

Char Development and Settlement Project Phase IV Bangladesh

Annual Outcome Survey 2016

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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

As part of the M&E systems of CDSP-IV, the Annual Outcome Survey (AOS) gathers detailed information on log frame objective and outcome indicators as well as a number of output indicators. This survey also covers CDSP I, II and III areas (the three earlier phases of CDSP) and incorporates indicators that have been covered in past CDSP III monitoring surveys (land tenure and retention, cropping intensity). This enables the CDSP data-set to be continued and so measures 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 by end 2011, but covered only the CDSP IV area, as did the 2014 AOS. The other four AOS (2012, 2013, 2015 and 2016) 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.

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. In addition, outcome surveys gather information on the project services received by respondents.

The current survey is the fifth round of annual outcome survey. Data collection was completed on 16 February 2016. 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. Annual surveys also provide evidence for RIMS level II performance ratings.

2. Methodology

2.1 Sampling procedure

The sample 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 variations in the sample composition in each survey round.

Table 1: Sample distribution

Area	Total 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 Elahi	Char Mohiuddin	20			
			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 Katakhal	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	Joypur Somaj	14			
			Krishno Nagar 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		

2.2 Survey questionnaire

Data was collected using a household questionnaire. To comply with the 2016 Supervision Mission recommendations, some additional questions on the works of Forest Department and Department of Agricultural Extension have been included. The updated questionnaire is in Annex 1.

2.3 Field data collection and data analysis

During December 2016 to February 2017 data was collected from the field by four hired enumerators (two men and two women) along with the two M&E Officers of CDSP IV and a hired Survey Supervisor cum Data Entry & Analysis Specialist. The enumerators were trained on how to fill in the survey questionnaire and on the interview techniques to be followed during field data collection. The field data collection process continued for 34 days including four days for checking completed questionnaires and verification at different field locations. In this round 19 sample households could not be located from their earlier addresses as recorded in the previous survey rounds 2012, 2013, 2013 and 2015. Fourteen households of Joypur Somaj and three households of Sahebani Somaj in Caring char have migrated to distant locations due to loss of their homesteads to the river erosion taking place at the bank of the Meghna. Another two sample households from South Mojlishpur, Noler Char and from Char Basher, Char Nangulia (CDSP IV), and three households of CDSP III have migrated to other locations after selling their homesteads. To keep the sample size at 600, 22 new sample households were selected from settlements (somaj)

close to the locations of the missing households. The list of the sample households who migrated and the new sample households has been included as Annex 2 of this report. After computer data entry, analysis was done using MS Access and SPSS during January to March, and a partially complete first draft report was shared with the IFAD Supervision Mission of March 2017. While finalizing the report some inconsistencies were noticed, which took time to sort out; hence the late final completion of this report.

3. Results and discussion

3.1 Settlement status

In the CDSP-IV area the settlement activities show good progress, with the AOS showing 69% of settlement completed (Table 2) compared to zero in 2013. This is consistent with the progress of khatian (land title) distribution reported by MoL (Ministry of Land), which stands at 69.4% of the target 14,000 households by the end of 2016. For the remaining area, the settlement procedure is going on, but there is no settlement program on Urir Char. In CDSP-I, II and III areas most people had been settled through CDSP, some were settled by purchasing land from other settlers and a few of them settled by inheriting land. The proportion of households who purchased or inherited land is 29% and 17% in the CDSP-I&II and CDSP-III areas respectively. There has been a small increase in this proportion since the first (2012) AOS in CDSP I&II (when it was 27%), but no change in CDSP III. As selling of newly received land titles is not allowed, it is assumed that these sales were informal.

Table 2: Settlement Status (% of HH)

	CDSP-I & II	CDSP-III	CDSP-IV
Settled under settlement program	71	83	69
Settled through purchasing land	19	15	2
Occupying <i>khas</i> land	-	-	29
Inherited	10	2	-

3.2 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 3. The principal occupation in all CDSP areas is now day labour. This is followed by agriculture in CDSP IV and CDSP I&II, but by petty trade in CDSP III. Overall these three occupations account for the principal occupation of over 70% of household heads in CDSP III and IV areas, but in CDSP I/II and III salaried jobs have also become important, accounting for 15% of principal occupations.

The proportion of household heads involved with agriculture as a principal occupation has a decreasing trend in all the areas, most notably in the CDSP-IV areas it has remarkably decreased from 37% at baseline to 22% now (having increased to 48% in 2014, it then declined to 24% last year). Day labour is little changed - falling from 31% at baseline to 30% 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 19%. 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 3: Principal occupation of household head (%)

	CDSP-IV Baseline	CDSP-I & II	CDSP-III	CDSP-IV
Agriculture	37	20	16	22
Day Labour	31	24	33	30
House keeping	3	3	3	4
Fisherman	3	3	7	5
Job	3	15	8	7
Petty trading	9	16	25	19
Rickshaw/ Van/ Boat puller	4	1	1	2
Driver	0	4	3	3
Old age	6	8	2	5.5
Others	5	6	2	2.5

3.3 Housing

The average size of the main houses observed in the CDSP-I&II, CDSP-III and CDSP-IV areas is shown in Table 4 below. Houses in CDSP I&II and III are double the size of those in CDSP IV at baseline but, with a 39% increase in average size of CDSP IV houses, the gap has now closed to a difference of less than 50%. There are no major changes observed in floor type in all CDSP areas. A remarkable change is observed regarding materials of the wall and the roof in CDSP IV, with 72% of walls and 70% of roofs now being tin, compared to only 13% of walls and 16% of roofs at baseline. In terms of use of tin for walls and roofs, CDSP IV is now not far behind the 84% or more of CDSP I&II and III, but 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.

