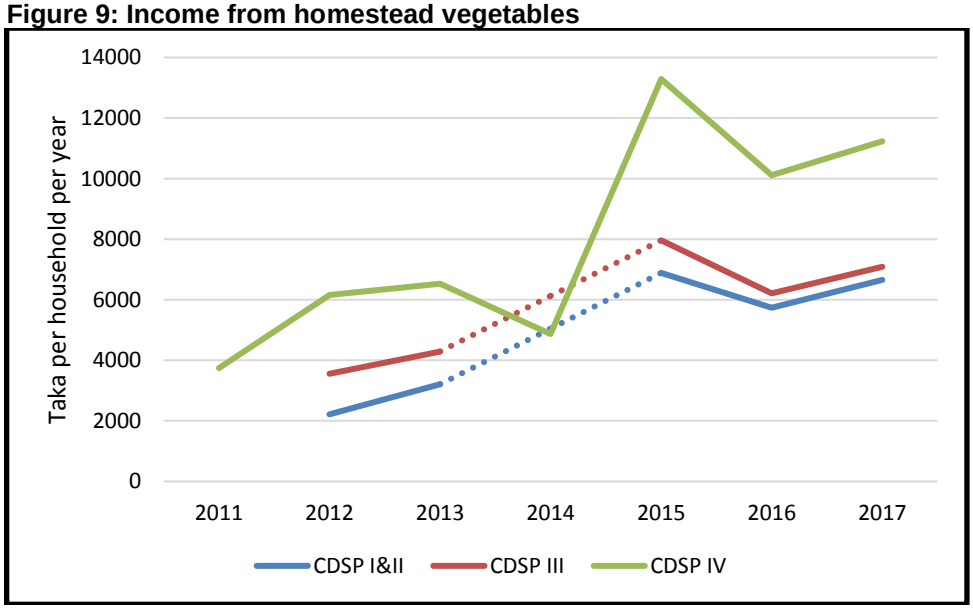
exceeds that of field vegetables in all three CDSP areas. In CDSP IV 64% of sales comes from homesteads, and over 80% in the older areas (as field vegetable production is much lower here). Total sales of vegetables (field and homestead) in CDSP IV are over double that of CDSP III and over three times that of CDSP I&II.

Table 27: Sales of homestead vegetables

	CDSP 1&2	CDSP 3	CDSP 4
Households growing homestead vegetables as percent of all households	65%	86%	95%
Households selling homestead vegetables as percent of all growers	90%	98%	99%
Average sales per grower per year – Taka	Tk.6,660	Tk.7,089	Tk.11,234
Average percentage of homestead production that is sold	35%	27%	62%
Average sales of homestead vegetables – average for all 200 sample household	Tk,4329	Tk.6,097	Tk.10,617
Average sales of field vegetables – average for all 200 sample household	Tk.899	Tk.1,388	Tk.6,015
Average total sales of vegetables – average for all 200 sample household	Tk.5,228	Tk.7,485	Tk16,632
Homestead sales as percentage of total sales	83%	81%	64%

Figure 9 shows that income from homestead vegetables is higher in CDSP IV than in the older areas, and has increased, on average, at a faster rate. Data from different years may not be consistent – being either the value of sales or the value of total production – which may account for some of the sharp year to year fluctuations.

Figure 9: Income from homestead vegetables



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

3.10.6 Fruit and trees

All sample households in the three areas have fruit trees. CDSP IV households report on average, over 100 fruit trees. Although these are mostly banana (73 per household), almost all households report mango and guava trees. CDSP III households have almost as many fruit trees with CDSP I&II having on average 68. Almost all households report owning palm trees – mainly beetle nut followed by coconut. CDSP IV households own fewer palm trees than those in the older areas. Almost all households also report timber trees, with an average of 81 in both CDSP III and IV, and 99 in CDSP I&II. Taking all trees together, households in the three areas have much the same numbers of trees.

Table 28: Fruit and trees

	CDSP I&II		CDSP III		CDSP IV	
	% of hh	avg trees/hh	% of hh	avg trees/hh	% of hh	avg trees/hh
Fruit trees						
Guava	83%	3.2	93%	3.8	95%	5.5
Mango	97%	18.4	95%	14.5	95%	15.1
Banana	60%	34.5	80%	66.8	95%	72.9
Papaya	67%	1.9	74%	2.7	78%	2.5
Lemon	65%	1.5	61%	1.7	58%	1.1
Jamrul	31%	0.7	33%	0.9	29%	0.5
Starfruit	58%	1.2	43%	0.9	36%	0.6
Kul	82%	2.7	87%	3.0	91%	3.1
Other	66%	3.8	47%	2.5	56%	2.3
total fruit	99%	67.8	100%	96.8	100%	103.6
Palm trees						
Beetle	95%	39.8	88%	26.5	78%	17.4
Coconut	97%	20.5	94%	21.9	95%	11.7
Other	35%	3.1	42%	4.2	36%	3.8
total palm	99%	63.5	95%	53.1	97%	32.9
Timber trees						
Raintree	98%	41.8	96%	53.0	96%	46.1
Casuarina	54%	11.3	69%	10.1	69%	13.1
Mahogany	91%	37.1	78%	13.4	75%	17.0
Other	47%	8.5	33%	4.9	35%	6.8
total timber	99%	98.8	99%	81.4	97%	81.7
Total all trees		230.1		231.3		218.3
Sales of fruit	87%	6085	90%	5696	89%	4965
% consumed	93%	38%	97%	25%	96%	55%
Total hh (n)	200	200	200	200	200	200

Percentage of all sample households Average number for al sample households

Sales of fruit average Tk.4,965 for CDSP IV households, with more than half of production being consumed at home (Table 28). Somewhat higher sales are reported in the other CDSP areas, but with a small proportion being consumed at home. The survey did not collect specific information on firewood and timber sales, but some households reported this as part of household income – it was mostly included in the "other" category.

3.11 Poultry, livestock and aquaculture

3.11.1 Poultry

Table 29 shows that at least 95% of the households in all CDSP areas rear poultry. The average number of chickens per poultry keeping household has doubled in CDSP IV areas, and the number of ducks has also increased. Some CDSP IV households (14%) also keep pigeons, with a similar number in CDSP III and 21% in CDSP I&II. CDSP IV households may produce, consume and sell slightly more eggs than in the older areas, and certainly seem to consume over twice the number of ducks and chickens. Further data is in Annex 3.