Table 4: Housing

	CDSP IV Baseline	CDSP I & II	CDSP III	CDSP IV
Average size of main house (sq. ft)	253	528	516	352
Type of floor (% of HH)				
Mud	99	94	96	98
Bricks	1	6	3.5	-
Pacca	-	-	.5	2
Type of Wall (% of HH)				
Leaf	4	-	1	3
Straw	34	1	1.5	8
Mud	-	-	.5	2
Bamboo	50	10	7	15
Tin	13	84	86	72
Pacca	-	5	4	-
Type of Roof (% of HH)				
Leaf	2	-	-	2
Straw	82	3	9	28
Tin	16	96	90	70
Pacca	-	1	1	-

3.4 Water supply and sanitation

From data in Table 5 below it can be concluded that household access to drinking water has improved in CDSP IV compared to the baseline situation. Although almost all households have been getting water from tube-wells (including shallow tube-wells in the CDSP I&II and III areas due to reduced salinity of the upper aquifer), the access to water has greatly improved in the CDSP IV area, with sources now being around 50 metres from the home as against 350 metres in the baseline situation (more in the rainy season). This saves much time in collecting drinking water, especially for the women of the households who usually perform this task.

Table 5: Water and sanitation

	Baseline CDSP IV	CDSP-I,II	CDSP-III	CDSP-IV
Source of Drinking Water (%)				
Shallow Tube well	3	50	36	10
Deep Tube well	96	50	64	90
Dug well	-	-	-	-
Rain Water	-	-	-	-
Pond Sand Filter	-	-	-	-
Untreated pond water	2	-	-	-
River/Canal water	-	-	-	-
Ownership of tube well (%)				
Owned by HH	5	25	25	5
Jointly owned	5	2		
Neighbour	27	23.5	12	4
Govt./Community	63	17	11	18
From CDSP	-	32	52	73
Distance of water sources				
Dry Season (metre)	345	35	35	44
Rainy Season (metre)	418	40	41	56
Type of latrine used by HH (%)				
No latrine	5			
Hanging/open	77	3	8	-
Ring slab (unhygienic)	14	37	30	20
Hygienic	6	60	62	80
Source of ring slab or hygienic latrine				
Purchased from market	61	79	35	13
Purchased from NGO/other organization	8	1	1	-
Donated by GO/NGO/other organization	31	-	-	-
Installed by CDSP	-	19	64	87

Table 5 shows that the use of ring slab and hygienic latrines in CDSP IV has hugely increased compared to the baseline situation (from 20% to 100%). It is worrying that in the CDSP older phase areas some 6% 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. Eighty seven percent of the CDSP IV households have received sanitary latrines from this project.

3.5 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 6 below).

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 slight improvement - from around 18% to about 24%. However, with the efforts in

hygiene education made by CDSP IV, the proportion washing hands with soap has increased from only 4% to 23% - still only a minority but almost the same as the older CDSP areas. But washing hands after return from the latrine has 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 75%. In CDSP III it was 34% in 2012, and now is 59%. For CDSP IV use of soap or ash was only 6% at baseline against 82% now. The higher figure for CDSP IV suggests that this project's efforts in hygiene education, at least related to latrine use, have been more successful than in the earlier phases of CDSP.

Table 6: 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				
Wash by plain water	96	75	76	77
Wash by Soap	4	25	24	23
Washing hands after return from latrine				
Wash by plain water	94	25	41	18
Wash by soap	0	56	37	60
Wash by ash	6	19	22	22

Table 7 shows that households across all CDSP areas have improved immunization of their children. More than 92% 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 96%), obviously because of the project, but also in the older CDSP areas the situation has improved since 2012 (from around 30% to over 94%). From discussion with Civil Surgeon and District Family Planning Officer it became clear that now these departments are undertaking health support activities in an organised way with the support of Save the Children through the Ma Moni programme, with 15 satellite clinics and 30 outreach centres implementing an expanded programme of Immunization. This intensive support is reflected in the improved figures!

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 methods increasing from 34% to 100%. In CDSP I, II and III, the situation was already better in 2012, and the above-mentioned health support, increased general awareness, and easy availability of FP materials must be the reason for the further improvement in those areas (from around 40% to almost 100%).

Table 7: Health and family planning

	CDSP-IV Baseline	CDSP-I,II	CDSP-III	CDSP-IV
Immunization of the children (% of HH)				
Yes	52	93	96	92
No	48	17	16	21
Regular visit of Govt./NGO health worker in the community (% of HH)				
Yes	6	97	94	96
No	94	3	6	4
Use of Family Planning Method (% of eligible couples among HH)				
No	66	2	1	0
Temporary method	32	86	91	95
Permanent method	2	12	8	5

3.6 Household and productive assets

A long list of family assets is examined yearly, see Table 8. Average total asset value in CDSP IV is six times (increase of 501%) the value during the baseline survey of 2011. At present the average total values for assets are Tk. 320,634 for CDSP I&II (an increase of 343% since 2012), Tk. 373,370 for CDSP III (an increase of 475% since 2012) and Tk. 212,010 for CDSP IV.

Table 8: Household assets (households in percent and value in Taka)

Sl#	Assets	Baseline CDSP IV		CDSP I & II		CDSP III		CDSP IV	
		HH	Value	HH	Value	HH	Value	HH	Value
1	Cot/ Khaat	90	1,411	100	6256	99	5003	98	3211
2	Almira	5	2,540	47	4401	41	2970	28	2804
3	Showcase	-	-	49	4877	44	4250	25	4233
4	Chair/table	28	1,061	88	2854	87	2567	72	1721
5	Shinduk(Wooden box/Trunk-Tin)	36	1,991	43	3008	52	3994	58	2954
6	Alna	22	1,113	48	705	31	915	22	585
7	Ceiling/Table Fan	0.2	833	24	1500	24	710	15	696
8	Radio/Cassette Player	1	421	3	2583	1.5	1466	1	3000
9	B&W TV	0.7	4,120	4	2500	2.5	3800	-	-
10	Color TV	0	0	5.5	7909	4	6750	2	7000
11	Mobile Phone	46	1,984	94.5	3740	95	3066	96	2655
12	Sewing machine	2	4,013	9.5	7342	10	4868	9	3991
13	Ornaments	54	6,687	97	22778	99	21422	95	18184
14	Bicycle	7	2,962	35	5469	28	5100	24	3713
15	Rickshaw/Van	1	5,900	3	14333	3	7167	1	4000
16	Motor cycle	-	-	10.5	72143	8	60667	4	88750
17	Auto rickshaw battery operated	-	-	-	-	1	50000	-	-
18	Sprayer	-	-	8	987	12	858	28	1144
19	Laptop	-	-	1	17500	1.5	14333	.5	6000
20	Bullock cart	-	-	-	-	-	-	-	-
21	Solar	-	-	68	22085	68	24358	53	18045
22	Shop with land ownership	-	-	14	660000	16	283906	14	288400
23	Tractor for cultivation	-	-	3	39000	1.5	36667	4	45714
24	Boat	0.5	9,500	.5	60000	2	22500	1.5	65000
25	Mechanized boat	1	94,928	.5	80000	5.5	88182	4	89357
26	Thresher	3	26,155	1.5	3867	7	5321	3	3000
27	Water pump	0	0	3.5	13786	3	9667	5.5	25800
28	Fishing net (Type:....)	40	3,377	55	4998	69	10229	71	5174
29	Fruit/timber	24	10,765	98	152297	98	136893	99	55816
30	Cow	61	23,328	42	85396	58	59904	70	66765
31	Buffalos	2	216,204	-	-	1.5	60000	1.5	83333
32	Goat	36	3,533	13	7181	26	7957	23	6953
33	Sheep	1	21,988	-	-	2	1613	5	5378
34	Chicken	90	903	89.5	2563	93	2641	93	2496
35	Duck	81	1,269	82.5	2294	82	2387	89	3004
36	Pigeon	-	-	20	1934	14	2370	15	2883
37	Rice husking machine	-	-	1.5	50333	3.5	82371	1.5	21667
38	Trolley motorized	-	-	1	80000	-	-	-	-
39	CNG Auto	-	-	2	170000	-	-	-	-
40	Others (specify)	-	-	9.5	642316	9	283300	3	190833
	Average total asset value		35,162		320,634		373,370		212,010

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

Table 9 compares the shares of different categories of assets in total asset value. For CDSP IV households, at the time of baseline in 2011, livestock accounted for 62% of total asset value. Now the value of assets is more or less 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.

Table 9: 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%	16%	19%	20%	Up 469%	ornaments (41%), solar system (23%)
Non-farm enterprises	7%	24%	18%	23%	Up 1870%	shop with land (82%)
Farm assets	10%	36%	42%	28%	Up 1659%	trees (93%)
Livestock	62%	10%	13%	26%	Up 153%	cows (85%)
Other assets	0%	14%	8%	3%		
Total	100%	100%	100%	100%		
Total value per household Taka	35,162	320,634	373,370	212,010	Up 501%	

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 15% of households), almira (5% to 28%), chair/table (28% to 72%), bicycle (7% to 24%), mobile phone (46% to 96%), and ornaments/jewellery (54% to 95%). In 2011 no households reported ownership of solar power systems, but now these are owned by 53% of households. Ornaments and solar systems are now the two most valuable household assets, accounting for almost two-thirds of the total value of household assets.

The proportion of productive farm and non-farm assets has increased in CDSP IV from 17% to 51% (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 82% of asset value in this category and are owned by 14% of CDSP IV households. The farm productive asset category is dominated by timber and fruit trees¹, which account for 93% of asset value in this category and are now owned by 99% of households compared to 24% at baseline. In livestock, cows account for 85% of total asset value and are owned by 70% 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 26% of the total value of assets owned by households in CDSP IV.

3.7 Annual household income

Table 10 shows the average annual income of the households from different sources. The total average annual incomes of the sampled households are at present Tk. 231,074, Tk.249,077 and Tk.189,627 in the CDSP I&II, CDSP III and CDSP IV areas respectively. Compared to the CDSP-IV baseline data from 2011, the average annual household income in the CDSP IV area has increased by 164%, with a 38% rise over the previous year.

For CDSP IV, income is split between 42% from the farm sector and 58% from the non-farm sector. The share from the farm sector is somewhat higher than at baseline in 2011 (38%), but is less than the 50% of last year. In the older CDSP areas the share of income from the farm sector is lower at 32-33% - and this share has also declined from 38-48% since 2012.

Within the farm sector for CDSP IV, the share of crops has declined since 2011 - from 60% to 31%, with growth in all the other, higher value, farm sub-sectors. In fact, livestock rearing now contributes more, and crops slightly less, than

¹ Timber and fruit trees are valued by respondents in terms of their value for timber and firewood

in the older CDSP areas. This may reflect the combination of micro-credit and community livestock service providers that have been effective in CDSP IV. Within the non-farm sector, the proportion of income from wages has fallen, although this still accounts for over 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 similar, but CDSP IV households still have significantly less non-farm income, especially from wages and salaries, petty trade and remittances.

Table 10: 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	
Field Crops	15,617	25,704	27,885	24,900	60%	34%	34%	31%	59%
Homestead Gardening	3,115	17,771	16,312	16,601	12%	24%	20%	21%	433%
Pond Aquaculture	2,713	8,734	7,851	9,318	10%	12%	10%	12%	243%
Forestry/Trees	0	319	2,415	604	0%	0%	3%	1%	
Livestock Rearing	2,666	12,397	15,553	18,305	10%	17%	19%	23%	587%
Poultry Rearing	1,887	10,010	11,236	9,638	7%	13%	14%	12%	411%
<u>total farm sector</u>	25,998	74,935	81,252	79,366	100%	100%	100%	100%	205%
Wage/Salary	33,378	85,768	74,863	57,067	73%	55%	45%	52%	71%
Petty Trading	6,879	29,410	40,744	24,779	15%	19%	24%	22%	260%
Rickshaw/Van Pulling	2,749	2,405	3,462	3,696	6%	2%	2%	3%	34%
Fishing/PL Catching	2,093	6,836	21,082	8,287	5%	4%	13%	8%	296%
Remittance	601	14,325	15,071	6,773	1%	9%	9%	6%	1027%
Handicrafts	252	2,657	941	2,661	1%	2%	1%	2%	956%
Others	0	14,738	11,662	6,998	0%	9%	7%	6%	
<u>total non farm sector</u>	45,952	156,139	167,825	110,261	100%	100%	100%	100%	140%
total farm	25,998	74,935	81,252	79,366	36%	32%	33%	42%	205%
total non farm	45,952	156,139	167,825	110,261	64%	68%	67%	58%	140%
<u>Total</u>	71,950	231,074	249,077	189,627	100%	100%	100%	100%	164%

Income from farm and non-farm enterprises is estimated as being net of enterprise operating costs.