Table 29: Poultry rearing

	CDSP-IV Baseline	CDSP-I &II	CDSP-III	CDSP-IV
HH rear poultry (% of all HH)	89	95	98	99
Average nos. of chicken per HH that own	6	10	12	12
Average nos. of duck per HH that own	7	9	10	9
Average nos. of pigeon per HH that own		9	8	8
Annual production of eggs (Nos./ HH)*	156	467	491	540
HH consumption of eggs (Nos./ HH per year)*	47	187	180	206
Income from eggs (Tk/ HH per year)*	817	2401	2739	2899
No of chickens & ducks consumed / HH /year*		15	16	41
No of chickens & ducks sold / HH /year*		12	15	14
Income from sales of chickens, ducks and pigeons (Tk/ HH per year)*		3844	4625	4414

'* average for all 200 sample households

3.11.2 Livestock

Table 30 shows that bovines (primarily cattle) rearing has slightly increased in CDSP IV and, with 78% of households involved, this activity is significantly more widespread than in CDSP I, II and III, and households own more animals. Despite increasing demand for milk and meat, the number of animals is more or less stable. Increasingly mechanized cultivation (tractors replacing draught animals) and reduced grazing on fallow land with the increase in crop cultivation, discourage households from keeping more cattle. There has been a switch to milk production and, compared to the baseline, production, consumption and sales have all greatly increased in CDSP IV. However, milk production and sales are higher in CDSP I&II.

Table 30: Cattle and buffalo

	CDSP-IV Baseline	CDSP-I &II	CDSP-III	CDSP-IV
Number of HH rearing cattle/buffalo (% of all HH)	75%	46%	55%	78%
Number of cattle/buffalo (average for all HH)		1.49	1.60	2.36
Number of HH with milking cows (% of all HH)		32%	32%	46%
Number of HH producing milk (% of dairy cow HH)		98%	94%	100%
Avg. milk production (Lt per year)	114	381	280	307
Avg. milk consumption (Lt per year)	64	119	102	120
Number of HH selling milk (% of dairy cow HH)		92%	92%	96%
Avg. income from milk (avg for dairy cow HH) Tk	2,850	12,981	8,844	8,542
Number of HH selling cattle (% of cattle HH)		75%	52%	75%
Number of animals sold (avg for cattle HH)		1.05	1.28	1.27
Income from animal sales (avg for cattle HH) Tk.		43,048	49,484	44,808

Beef fattening has become an important activity and 75% of CDSP cattle keeping households report sales in the last year, with average sales of 1.27 animals. Although the value of these sales appear 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 lower.

A significant proportion of cattle and buffalo are share-owned. This enables a poor household to keep an animal that belongs to another person, with production (milk, calves) being divided (usually 50-50) between the keeper and owner. Table 31 shows that 38% of CDSP IV households that own cattle/buffalo do so via share-ownership arrangements, and that 28% of animals are share-owned. Share ownership is less widespread in the older CDSP areas. More data on cattle and buffalo is in Annex 3.

Table 31: Share-ownership of cattle and buffalo

		owned	shared	Total*	n
CDSP I&II	% of households	84%	18%	101%	91
	% of animals	88%	12%	100%	297
CDSP III	% of households	82%	21%	103%	109
	% of animals	77%	23%	100%	316
CDSP IV	% of households	70%	38%	108%	154
	% of animals	72%	28%	100%	472

'* the total for households may exceed 100% as a few households have some animals that they own outright and other animals that are share-owned.

A minority of households keep goats, and a very few have sheep. In CDSP IV 25% of households own goats (including a limited amount of share-ownership) – compared with 39% in CDSP III and 20% in CDSP I&II. The proportion of households with goats in CDSP IV has increased – it was only 17% at baseline. On average each owning household will have around two animals and will sell a little more than one animal per year.

Table 32: Sheep and goats

		Goats				Sheep			
		Owners	Sample size	Animals per hh	Sample size	Owners	Sample size	Animals per hh	Sample size
		% of hh	n	Number	n	% of hh	n	Number	n
CDSP I&II	Owned	20%	200	2.21	39	1%	200	3.00	2
	Consume	5%	39	0.05	39	0%	2	0.00	2
	Sold	72%	39	1.36	39	100%	2	1.50	2
	Sales Tk			10254	28			8750	2
CDSP III	Owned	39%	200	1.85	78	0%	200		
	Consume	0%	78	0.00	78				
	Sold	41%	78	0.86	78				
	Sales Tk			7853	32				
CDSP IV	Owned	25%	200	2.04	50	1%	200	18	1
	Consume	4%	50	0.06	50	0	1	0	1
	Sold	74%	50	1.4	50	100%	1	1	1
	Sales Tk			7721	34			9000	1

3.11.3 Aquaculture

Almost all households have ponds and these are now nearly all cultivated – compared with little more than half at baseline (Table 33). Total fish production for households with ponds in CDSP IV has almost tripled and now slightly exceeds the other CDSP areas.

Table 33: Aquaculture

		CDSP IV baseline	CDSP 1&2	CDSP 3	CDSP 4
Owning a fish pond	% of all HH	99%	97%	96%	97%
Cultivating fish	% of pond HH	51%	100%	98%	98%
Consuming fish	% of pond HH		100%	99%	98%
Selling fish	% of pond HH		90%	60%	77%
Area of pond	Decimal/pond HH		23.8	24.3	28.9
Area cultivated	Decimal/pond HH		19.7	19.9	23.4
Total production	Kg/pond HH	43	112.3	114.3	125.8
Yield	kg/decimal	1.7	5.7	5.7	5.4
Amount consumed	Kg/pond HH	29	61	70	67
Amount sold	Kg/pond HH	14	51	44	58
Average price	Tk/kg	105	146	142	145
Sales value	Tk/year	1,470	7,272	5,561	8,189

3.12 Food security

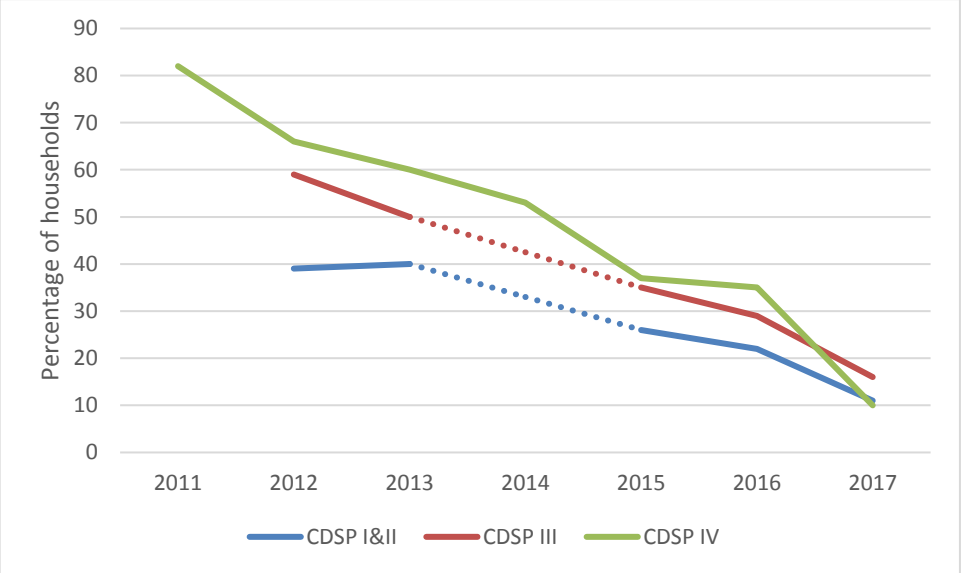
Survey respondents were asked how many months of a year they can meet their basic food (i.e. rice) needs from their own production. Table 34 shows that, on average, CDSP IV households can meet household basic food needs from their own production for 10.5 months, 3.5 months more than in the baseline situation. In the older CDSP areas the average period is much the same – maybe a little worse in CDSP III. Over two-thirds of CDSP IV now produce enough basic food to last them round the year.

The respondents were also asked whether they faced any acute food crisis during the last one year, at which time household members may have had to eat less than the usual quantity of food or an inferior quality of food. Only 10% of CDSP IV households said that they faced such a crisis, a significant improvement compared with 82% in the baseline situation. This is much the same as in CDSP I&II, but a higher proportion (16%) of CDSP III households reported a food crisis. The considerable progress made by CDSP IV in food security is shown in Figure 10.

Table 34: Food security

		CDSP IV Baseline	CDSP I &II	CDSP III	CDSP IV
Average months in a year HH able to meet the basic food needs from own production		7	10.6	9.3	10.5
Number of months able to meet basic food needs from own production (% of households reporting)	3 and under		4.4%	10.5%	3.5%
	4 to 6		7.0%	12.3%	9.2%
	7 to 11		15.8%	21.6%	18.5%
	12		72.8%	55.6%	68.8%
	total		100%	100%	100%
Sample size (n)			158	171	173
HH faced acute crisis in the last year (% of HH)		82%	11%	16%	10%
Sample size (n)		1400	200	200	200

Figure 10: Households facing an acute food crisis



AOS data was not collected for CDSP I&II and II in 2014. The dotted lines connect data from 2013 to data from 2015 for these areas.

3.13 Road communications

The ease of mobility of sample household members has been assessed through asking about access to primary schools and madrasas, and to the local market (hat/bazaar). Indicators for ease of access include distance (more schools and markets have been built, and new bridges and embankments provide more direct routes), the type of road used, and the time taken for the trip during the rainy and dry seasons. Table 35 shows that, in the CDSP IV area, the distance and time needed to travel to schools has more than halved, with the distance and time to markets now being little more than one quarter of the baseline situation. In the CDSP IV area over 60% of travel is on brick and bitumen roads that did not exist before the project. Compared with the CDSP III area, there is less use of earth roads in travel to school and market, but people in the CDSP I&II area make more use of bitumen roads.

Table 35: Improved communications

	CDSP-IV Baseline	CDSP-I &II	CDSP-III	CDSP-IV
Primary Schools/ Madrasas				
Average distance (km)	1.5	0.79	0.63	0.69
No road (% of responses)	29%			3%
Earth road (% of responses)	71%	29%	68%	33%
Brick road (% of responses)		7%	6%	33%
Bitumen road (% of responses)		64%	26%	26%
Waterway (% of response)				3%
Average time taken to reach in rainy season (minutes)	37	16	14	16
Average time taken to reach in dry season (minutes	25	13	11	13
Hats /Bazaar				
Average distance (km)	2.8	0.82	1.25	0.79
No road (% of responses)	33%		1%	3%
Earth road (% of responses)	67%	30%	52%	32%
Brick road (% of responses)		7%	6%	32%
Bitumen road (% of responses)		61%	41%	30%
Waterway (% of response)				3%
Average time taken to reach in rainy season (minutes)	62	17	22	18
Average time taken to reach in dry season (minutes)	49	13	17	14

3.14 Shocks and crises

Respondents were asked (with some probing) whether household members had faced any kind of accident, loss or problem (called 'disaster') during last one year, and, if they did, these incidents were identified using a 13 point checklist list (with provision to add more). For each reported disaster, its intensity and coping method was obtained through appropriate questions. It should be noted that during baseline survey the respondents were asked to response for the last five years, rather than just for the last one year as in the AOS.

Table 36 shows that, compared to the baseline situation, shocks or crises have been reduced in the CDSP IV area. At the start of the project the two major shocks (reported by over 40% of households) were loss of crops – which has now been halved, but is still a significant source of loss – and displacement due to flood / cyclone – which has been reduced to a low level (3% report). Serious illness of household members remains a major shock – with 20% reporting this in the last year. However, two other important sources of loss in the baseline survey have been greatly reduced: (i) death or theft of livestock or poultry (from 15% to 5%) and dacoity, theft and mastans (extortion) in house/ business (15% to 1%). Over the last few years losses from river erosion have increased in CDSP IV and are now at the baseline level of 8%. However, overall, households in CDSP IV now face a similar level of shocks and crises to those in the older CDSP areas.

Table 36: Type of shocks or crises

Percentage of households reporting shocks in the last year	CDSP-IV Baseline	CDSP-I &II	CDSP-III	CDSP-IV
Death/ invalidity of earning member	4	4	2	4
Serious disease of any member	20	15	16	20
Displacement due to flood/ cyclone/ tornado	42	0	2	3
River erosion	8	2	4	8
Loss of crop due to flood/ drought	47	21	17	20
Loss/ death/ theft of livestock/ poultry	15	2	2	5
Dacoity/theft/ mastans in house or business	15	2	2	1
Loss of business/ investment	1	1	2	1
Divorce/ separation	1	2	1	0
Dowry	3	3	2	4
Socio-political harassment, including bribes and tolls	1	3	2	4
Women harassment (Violence)	0	0	0	0
House destroyed by fire or other reason	2	1	1	0
Others	--	1	1	2

Respondents were asked to rank the impact of shocks as severe, moderate or low (Table 37). Relatively few were rated as low impact, with most falling into the moderate category. River erosion in CDSP IV is mostly a severe shock as it means loss of land.

For each shock, respondents were asked what action they did to reduce and mitigate the loss. Multiple answers were possible. These have been summarised across all types of shock and the data is shown in Table 38. This shows that the most frequent response is to use savings followed by taking of loans. This shows the importance of access to financial services in building resilience to shock – which could be extended to insurance. The third most important action was to mobilise support from community groups and NGOs – showing the importance of CDSP FLI.