3.8 Field crop cultivation

3.8.1 Crop area and cropping intensity

On average, each farmer in CDSP IV is growing 170 decimals of crops on 153 decimals of land - a cropping intensity of 111%, compared with 105% at baseline in 2011 (Table 11). Cropping intensity is around 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.

Table 11: Average area cropped and cropping intensity.

		Baseline CDSP IV	2016 Phase I/II	2016 Phase III	2016 Phase IV
Decimals per household	Area cultivated	154	180	135	153
	Area of all crops	163	262	206	170
Cropping intensity		105%	146%	153%	111%
n (farmers)			110	125	123

Cropping in all CDSP areas is dominated by paddy, which is cultivated by over 98% of farmers (Table 12). Paddy is predominantly rainfed aman, with very little aus now being grown, however boro is becoming significant in CDSP IV and, to a lesser extent, in CDSP I&II. However little is grown in CDSP III as groundwater there remains saline. Much of the boro in CDSP IV is irrigated by DTW which are exploiting the deep fresh water aquifer and pose a threat to supplies for domestic use.

Table 12: Cultivation of different crops

		Percentage of farmers who grow			Share of cultivated area		
		I/II	III	IV	I/II	III	IV
Paddy	Aus	0.9%	2.4%	1.6%	0.8%	2.2%	1.4%
	aman	96.4%	98.4%	86.2%	95.1%	99.7%	83.9%
	Boro	9.1%	0.8%	13.0%	6.6%	0.5%	10.9%
	all paddy	98.2%	99.2%	98.4%	102.5%	102.3%	96.2%
Pulses and oilseeds	Keshari ¹	23.6%	17.6%	8.9%	11.0%	11.1%	3.7%
	Mung ²	10.0%	6.4%	3.3%	1.6%	2.1%	0.8%
	Felon ³	19.1%	19.2%	7.3%	1.8%	1.8%	1.1%
	Mashuri ⁴	1.8%	0.0%	0.0%	0.2%	0.0%	0.0%
	Mashkalai ⁵	0.0%	0.0%	0.8%	0.0%	0.0%	0.2%
	Soyabean	29.1%	35.2%	4.1%	11.3%	24.3%	1.2%
	Mustard	2.7%	1.6%	4.1%	8.8%	0.4%	2.8%
	Groundnuts	20.0%	13.6%	3.3%	3.5%	3.1%	0.7%
	All pulse & oilseed	58.2%	59.2%	21.1%	38.2%	42.8%	10.6%
Vegetables and spices	Water melon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Musk melon	1.8%	0.0%	0.0%	0.2%	0.0%	0.0%
	Chilli	50.0%	53.6%	31.7%	3.4%	5.1%	2.6%
	Onion	0.0%	0.8%	2.4%	0.0%	0.0%	0.1%
	Garlic	5.5%	10.4%	9.8%	0.2%	0.5%	0.2%
	Coriander	3.6%	1.6%	0.8%	0.1%	0.0%	0.0%
	Turmeric	1.8%	1.6%	0.0%	0.1%	0.0%	0.0%
	Sweet potato	12.7%	20.0%	15.4%	0.9%	1.8%	1.3%
	All spice & veg	55.5%	53.6%	37.4%	4.9%	7.5%	4.3%
All field crops		100.0%	100.0%	100.0%	145.6%	152.6%	111.0%
Number of farmers (n)		110	125	123			

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

Pulses and oilseeds have yet to become important crops in the CDSP IV area, being grown by 21% of farmers on just over 10% of the cultivated land (Table 12). These crops are grown more widely by nearly 60% of farmers in the older CDSP areas and account for around 40% of the cultivated area. Soyabean has become important, especially in CDSP III. Over half of all farmers in CDSP I/II and III grow vegetables and spices on a field scale, as do over a third of farmers in CDSP IV, but the area grown is relatively small. Chilli is the most important of these crops.

3.8.2 Production, consumption and sale of field crops

Details of paddy production are in Table 13. Around 80% of farmers hire labour for this crop, and hired labour provides does around one third to half of the work in the crop. Average yield (of all types of paddy) in CDSP IV is 11.8 kg per decimal – 2.9 tons per ha, compared with 1.9 tons/hectare at baseline. Around one third of production is sold, with about 40% of rice producers making sales. Production, consumption and sales of paddy in CDSP IV are now only slightly less than in the older CDSP areas.

Table 13: Paddy production and utilisation

		CDSP I/II	CDSP III	CDSP IV
Percentage of farmers hiring labour		81%	72%	82%
Share of total labour for paddy that is hired		49%	32%	41%
Average area of paddy grown	Decimals	184	138	147
	Kg per household	1807	1891	1738
Average yield	Kg per decimal	9.81	13.65	11.80
Percentage of production	Consumed	59%	71%	60%
	Sold	36%	25%	35%
	Post-harvest loss	5%	4%	5%
Percentage of farmers reporting post-harvest loss		82%	89%	85%
Percentage of farmers making sales		40%	34%	41%
Sales income: Tk per farmer who sells paddy		24000	21017	20828
N (farmers)		130	138	142

Pulses, oilseeds and field (as against homestead) vegetables are mainly grown using family labour, with much less being hired. Around three-quarters of the production of these crops is sold (Table 14).

Table 14: Pulses, oilseeds and field vegetables

		CDSP I/II	CDSP III	CDSP IV
Percentage of farmers hiring labour		38%	34%	20%
Share of total labour that is hired		21%	23%	8%
Average area grown	Decimals	77	68	23
Average production	Kg per household	355	581	168
Percentage of production	Consumed	21%	23%	21%
	Sold	77%	75%	76%
	Post-harvest loss	3%	2%	3%
Percentage of farmers reporting post-harvest loss		42%	67%	31%
Percentage of farmers making sales		88%	89%	86%
Sales income: Tk per farmer who sells these crops		11940	12427	6194
N (farmers)		91	91	58

3.8.3 Post-harvest losses

Data in Tables 13 and 14 show that 4% to 5% of paddy, and 2% to 3% of other crops are lost after harvest. Over 80% of farmers report post-harvest losses of paddy but significantly fewer producers of other crops report such losses. The cause of post-harvest losses are: (i) ducks and chickens, (ii) threshing, and (iii) other causes including transport. These three causes are of more or less equal importance for paddy in the CDSP III area, with poultry being slightly more important in CDSP IV. For vegetables and other crops, transport and other causes are the main reason for post-harvest losses.