Table 37: Severity of shocks

	Type of shock	CDSP I&II			CDSP III			CDSP IV		
		severe	moderate	low	severe	moderate	low	severe	moderate	low
1	Death/invalidity of earning member	4%	1%	0%	2%	0%	0%	2%	2%	0%
2	Serious disease of any member	1%	13%	1%	2%	13%	1%	4%	15%	2%
3	Displaced by flood, cyclone	0%	0%	0%	2%	1%	0%	1%	2%	0%
4	River erosion	0%	2%	0%	2%	3%	0%	7%	1%	0%
5	Crop loss from flood/drought	8%	13%	0%	3%	14%	1%	4%	16%	1%
6	Loss of livestock/poultry	1%	1%	0%	0%	2%	1%	2%	3%	1%
7	House damaged by flood/ storm	0%	1%	0%	0%	0%	0%	1%	2%	0%
8	Dacoity/ Theft/ Mastanies	2%	1%	0%	1%	2%	0%	1%	0%	0%
9	Loss of business/investment	0%	1%	0%	1%	1%	1%	0%	1%	0%
10	Divorce/separation	0%	2%	0%	0%	1%	0%	0%	0%	0%
11	Dowry	0%	3%	0%	0%	4%	0%	1%	4%	0%
12	Socio-political harassment	2%	2%	0%	1%	1%	1%	1%	4%	0%
13	Women harassment (Violence)	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	House destroyed by fire etc	0%	0%	1%	1%	0%	0%	0%	0%	0%
15	Others	0%	1%	0%	0%	1%	0%	1%	1%	1%
	Sample size (n)	200	200	200	200	200	200	200	200	200

Table 38: Actions to mitigate and recover from shocks

	CDSP I&II	**CDSP III**	**CDSP IV**
Sell land	0%	1%	1%
Sell livestock	4%	7%	7%
Sell trees	6%	5%	0%
Use savings	29%	45%	34%
Mortgage land	1%	1%	1%
Mortgage other property	0%	1%	0%
Help from relatives	6%	5%	7%
Take loan	18%	16%	25%
Take materials on credit	12%	7%	5%
Aid or relief	1%	1%	0%
Complain to authorities	0%	0%	0%
Mobilise community groups / NGO	20%	8%	17%
Do nothing	2%	0%	1%
Other	0%	1%	0%
Total	100%	100%	100%
Total responses (n)	139	147	203

3.15 Comparison of selected Indicators across rounds of AOS

Table 39 shows values and indication of increase or decrease for respective selected indicators across the baseline and 1st to 6th rounds of annual outcome surveys.

Table 39: Comparison of 1st to 6th AOS and baseline survey

Indicators	Base-line 2011	Annual Outcome Surveys						% change 2011 to 2017
		2012	2013	2014	2015	2016	2017	
Agriculture as principal occupation of household head (%)	37	45	45	48	25	22	29	(22)
Day labour as principal occupation of household head (%)	31	29	29	20	36	30	29	(6)
Straw made roof of main house (%)	82	66	55	33	42	28	19	(77)
Tin made roof of main house (%)	16	34	43	67	58	70	80	400
Average distance (in meters) of drinking water source in dry season and wet season	345 418	154 183	112 133	120 135	50 65	44 56	78 87	(77) (79)
Average value of hh assets (BDT)	35,162	43,797	61,485	99,204	126,451	212,010	301,418	757
Annual hh income (BDT)	71,951	89,800	107,771	109,207	163,009	189,627	280,243	289
Rice production (MT/ha)	1.9	2.0	2.1	2.2	2.3	2.9	3.3	74
Income from homestead gardening (BDT/HH)	3,742	6,155	6,526	4,866	13,288	10,115	11,234	200
HH facing acute food crisis (%)	82	66	60	53	37	35	10	(88)

4. Summary and conclusion

The 2017 AOS shows that the vast majority of children (88% of those aged 5 to 16 years) are **going to school**, although this is a little below the rate in the CDSP I&II area. Participation in **field level institutions** reflects the numbers of these institutions that were formed by CDSP IV and, as would be expected, is generally higher than in the older CDSP areas. CDSP IV **settlement activities** show good progress, for 71% of the HHs settlement is completed. However, 32% of the area of land occupied is still occupied through informal arrangements.

It can be observed that there is a change in the **principal occupation of the head of household**. The proportion of household heads involved with agriculture as a principal occupation has a decreasing trend across all CDSP areas, most notably in the CDSP IV areas it has remarkably decreased from 37% at base line to 28% now, while petty trade increased from 9% to 20%. Day labour is the more widespread occupation, being the principal occupation of 29% of CDSP IV household heads, almost the same as 31% at baseline. In all areas the primary occupation of the spouse of the household head is overwhelming that of housewife, with livestock as a secondary occupation – evidence that women see themselves as primarily having a domestic role, but also look after livestock.

There have been substantial improvements to **housing**, with CDSP IV households beginning to catch up with those in the older CDSP areas in terms of size of house and use of tin sheets for walls and roofs. Such changes are due to better socio-economic condition and having permanent settlement through receiving 'khatians'. The better availability of building material due to improved communications may also be a factor. Domestic water has become more accessible with the distance to a source of **safe drinking water** falling by 78%. This saves both labour and time for the women of the households. **Sanitation** has also been greatly improved, with all CDSP IV households now using ring slap or hygienic latrines, and most households washing hands with soap before means and after using the latrine.

Households across CDSP show improvement regarding **immunization of children**. More than 99% of the CDSP IV households ensure immunization of their children, a big improvement over 52% at baseline. CDSP IV is now similar to CDSP I, II and III, where the figures were just above 70% in 2012. The visits of Health Workers to the community have increased compared to the CDSP-IV baseline situation, obviously because of the project, but also in the older CDSP areas the situation has improved with the implementation of programmes by government health and family planning departments. The use of **family planning** methods has also improved significantly across CDSP, with virtually all eligible households taking up family planning.

The steady increase of the value of **household and productive assets** continues. The total value per household in CDSP IV has now increased by over eight times, although the total value of assets is still significantly lower than in the older CDSP areas. At baseline, livestock (mainly cattle) accounted for 62% of total asset value, this has now decreased to 25%, and the proportion of productive farm and non-farm assets has increased from 17% to 55% (but CDSP I/II and III have 60% or more of assets in these two categories). The most valuable non-farm productive asset are shops with land - these now account for 85% of asset value in this category and are owned by 17% of CDSP IV households. The farm productive asset category is dominated by timber and fruit trees, which account for 92% of asset value in this category and are now owned by 99% of households compared to 24% at baseline. In livestock, cows account for 81% of total asset value and are owned by 78% of households. In the household asset category, major items are now ornaments/jewellery (34% of the total value) and solar systems (23%).

Compared to the CDSP IV baseline the average annual **household income** in the CDSP IV area has increased by 289%. Although overall average income for CDSP IV households has not yet caught up with those in CDSP I/II and III, total income from agriculture is now slightly higher, but CDSP IV households still have significantly less non-farm income, especially from wages and salaries, business and remittances. Within the farm sector for CDSP IV, the share of net income from crops has declined since 2011 - from 60% to 38% and aquaculture from 10% to 7.5%, with growth in all the other farm sub-sectors.

Most farmers report slight **damage** to aman paddy and rabi crops from salinity, flooding and waterlogging, but fewer report damage to trees. Damage to aman seems to be more common in the CDSP IV area than in the older areas, but there is less difference between the areas for rabi crops – although in CDSP IV there may be

slightly more salt damage and less flood damage and waterlogging. No respondents reported any increase in damage. Almost all CDSP I&II and III farmers said damage had reduced over the last five years, as did around two-thirds to three quarters of CDSP IV farmers. The reduction in damage over the last one year is, as would be expected, less dramatic. This information leads to the following conclusions: (i) the cropping environment is continuing to improve in the older CDSP areas – there is no evidence that water improvements are not being sustained: and (ii) much of the improvement is yet to take place in CDSP IV.

All sample households have homestead **land**, and almost all have a pond – so interventions in homestead agriculture and aquaculture have the potential to reach virtually all households. Between 62% (CDSP I&II) and 83% (CDSP IV) have cultivated land for field crop production. The average area per household of cultivated land is higher in the CDSP IV sample – as is the area of fish pond and total area operated per household.

The **cropping intensity** in CDSP IV is 145%, compared with 105% in 2011. Cropping intensity is over 150% in the older CDSP areas, with more non-rice crops being grown. The relatively low cropping intensity in CDSP IV suggests that there is still further potential to increase crop production when all chars get full flood protection.

Cropping in all CDSP areas is dominated by paddy, which is cultivated on 90% or more of cultivated land. This is mainly transplanted aman, with very little aus now being grown. Boro is becoming significant in CDSP I&II and CDSP IV. With a higher proportion of households growing paddy, 20% to 35% more paddy is produced by CDSP IV than in the older CSDP areas. Average **paddy yield** in CDSP IV 3.3 tons/hectare, 74% more than at baseline. In the CDSP IV area 7.2% of land is used for field vegetables, over double that of the older areas, mostly grown using the sorjon integrated vegetable-fish production system.

In all CDSP areas just over one third of all paddy produced is sold – in CDSP IV 40% of all households (and almost half of paddy producers) sell paddy. Other crops are grown largely for sale. In CDSP IV, field vegetables are the most important crop in terms of the average value of sales for all crop producers. Oilseed is the principal crop sold in CDSP III, while oilseeds and field vegetables are of equal importance in CDSP I&II.

Homestead production: 95% of CDSP IV households cultivate vegetables and spices around their homesteads, compared with 86% in CDSP IV and 65% in CDSP I&II. The higher adoption of this activity in CDSP III and IV may be the result of the support that these projects have given to homestead production. Over 90% of homestead vegetable growers sell some of their production, with more being sold in the in the CDSP IV area. The total value of sales of homestead vegetables exceeds that of field vegetables in all three CDSP areas. Total sales of vegetables (field and homestead) in CDSP IV are over double that of CDSP III and over three times that of CDSP I&II.

Poultry are reared by at least 95% of households in all CDSP. The average number of chickens per household has more than doubled in CDSP IV areas, and the number of ducks has also increased. CDSP IV households may produce, consume and sell slightly more eggs than in the older areas, and certainly seem to consume over twice the number of ducks and chickens. However, given the effort made to develop backyard poultry in CDSP IV, the income generated is remarkably similar with the other CDSP areas.

The proportion of households **rearing bovines** (mainly cattle) has increased marginally in CDSP IV, and is significantly more than in CDSP I, II and III. There has been a move from keeping draught animals to milk and meat production, and production and consumption of milk has more than doubled in the CDSP IV areas, with the value of milk sales going up by over three times. Relatively few households keep sheep and goats.

Almost all households have **fish ponds** and these are now nearly all cultivated – compared with little more than half at baseline. Total fish production for households with ponds in CDSP IV has almost tripled and now slightly exceeds the other CDSP areas.

In the CDSP IV area the proportion of households facing acute **food crisis** has reduced from 82% to 10% since 2011 and is now a little lower than in the older CSDP areas. The number of months with food shortage has also reduced and CDSP IV char dwellers can now meet their demand of basic food for 10.5 months of a year compared with only 7 months during the baseline period.

CDSP IV has put significant resources into building a **road communication network** on the chars. In the CDSP IV area, the distance and time needed to travel to schools has more than halved, with the distance and time to markets now being little more than one quarter of the baseline situation. In the CDSP IV area over 60% of travel is on brick and bitumen roads that did not exist before the project. Compared with the CDSP III area, there is less use of earth roads in travel to school and market, but people in the CDSP I&II area make more use of bitumen roads.

Household shocks and crises, such as those from natural disasters, ill health and lawlessness, have been greatly reduced in the CDSP IV area. Households in CDSP IV now face a similar level of shocks and crisis to those in the older CDSP areas.

Overall almost all indicators for outcomes in CDSP IV show substantial improvements since the baseline survey in 2011. Indicators where CDSP IV has now caught up with the older CDSP areas include water and sanitation, road communications, health services, family planning, sales of cattle, milk and fish consumption. Shocks and crisis reported by households are now broadly similar across all CDSP areas. CDSP IV households now do better than those in CDSP I/II and III in terms of total production of paddy, production, production and sales of fruit and vegetables (both homestead and field), poultry production and consumption, fish production and sales and food security. Indicators where CDSP IV households have made good progress, but still lag behind those in the older CDSP areas, include cropping intensity, milk production and sales, housing, asset ownership, and overall household income (farm income has more than caught up, but non-farm income has not).

It is also worth noting that indicators have continued to improve in the CDSP I/II and III areas, with significant changes since the first round of AOS in 2012. This provides evidence of the **sustainability of CDSP interventions** and the scope for improvements in CDSP IV to continue after the end of the project.