3.9 Homestead gardening

The main vegetables cultivated around homesteads are non-leafy vegetables such as various types of beans and gourds. Data in Table 15 shows a considerable increase in the range of vegetables grown in CDSP IV since the baseline survey. In particular, the numbers of households cultivating bitter melon, cucumber and radish has increased by nearly three times since baseline. Due to lack of irrigation, common winter vegetables like carrot, cauliflower and cabbage are mostly absent in all the chars, although these are being encouraged by the project with the development of rainwater harvesting. The three major fruits grown in the area are banana, guava and papaya.

Table 15: Types of vegetable cultivated in homesteads (% of HH growing)

	CDSP-IV Baseline	CDSP-I & II	CDSP-III	CDSP-IV
Bean	82	86	93	96
Long Bean	35	41	45	64
<i>Jali Kumra</i> (Ridge gourd)	23	5	2.5	12
Bottle Gourd	60	47	43	61
Sweet Gourd	22	14	24	34
<i>Korola</i> (Bitter gourd)	7	16	15	25
<i>Jinga</i> (Ridge gourd)	39	45	41	55
Dhundul (Sponge gourd)	55	42	38	54
Okra	8	8.5	6	15
Cucumber	10	20	18	32
Radish	9	21	25	28
Spinach	3	5	3	9
<i>Lal Shak</i> (Red amaranth)	23	35	27	40
<i>Pui shak</i> (vine spinach)	19	15	13	23

Production of fruit and vegetables have tripled since the start of CDSP IV, with sales increasing by more than four times. Most labour for homestead fruit and vegetables is provided by household members, and most households produce enough to sell surplus produce (see Table 16). The average value of these sales (for those families making sales) is about half that for paddy but considerably more than for other field crops. However, the number of CDSP IV households selling homestead produce far exceeds the numbers selling paddy and other crops. Taking account that almost three times more CDSP IV households sell homestead fruit and vegetables than paddy and other field crops, this survey suggests that more money might be generated by homestead production than by all types of field crops (but data in Table 10 shows that more net income comes from field crops).

Table 16: Homestead vegetable and fruit production

	CDSP I/II	CDSP III	CDSP IV
Percentage of farmers hiring labour	12%	12%	14%
Share of total labour that is hired	7%	5%	10%
Sales income: Tk per farmer who sells these crops	5740	6214	10115
Number of households selling these crops	128	137	165

CDSP IV households also sell significantly more homestead fruit and vegetables than those in the older CDSP areas – although it has not been possible to collect reliable data on home consumption, this is also likely to be higher.

3.10 Poultry

Table 17 shows that at least 90% of the households in all CDSP areas rear poultry. The average number of chickens per household has more than doubled in CDSP IV areas. This is due to increased access to microcredit and introduction of trained poultry workers by the project, who are providing vaccination and treatment services at low cost. The average number of ducks has increased from 7 to 9 in CDSP IV areas. Average egg production in CDSP IV at present is 85% higher than at baseline and 35% more than last year. Consumption of eggs at household level has more than doubled. Consumption of meat by households has increased to 10 times over the baseline amount, with income from egg and poultry meat sales increasing by over 2.5 times. Indicators for poultry production and consumption in CDSP IV have largely caught up with the older CDSP areas, with sales of poultry meat being around 25% higher. Female household members reportedly rear most poultry, although, in a few cases, men do the task with assistance from women.

Table 17: Poultry rearing

	CDSP-IV Baseline	CDSP-I & II	CDSP-III	CDSP-IV
Rearing status				
HH rear poultry (%)	89	90	93	93
HH vaccinating poultry (%)		10	7	36
Average nos. of chicken per HH	6	12	15	13
Average nos. of duck per HH	7	10	7	8
Annual production of eggs (Nos./ HH)	156	279	306	288
HH consumption of eggs (Nos./ HH)	47	138	112	106
Income from eggs (Tk/ HH)	817	2024	2087	2152
Annual production of poultry meat (Kg/ HH)	36	146	67	80
HH consumption of meat (Kg/ HH)	6	133	52	62
Income from meat (Tk/ HH)	4,949	9477	9835	12354

3.11 Livestock and aquaculture

Table 18 shows that livestock (primarily cattle) rearing has slightly decreased in CDSP IV but, with 70% of households involved, this activity is still significantly more widespread than in CDSP I, II and III. This decline is due to increased mechanized cultivation (tractors replacing draught animals), and also due to the reduction in grazing on fallow land with the increase in vegetable and field crop cultivation.

Table 18: Livestock and aquaculture

	CDSP-IV Baseline	CDSP-I & II	CDSP-III	CDSP-IV
Livestock				
Nos. of HH rearing livestock (%)	75	42	58	70
Avg. milk production (Lt)	114	215	242	321
Avg. milk consumption (Lt)	64	78	90	147
Avg. income from milk (Tk)	2,850	9,169	9,753	10,242
HH with goat (%)	17	13	25	23
Aquaculture				
HH with pond/ditch (%)	99	95	93	99
HH culture pond/ditch (%)	51	78	75	74
Average production (kg/HH)	43	131	146	134
Yield (kg/decimal)	1.74	4.7	5.0	2.3
Average consumption (kg/HH)	29	58	101	61
Average income from pond (Tk/HH)	4,515	10,698	10,357	11,734

Those farmers who still keep cattle and buffalo now emphasise milk and beef 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. Milk production and sales have also increased in the older CDSP areas, but indicators for average household milk production, consumption and sales in CDSP IV now exceed those in the older CDSP areas.

Although there are reports that some households have given up keeping goats due to problems of grazing them with more and more land being used for vegetables and crops, the proportion of sample households keeping goats has increased from 17% at baseline in 2011 to 23% in 2016. This may well be because CDSP IV households are now becoming more interested in rearing goats because of the availability of support from local paravets and PNGOs. This trend may continue in 2017.

Almost all households have some sort of pond or ditch – and did so prior to the start of CDSP IV. However, the proportion of CDSP IV households using these ponds for aquaculture has increased from about half to three-quarters – and is similar to the proportion in the older CDSP IV areas. In CDSP IV fish production per household has gone up by three times, consumption has doubled and sales have more than doubled. Although reported pond

yields (kg per decimal) have increased by 32%, these yields are still only 2.3 kg/decimal (568 kg/ha), much lower than would be expected for a cultivated pond, and less than half of yields reported in the older CDSP areas.