Annex-1 Annual Outcome Survey Questionnaire 2017

CDSP Phase: I II III IV 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, Others (Specify). . . . . .-19*		

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*

- Local unit: 1 hath=1.5 feet

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*			
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			
39	CNG Auto			

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

12. Crops grown

	Area Cultivated				Area Cultivated	
	In field (decimal)	In homestead (tick if grown)			In field (decimal)	In homestead (tick if grown)
Cereals				Vegetables		
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						
Cassava				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 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 % 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 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		
	Total	

In last 12 months

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

15. 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=heavydamage, 5=total loss

Change/trend in damage: 1 = damage reducing, 2 = no change in damage, 3 = damage increasing

16. Poultry

	Chickens	Ducks & Geese
Number of birds owned at current time		
In last 12 months for both chickens & 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	

17. 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			

18. 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			

19. 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	

20. Household Annual Income: in last 12 months

Sources of Income	**Amount (Taka)**	**Sources of Income**	**Amount (Taka)**
Wage from daily labour		Livestock Rearing	
Field Crops		Poultry Rearing	
Petty Trading		Job/salary	
Business		Skilled work	

Homestead Gardening (including fruits & trees)		Remittance	
Rickshaw/van/boat/vehicle		Handicrafts	
Pond Aquaculture		Pension & social benefits *	
Forestry/Trees		Begging and relief	
Fishing/PL catching		Others……	

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

- Social benefits includes fees for elder people, widow, disabled, freedom fighter etc.

21. 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 …….

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

23. 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*

24. Shocks and coping strategyAOS only

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)..................

Thank you for your kind cooperation

Comments: _

_ _

Field Investigator's Signature & Name: -.- - -

Date: . . . .

Verifier's Signature &Name: -

Date: ……………..

Annex 2: List of missing sample and replacement sample households

List of replacement sample households

ID	Old IDs	Phase	Name	Father's Name	H/Wife Name	Bari	Location
42028044	**42028012**	4	Oziullha (bagha)	Nozir Ahammad	Kamrun Nahar	Oziullha' house	West Charbasar
42028042	**42028026**	4	Sufia Bagum				East side from Hasim'house , West Charbasar
43025027	**43025013**	4	Md sharu	Late Joynal Abdin	Zarna Begum		South side from Bangla bazar Noler Char
43025028	**43025024**	4	Mhamudul Haque	Late Badsha Mia	Rohima Khatun	Rashad'house	Bangla Bazar Dakshin Pasha Raster Purba Pasha
43025029	**43025022**	4	Md.Gias Uddin	Late Md.Hossan	Roksana Begum		Bangla Bazar Dakshin Pasha Raster Purba Pasha
44001030	**44001001**	4	Md.Eliyas	Md.Rofikul Alom	Nargis Begum	Eliyas'shouse	Mohammadpur Madrasa Bazarer RasterPurba pasha Caring Char
44001031	**44001005**	4	Narayan Chandra Das			01741343241	
44001032	**44001006**	4	Abdur Rob	Mofijur Rahaman		Mofij Dirver'house	01876923876
44001033	**44001007**	4	Balayet Hossan	Late Abdul Malek	Taslima Begum	Mofij Dirver'house	01882260943
44001034	**44001008**	4	Md.Siraj Uddin	Toffajul Ahammad	Hazera Khatun		01825780073
44001035	**44001013**	4	Abdul Kiyoum	Late Shamsul Haque	Khatiza Begum	Kiyoum Mastorier bari	01827502100
44001036	**44001015**	4	Md.Nur Nobi	Late Robiul Hoque	Nurjahan	Siddiquer babar bari	01885292859
44001037	**44001016**	4	Ala Uddin	Late Belayer Hossan	Sufia Begum	Fatemar babar bari	
44001038	**44001018**	4	Bipul Chandra Das	Late Dash Bondu Das	Vabna Rani Das		01756677477
44001039	**44001019**	4	Robiul Hossan	Late Fochiul Mia	Nur Nahar	Capalago bari	017821866746
44001040	**44001022**	4	Md.Mohiuddin	Late Mojammel Hossan		Mohiuddin kholifar bari	
44001041	**44001024**	4	Habib Ullha	Late Haris Mia		Habib Ullha Sordar bari	Shelterer Purba Pasha
44001042	**44001025**	4	Md.Halal Uddin	Mostafijur Rahaman		Halal Mazir bari	
44001043	**44001029**	4	Abdul Monnf	Late Nurl Hoque		Halal Mazir barier Uttar Pasha	Caring Char
44016034	**44016002**	4	Abdul Jaban	Late Jalal Ahammad	Julekha Khatun	Maharajer baper bari	01830807475
44016035	**44016003**	4	Md.Ohayad Uddin (Hezu)	Md.Noyab Uddin	Nazma Begum		Chowdhray Gram, Craing Char
44016036	**44016004**	4	Mainuddin (Bacho)	Late Mobashar Ahammad	Nasima Begum	Bachor bari	North side from madrasha bazar
44016037	**44016007**	4	Md.Mofij Uddin	Late Azahar Ahammad	Rohima Khatun	Mofijer bari	0187223895
44016038	**44016008**	4	Jahagir Alom	Late Achiul Hoque	Rijea Begum		01857242443
44016039	**44016009**	4	Md.Hasan	Late Md. Mahamudul Hoque	Nurjahan Begum		01884218715
44016040	**44016010**	4	Ozi Ullha	Late ziaul Hoque	Dilora Begum		01882717345
44016041	**44016024**	4	Md.Meharaj	Abdus Sobahan	Swopna	Meharaj mazir bari	01838901654
44016042	**44016025**	4	Md.Nasir Uddin	Md.Nur Islam	Kohinur Begum	Nasirer bari	01835104398

ID	Old IDs	Phase	Name	Father's Name	H/Wife Name	Bari	Location
44016043	**44016027**	4	Md. Anayet Hossan	Kobir Uddin	Panna Begum		01879075182
44016044	**44016030**	4	Nizam Uddin	Abul Kasham	Bakul akter		01835104398