3.12 Social forestry

Sample respondents who were members of SFG were asked about the benefits that are generated by their participation in social forestry. In the CDSP III area more households reported getting benefits from roadside plantation than embankment or canal-side plantation. The main benefit reported was firewood (trees are not yet ready to be cut down for timber, followed by labour wages paid by the Forest Department for tree-care.

Table 19: Benefits from social forestry

Plantation	Types of benefits					
	Fuel wood	Fruit	Bean	Labour	Watcher	Medicinal plants
CDSP III						
<u>Embankment</u>						
-Number HH reporting	7	6	5	7	-	3
-Qty (kg/days)	571			6	-	2
-Amount(Tk.)	1714	625	1650	1743	-	367
<u>Roadside</u>						
-Number HH reporting	18	3	1	18	-	9
-Qty (kg/days)	469			5	-	
-Amount(Tk.)	1200	950	600	1325	-	264
<u>Canal</u>						
-Number HH reporting	4			2		1
-Qty (kg/days)	1170			4		
-Amount(Tk.)	5475			1200		200
CDSP IV						
<u>Embankment</u>						
-Number HH reporting	16	6	3	13	2	2
-Qty (kg/days)	414		30	5	185	
-Amount(Tk.)	1081	917	2067	1369	25000	400
<u>Roadside</u>						
-Number HH reporting	11	5	4	10	1	2
-Qty (kg/days)	249		21	7	6	
-Amount(Tk.)	627	1700	1538	1950	1800	160
<u>Canal</u>						
-Number HH reporting		1	1			
-Qty (kg/days)			40			
-Amount(Tk.)		900	2000			

In the CDSP IV area, most SFG households report benefits from wages and firewood, but two households got considerably more from payments to watch embankment plantations.

3.13 Food security

Survey respondents were asked how many months of a year they can meet their basic food needs from their own production. Table 20 shows that, on average, CDSP IV households can meet household basic food needs from their own production for 9 months, 2 months more than in the baseline situation. In the older CDSP areas the average period is 9.4 months. 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. If they faced this situation, they were asked to specify the months when it occurred as per the *Bangla* calendar. Thirty five percent of the respondents replied that they face such a situation in different months

of the year in CDSP IV area, a significant improvement compared with 82% in the baseline situation. Food security is still a little better in the older CDSP areas. In the CDSP I&II area 22% of respondents faced this crisis, while in the CDSP III area the proportion was 29%. In these older areas, there has been a significant improvement since 2012, when 39% faced a crisis in CDSP I/II and 59% in CDSP III. Table 20 shows the acute crisis period by month.

Table 20: Food security

	CDSP-IV Baseline	CDSP-I & II	CDSP-III	CDSP-IV
Average months in a year HH meet the basic food needs from own production	7	9.4	9.4	9
HH faced acute crisis in the last year (% of HH)	82	22	29	35
Crisis Months (% of HH)				
<i>Boisakh (Apr-May)</i>	5	0	3	8
<i>Joistho (May-Jun)</i>	16	1	3	7
<i>Ashar (Jun-Jul)</i>	33	11	11	19
<i>Srabon (Jul-Aug)</i>	35	17	23	23
<i>Vadro (Aug-Sep)</i>	44	17	23	20
<i>Ashin (Sep-Oct)</i>	54	16	20	23
<i>Kartic (Oct-Nov)</i>	50	4	2	6
<i>Agrohayoun (Nov-Dec)</i>	9	1	0	2
<i>Powsh (Dec-Jan)</i>	2	0	0	1
<i>Mug (Jan-Feb)</i>	3	0	0	1
<i>Falgun (Feb-Mar)</i>	4	0	1	1
<i>Chaitro (Mar-Apr)</i>	6	0	2	2

3.14 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 21 shows that, in the CDSP IV area, the distance to both schools and markets has more or less halved, and most people are now able to use brick or bitumen roads – which were completely absent before. The time taken to reach schools and markets has more than halved and is now similar to that in the older CDSP areas.

Table 21: Improved communications

	CDSP-IV Baseline	CDSP-I &II	CDSP-III	CDSP-IV
Primary Schools/ Madrasas				
Average distance (km)	1.5	0.8	0.48	0.6
No road (% of HH)	29	1.5	1.2	4
Earth road (% of HH)	71	49	44	14
Brick road (% of HH)	0	6.5	10	25
Bitumen road (% of HH)	0	96	47	37
Average time taken to reach in rainy season (minutes)	37	15	12	13
Average time taken to reach in dry season (minutes)	25	11	9	9
Hats /Bazaar				
Average distance (km)	2.8	0.9	2.1	1.4
No road (% of HH)	33	1	0.5	4
Earth road (% of HH)	67	49	23	13
Brick road (% of HH)	0	10	18	39
Bitumen road (% of HH)	0	93	88	71
Average time taken to reach in rainy season (minutes)	62	15	25	24
Average time taken to reach in dry season (minutes)	49	11	20	18

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.

Table 22 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	3	3	5
Serious disease of any member	20	21.5	21	17
Displacement due to flood/ cyclone/ tornado	42	3	1	2
River erosion	8	-	2	2
Loss of crop due to flood/ drought	47	7.5	2.5	3
Loss/ death/ theft of livestock/ poultry	15	3	8	7
Dacoitary/theft/ mastanias in house or business	15	4	5	2
Loss of business/ investment	1	0.5	2	1
Divorce/ separation	1	-	0.5	-
Dowry	3	4.5	5	5
Socio-political harassment, including bribes and tolls	1	1.5	3.5	3
Women harassment (Violence)	0	-	0.5	-
House destroyed by fire or other reason	2	-	0.5	1
Others	--	5.5	2.5	2

From Table 22 it is observed that, compared to the baseline situation, shocks or crises have been reduced in the CDSP IV area. Some of them are remarkably reduced, like displacement due to floods, cyclones and tornados

(from 42% to 2% of households), loss of crops due to flood or drought (from 47% to 3%), death or theft of livestock or poultry (from 15% to 7%) and dacoity, theft and mastanias in house/ business (15% to 2%). But it should be noted that during baseline survey the respondents were asked to respond for the last five years, rather than just for the last one year. Households in CDSP IV now face a similar level of shocks and crises to those in the older CDSP areas.