List of sample households that could not be located due to migration/erosion

ID	Phase	Name	Father's Name	H/Wife Name	Bari	Location/ Somaj
42028012	4	Sala Uddin	Late Sekantor Hossain	Rukeya Begum	Salauddin's house	West Charbasar , Nangulia
42028026	4	Hanif	Late khurshid Mia	Anwara Begum	Hanif's house	West Charbasar
43025013	4	Abul Hasim	Salamoth Hazi	Romana	Abul Hasim Baro bari	Dakshin Mozlishpur, Noler Char
43025024	4	Nasir Uddin	Morashid Rahman	Fardawsh Begum	Nasier bari	Dakshin Mozlishpur
43025022	4	Md Bahar Uddin	Md.Mostafa	Athor Banu	Baharer bari	Dakshin Mozlishpur
44001001	4	Narayan Chandra Das	Propula Chandra Das	Lakhi Rani Das	Pankoz Karani Bari	Krishno Nagor, Caring Char
44001005	4	Uthpol	Late:Sri Kishno Das	Sonjitha Das	Uthpol's house	Krishno Nagor
44001006	4	Radhu Chandra Das	Late Shurandhu Chandra	Golapi Bala Das	Radhuer bari	Krishno Nagor
44001007	4	Prameka	Late Bogla Chandra	Late Tilok Chandra Das	Prameka's house	Krishno Nagor
44001008	4	Bedashor Das	LateTejontho Kumar D	Golapi Rani Das	Bedashor's house	Krishno Nagor
44001013	4	Md.Abul Kalam	Late Samsul Haque	Hazera Khatun	Kalam Sardar bari	Krishno Nagor
44001015	4	Athul	Raj Kumar Das	Athol Chandara	Athol's house	Krishno Nagor
44001016	4	Becha Ram	Raj Kumar Das	Ayathi Das	Becha Ram's house	Krishno Nagor
44001018	4	Bishubar Das	Tejondhu Das	Ripa Rani Das	Bishubar's house	Krishno Nagor
44001019	4	Md.Abul Kashim	Md.Abul Kalam	Fatima Beugm	Kalam Sardar's house	Krishno Nagor
44001022	4	Jadu Lal Das	Late Mon Mohan Das	Baski Bala Das	Jadu Lal Bari	Krishno Nagor
44001024	4	Rakhal	Baroth Chandra Das	Dipali Bala Das	Rakhal's house	Krishno Nagor
44001025	4	Gopal Chandra Das	Late Hori Kishno Chandra	Githa Rani Das	Gopal Chanrda Daser Bari	Krishno Nagor
44001029	4	Pankoj Chandra Das	Late Alang Kumar Das	Sobitha Rani Das	Pankoj Bari	Krishno Nagor
44016002	4	Md.Bechu	Nur Alam	Rahima Khatun	Bechur Bari	Chowdhray Gram, Caring Char
44016003	4	Md.Kabir	Delwar Hossain	Nasima Khatun	Kabir'House	Chowdhray Gram
44016004	4	Manuza Khatun	Late Noor Mia	Sayedul Haque	Manuza Bari	Chowdhray Gram
44016007	4	Anawuer Hossain	Late Siraj Uddin	Fardawsh Begum	Anawuer's house	Chowdhray Gram
44016008	4	Abdul Khalek	Mobasher Ahmed	Nur Nahar Begum	Khalek's house	Chowdhray Gram
44016009	4	Rasel Uddin	Delawuer Hossain	Hasina Begum	Rasel's house	Chowdhray Gram
44016010	4	Abul Kalam	Montazar Rahman	Fatima Khatun	Abul Kalam's house	Chowdhray Gram
44016024	4	Ruhul Amin	Late Sayed Ahmed	Rejiya Khatun	Ruhul amim' house	Chowdhray Gram

ID	Phase	Name	Father's Name	H/Wife Name	Bari	Location/ Somaj
44016025	4	Abul Kashem	Late Jobioul Haque	Peara Begum	Abul Kashem' house	Chowdhray Gram
44016027	4	Jashim Uddin	Late Azahar Ahmed	Rokiya Begum	Joshim' house	Chowdhray Gram
44016030	4	Md.Siddique	Late Mozammel Hossain	Minara Begum	Siddique's house	Chowdhray Gram

Annex 3: Additional data tables

Table 1: Damage to crops

Source of damage	Crop	Degree of damage	CDSP 1&2	CDSP 3	CDSP 4
Salinity	Aman	no damage	33%	28%	18%
		slight	58%	69%	76%
		moderate	8%	2%	5%
		heavy	0%	1%	1%
		total loss	0%	0%	0%
	Boro	no damage	11%	33%	29%
		slight	89%	67%	71%
		moderate	0%	0%	0%
		heavy	0%	0%	0%
		total loss	0%	0%	0%
	Rabi crops	no damage	4%	5%	5%
		slight	74%	81%	70%
		moderate	14%	13%	19%
		heavy	8%	1%	6%
		total loss	0%	0%	0%
	Homestead Vegetables	no damage	17%	14%	11%
		slight	83%	84%	81%
		moderate	0%	2%	7%
		heavy	0%	0%	1%
		total loss	0%	0%	0%
	Trees	no damage	67%	76%	47%
		slight	33%	22%	47%
		moderate	0%	2%	6%
		heavy	0%	0%	1%
		total loss	0%	0%	0%
Flooding	Aman	no damage	19%	12%	7%
		slight	58%	83%	78%
		moderate	19%	5%	11%
		heavy	5%	0%	4%
		total loss	0%	0%	0%
	Boro	no damage	15%	38%	28%
		slight	81%	63%	64%
		moderate	4%	0%	0%
		heavy	0%	0%	4%
		total loss	0%	0%	4%
	Rabi crops	no damage	6%	9%	2%
		slight	44%	63%	69%
		moderate	14%	23%	17%
		heavy	35%	5%	12%
		total loss	0%	0%	0%
	Homestead Vegetables	no damage	20%	19%	11%
		slight	79%	79%	79%
		moderate	0%	2%	7%
		heavy	1%	0%	2%

Source of damage	Crop	Degree of damage	CDSP 1&2	CDSP 3	CDSP 4
		total loss	0%	0%	0%
	Trees	no damage	67%	66%	39%
		slight	33%	30%	51%
		moderate	0%	4%	9%
		heavy	0%	0%	2%
		total loss	0%	0%	0%
Drainage	Aman	no damage	35%	29%	39%
		slight	59%	70%	57%
		moderate	7%	1%	5%
		heavy	0%	0%	0%
		total loss	0%	0%	0%
	Boro	no damage	37%	60%	50%
		slight	41%	40%	50%
		moderate	22%	0%	0%
		heavy	0%	0%	0%
		total loss	0%	0%	0%
	Rabi crops	no damage	26%	18%	30%
		slight	54%	64%	58%
		moderate	12%	17%	10%
		heavy	9%	0%	3%
		total loss	0%	0%	0%
	Homestead Vegetables	no damage	38%	31%	39%
		slight	52%	68%	57%
		moderate	6%	1%	5%
		heavy	3%	0%	0%
		total loss	0%	0%	0%
	Trees	no damage	75%	83%	70%
		slight	19%	16%	27%
		moderate	4%	1%	3%
		heavy	2%	0%	0%
Sample size (n)		aman	108	133	151
		boro	27	8	25
		rabi crops	78	96	112
		HVG	126	160	180
		Trees	195	176	178