3.16 Comparison of selected Indicators across rounds of AOS

Table 23 shows values and indication of increase or decrease for respective selected indicators across the baseline and 1st to 5th rounds of annual outcome surveys.

Table 23: Comparison of 1st to 5th Rounds of Outcome Surveys and CDSP IV Baseline 2011

Indicators	Base-line in 2011	Annual Outcome Surveys					Changes compared to baseline in 2011				
		in 2012	in 2013	in 2014	in 2015	in 2016	1 st Outcome in 2012	In 2 nd Outcome in 2013	In 3 rd Outcome in 2014	In 4 th Outcome in 2015	In 5 th Outcome in 2016
Agriculture as principal occupation of household head (%)	37	45	45	48	25	22	8% increase	8% increase	11% increase	12% decrease	15% decrease
Day labour as principal occupation of household head (%)	31	29	29	20	36	30	2% reduced	2% reduced	11% reduced	5% increase	1% decrease
Straw made roof of main house (%)	82	66	55	33	42	28	16% decrease	27% decrease	49% decrease	40% decrease	54% decrease
Tin made roof of main house (%)	16	34	43	67	58	70	9% increase	27% increase	51% increase	42% increase	54% increase
Average distance (in meters) of drinking water source in dry season and wet season	345	154	112	120	50	44	55% reduced	66% reduced	65% reduced	85% reduced	87% reduced
	418	183	133	135	65	56	56% reduced	68% reduced	68% reduced	84% reduced	87% reduced
Average value of hh assets (BDT)	35,162	43,797	61,485	99,204	126,451	212,010	25% increase	75% increase	182% increase	260% increase	503% increase
Annual hh income (BDT)	71,951	89,800	107,771	109,207	163,009	189,627	25% increase	50% increase	52% increase	127% increase	163% increase
Rice production (MT/ha)	1.9	2.0	2.1	2.2	2.3	2.9	5% increase	11% increase	16% increase	21% increase	53% increase
Income from homestead gardening (BDT/HH)	3,742	6,155	6,526	4,866	13,288	11,903	64% increase	74% increase	30% increase	255% increase	218% increase
HH faced acute food crisis (%)	82	66	60	53	37	35	16% reduced	22% reduced	29% reduced	54% reduced	47% reduced

4. Summary and Conclusion

The 2016 Outcome Survey shows that the CDSP IV **settlement activities** show good progress, for 69% of the HHs settlement is completed. This is consistent with the progress of khatian distribution reported by MoL, which stands at 69.4% of the target 14,000 households by the end of 2016.

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 and even 24% last year to 22% now, while petty trade increased from 9 to 19 percent. Day labour is the more widespread occupation in all CDSP areas, being the principal occupation of 31 percent of CDSP IV household heads - but has changed little from 30 percent at baseline.

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.

An important change is that, in the past, households of CDSP IV used to collect **safe drinking water** from a distance of, on average, 345 meter and 418 meter in the dry and rainy seasons respectively. Now the average distance is

only 44 metres and 66 metres respectively, which is similar to those in the older CDSP areas. This saves both labour and time, especially for the women of the households. Sanitation has also been greatly improved, with all CDSP IV households now using ring slap or hygienic latrines.

Households across CDSP show improvement regarding **immunization of children**. More than 92% 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 6 times (503%), 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 26%, and the proportion of productive farm and non-farm assets has increased from 17% to 51% (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 82% of asset value in this category and are owned by 14% of CDSP IV households. The farm productive asset category is dominated by timber and fruit trees, which account for 93% of asset value in this category and are now owned by 99% of households compared to 24% at baseline. In livestock, cows account for 85% of total asset value and are owned by 70% of households. In the household asset category, major items are now ornaments/jewellery (41% of the total) and solar systems (23%).

Compared to the CDSP IV baseline the average annual **household income** in the CDSP IV area has increased by 164%. 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 similar, but CDSP IV households still have significantly less non-farm income, especially from wages and salaries, petty trade and remittances. Within the farm sector for CDSP IV, the share of net income from crops has declined since 2011 - from 60% to 31%, with growth in all the other, higher value, farm sub-sectors.

The **cropping intensity** in CDSP IV is 111%, compared with 105% at baseline in 2011 (Table 11). Cropping intensity is around 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. Average **paddy yield** is 2.9 tons/hectare - 1.0 tons (53%) more than at baseline.

Production of **fruit and vegetables grown around homesteads** has tripled since the start of CDSP IV. The number of CDSP IV households selling homestead produce far exceeds the numbers selling paddy and other crops, with significant money generated by these sales. Compared with the older CDSP areas, more CDSP household reports sales of homestead produce and average sales are higher.

At least 90% of the households in all CDSP areas **rear poultry**. The average number of chickens per household has more than doubled in CDSP IV areas, with egg production being 85% higher than at baseline. Consumption of eggs at household level has more than doubled, and consumption of meat has increased to 10 times over the baseline amount, with meat and egg sales up by 2.5 times. Indicators for poultry production and consumption in CDSP IV have largely caught up with the older CDSP areas, with sales of poultry meat being around 25% higher.

Livestock rearing (mainly cattle) has slightly decreased in CDSP IV, but this activity is still significantly more widespread 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. Indicators for average household milk production, consumption and sales now exceed those in the older CDSP areas.

The percentage of households with **pond aquaculture** has increased from 51% to 74% in CDSP IV areas. Fish production (kg/ HH) has more than trebled, with consumption of fish doubling and sales increasing by 2.5 times. Although the yield of fish per unit area of pond has increased in the CDSP IV area, it is still less than half of that in the older CDSP areas and very low by Bangladesh standards.

In the CDSP IV area the proportion of households facing acute **food crisis** has reduced from 82% to 35% since 2011, but this is still higher than in the older CDSP 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 9 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. This has resulted in most people are now being able to use brick or bitumen roads – which were completely absent before. The time taken to reach schools and markets has more than halved and is now similar to that in the older CDSP areas.