Table 2: Trend in crop damage

Source of damage	Crop	Trend	CDSP 1&2		CDSP 3		CDSP 4	
			Trend in year	Trend in 5 yr	Trend in year	Trend in 5 yr	Trend in year	Trend in 5 yr
Salinity	Aman	reducing	56%	96%	31%	97%	28%	76%
		no change	44%	4%	69%	3%	72%	24%
		increasing	0%	0%	0%	0%	0%	0%
	Boro	reducing	74%	93%	33%	100%	36%	86%
		no change	26%	7%	67%	0%	64%	14%
		increasing	0%	0%	0%	0%	0%	0%
	Rabi crops	reducing	56%	99%	30%	97%	18%	62%
		no change	44%	0%	67%	3%	81%	37%
		increasing	0%	0%	0%	0%	0%	0%
	Homestead vegetables	reducing	76%	100%	35%	98%	32%	74%
		no change	24%	0%	65%	3%	68%	26%
		increasing	0%	0%	0%	0%	0%	0%
	Trees	reducing	96%	99%	89%	100%	60%	76%
		no change	4%	1%	11%	0%	40%	24%
		increasing	0%	0%	0%	0%	0%	0%
Flooding	Aman	reducing	49%	97%	31%	98%	29%	76%
		no change	50%	3%	69%	2%	70%	22%
		increasing	0%	0%	0%	0%	0%	0%
	Boro	reducing	74%	100%	38%	100%	39%	78%
		no change	26%	0%	63%	0%	57%	17%
		increasing	0%	0%	0%	0%	0%	0%
	Rabi crops	reducing	48%	97%	34%	100%	24%	70%
		no change	48%	1%	63%	0%	74%	29%
		increasing	0%	0%	0%	0%	0%	0%
	Homestead Vegetables	reducing	77%	99%	38%	99%	37%	75%
		no change	23%	1%	61%	1%	62%	24%
		increasing	0%	0%	0%	0%	0%	0%
	Trees	reducing	96%	100%	79%	99%	62%	78%
		no change	4%	0%	19%	1%	38%	22%
		increasing	0%	0%	0%	0%	0%	0%
Drainage	Aman	reducing	57%	99%	36%	99%	46%	85%
		no change	42%	1%	64%	1%	54%	15%
		increasing	0%	0%	0%	0%	0%	0%
	Boro	reducing	56%	78%	60%	80%	50%	83%
		no change	41%	22%	40%	20%	50%	17%
		increasing	0%	0%	0%	0%	0%	0%
	Rabi crops	reducing	62%	97%	36%	97%	46%	77%
		no change	33%	1%	61%	3%	54%	23%
		increasing	0%	0%	0%	0%	0%	0%
	Homestead Vegetables	reducing	70%	93%	45%	98%	52%	82%
		no change	29%	7%	55%	2%	48%	18%
		increasing	0%	0%	0%	0%	0%	0%
	Trees	reducing	92%	95%	91%	100%	81%	89%
		no change	7%	5%	9%	0%	19%	11%
		increasing	0%	0%	0%	0%	0%	0%
Sample size (n)		aman	108	108	133	133	151	151
		boro	27	27	8	8	23	23
		rabi crops	78	78	96	96	114	114
		HVG	125	125	160	160	180	180
		Trees	195	195	176	176	175	175

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

Table 3: Poultry

		CDSP 1&2			CDSP 3			CDSP 4		
		Chicken	Ducks	pigeon	Chicken	Ducks	pigeon	Chicken	Ducks	Pigeon
Percent of hh	Own	94%	95%	21%	98%	95%	13%	99%	97%	14%
Percent of owners	Consume eggs	88%	98%		92%	95%		96%	98%	
	Sell eggs	100%	95%		99%	92%		99%	95%	
	Consume birds	101%	99%	93%	99%	98%	88%	100%	101%	96%
	Sell birds	93%	93%	88%	93%	92%	73%	93%	93%	89%
Per household owning birds	No. of birds owned	9.86	9.35	8.98	11.64	9.53	8.04	11.66	9.47	8.07
	No. eggs produced	229	266		210	298		254	300	
	No. eggs consumed	91	108		66	120		98	113	
	No. eggs sold	138	159		144	178		156	187	
	no. birds consumed	8.51	7.07	5.00	9.17	7.29	4.96	34.71	7.25	5.15
	No. birds sold	6.40	6.44	5.27	8.11	7.13	5.69	7.78	6.96	4.67
	Egg sales Tk	1212	1334		1391	1441		1415	1560	
	Bird sales Tk	2241	2427	1096	2150	2401	1728	1999	2389	1031
Sample n	All households	200	200	200	200	200	200	200	200	200
	Owning households	188	189	41	196	191	26	197	193	27

Table 4: Cattle and buffalo

		Units	Cattle				Duffalo			
			Number of household		Number per household		Number of household		Number per household	
			% of hh	n	% of hh	n	animals/HH	n	% of hh	n
CDSP 1&2										
Animals owned/share-owned			46%	200	1.49	200	1%	200	0.045	200
of which milking cows			32%	200	0.44	200	1%	200	2	1
Milk	produced	litres/yr.	98%	63	381	62		1	1080	1
	consumed	litres/yr.	97%	63	119	61		1	0	0
	sold	litres/yr.	92%	63	279	58		0	1080	1
	price	Tk/litre			47				50	
	sales	Tk/year			12,981	58	0%		54000	1
Meat	consumed	animals	5%	91	0.05	91				
	sold	animals	75%	91	1.05	91	1%	200	0.01	200
	sales	Tk/year			43,048	69			120000	1
CDSP 3										
Animals owned/share-owned			55%	200	1.60	200	2%	200	3.00	1
of which milking cows			32%	200	0.40	200	0%	1	0	0
Milk	produced	litres/yr.	94%	63	285	63	0%	0	0	0
	consumed	litres/yr.	94%	63	104	59	0%	0	0	0
	sold	litres/yr.	92%	63	204	58	0%	0	0	0
	price	Tk/litre			44					
	sales	Tk/year			8,992	58				
Meat	consumed	animals	1%	109	0.01	109	0%	1	0	0
	sold	animals	52%	109	1.28	109	100%	1	1	1
	sales	Tk/year			49,484	61			70000	1
CDSP 4										
Animals owned/share-owned			77%	200	2.36	200	2%	200	5.5	4
of which milking cows			46%	200	0.58	200	75%	4	2	3
Milk	produced	litres/yr.	107%	91	307	97	67%	3	720	2
	consumed	litres/yr.	100%	97	120	97	50%	2	300	1
	sold	litres/yr.	96%	97	194	93			570	2
	price	Tk/litre			44				70	2
	sales	Tk/year			8,542	93			39900	2
Meat	consumed	animals	3%	155	0.04	155	0%	4	0	0
	sold	animals	75%	155	1.27	155	25%	4	2	1
	sales	Tk/year			44,808	117			100000	1