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, and poultry and fish production, consumption and sales. Shocks and crisis reported by households are now broadly similar across all CDSP areas. Production, consumption and sales of paddy (by far the main crop grown) in CDSP IV have now almost caught up with the older areas. CDSP IV households now do better than those in CDSP I/II and III in terms of sales of homestead fruit and vegetables, and in milk production, consumption and sales. Indicators where CDSP IV households have made good progress, but still lag behind those in the older CDSP areas, include housing, asset ownership, food security, and overall household income (farm income has caught up, but non-farm income has not). Cropping intensity in CDSP IV is still significantly lower than in CDSP I/II and III, with less cultivation of non-rice crops.

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**.

Annex-1 Annual Outcome Survey Questionnaire 2016

CDSP Phase:

I	II	III	IV
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 Sample ID:

--	--	--	--	--	--	--	--

 Baseline Sample ID:

--	--	--	--	--	--	--	--	--	--

Name of Respondent:..... **Relation with HH Head:**

Sex: M/F

Address: Vill/Somaj:....., Char:.....

Union:..... Upazila:.....

Member of Field Level Institutions (FLI):

FLIs	WMG	FF	SFG	NGO	TUG	LCS			
Yes/No									

Occupation:

	Primary	Secondary
Household Head		
Spouse		
<i>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 and Others (Specify).-19</i>		

Family Size:

	<10 Years	11-16 years	17-60 years	Above 60 years	All
Male					
Female					

Land holding:

Did you get the land from Government under settlement program?	Yes/No	If Yes amount	Land buy.....Deci. Land sellDeci
If no, how do you occupy the land?	Purchase-1, Occupy by myself-2, Lease/Share taken-3, Given by landowner to live-4, Others..... 5		Total land deci
Land by type (in deci):			
Homestead	Pond/ditch	Agri.Land	Fallow land

Housing Condition:

Type of House	Size (Length X Width) Feet	Type of Floor	Type of Wall	Type of Roof
Main House				
Kachari/Baithakkhana				
Kitchen				
Animal Shade				

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

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..... Meter	Rainy season.....Meter
Source of water for bathing and washing:	Shallow Tube Well -1, Deep Hand Tube Well-2, Dug Well-3, Pond Water-4, River/Canal Water-5, Others (specify).....6.	
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)/Ring-slab (water sealed)/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	

Health and Family planning:

How do you wash hand before taking meal? By only water-1, by soap-2	
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
If no, Why?	Lack of awerness-1, Support not available Localy-2, Due to bad road communication couldn't attend in the camp/center-3
Use mosquito net? Yes-1/No-2	If no, why?: Not needed-1, Lack of awerness-2, Lack of money-3
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	

If no, Why: Lack of awerness-1, Service not available locally-2, Materials are costly-3

Household Assets:

Sl	Type of Assets	Put Tick	Quantity	Present Value (Taka)
1	Cot/ <i>Khaat</i>			
2	Almira			
3	Showcase			
4	Chair/table			
5	<i>Shinduk</i> (Wooden box/Trunk-Tin)			
6	<i>Alna</i>			
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	<i>Rickshaw</i> /Van			
16	<i>Motor cycle</i>			
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			
30	Cow			
31	Buffalos			
32	Goat			
33	Sheep			

34	Chicken			
35	Duck			
36	Pigeon			
37	Rice husking machine			
38	Trolley motorized			
39	CNG Auto			
40	Others (specify			

Cultivation type Crop Production and Income:

Field Crops: Total Cultivated Land (in deci) Own, share-in, lease/cod- in , Share-out, Lease/cod-out, Total land.

Crops	Area Cultivated (Deci)	Variety		Crops	Area Cultivated (Deci)	Variety	
		Local	HYV			Local	HYV
Aus				Bean			
Amon				Long Bean			
Robi/Boro				<i>JaliKumra</i> (Ridge gourd)			
<i>Keshari</i>				Bottle Gourd			
<i>Mug</i>				Sweet Gourd			
<i>Felon</i>				<i>Korola</i> (Bitter gourd)			
<i>Moshuri</i>				<i>Jinga</i> (Ribbed gourd)			
<i>Mash Kolai</i>				Dhundul (Sponse gourd)			
Soybean				Okra			
Mastered				Cucumber			
Ground nut				Radish			
Water melon				Carrot			
Musk melon				Cauliflower			
Chilli				Cabbage			
Onion				Spinach			
Garlic				<i>Lal Shak</i> (Red amaranth)			
Coriander				<i>Puishak</i>			
Turmeric				Tomato			
Sweet potato				Brinjal			

Note: In case of growing vegetable in homestead please write 'B' in place of decimal

Production and Income

Crop	Labour Used @ Tk. 400 per day		Prod. Cost	Post- har- vest loss	Consump- tion		Sales	
	Own Tk.	Hired Tk.	Tk.	Kg	kg	Tk.	Kg	Tk.
<i>Field Crop</i>								
Paddy								
Straw								
Pulse								
Oil Seeds								
Vegetable								
Others								
<i>Homestead Gardening</i>								
Leafy & other vegetable								
Banana								
Papaya								
Guava								
Lemon								
Coconut								
Others fruits.....								

Social Forestry Production and Income:

Time spent in collection of fuel wood (in hours per week).

Plantation Types	Types of benefits					
	Fuel wood	Fruit	Bean	Labour	Watcher	Medicinal plants
Embankment						
-Qty (kg/days)						
-Amount(Tk.)						
Roadside						
-Qty (kg/days)						
-Amount(Tk.)						
Canal						
-Qty (kg/days)						
-Amount(Tk.)						
Institution						
-Qty (kg/days)						
-Amount(Tk.)						
Foreshore						
-Qty (kg/days)						
-Amount(Tk.)						
Block						
-Qty (kg/days)						
-Amount(Tk.)						
Mangrove **						
-Qty (kg/days)						
-Amount(Tk.)						
Others if any (specify)						
-Qty (kg/days)						
-Amount(Tk.)						

** Special income in case of mangrove

Salinity of Cultivable land

In the last one year, was there any damage of crop due to salinity? Yes-1, No-2				
If yes for which	Aus	Amon	Boro	Rabi
Extent of loss (Minimum-1, Moderate-2 & Maximum-3				

Poultry and Livestock Production and Income:

Birds	Egg Production & Income (last one year)			Meat Production & Income (Last one year)		
	Sales (nos.)	Consume (Nos.)	Income from sales (Tk)	Sales (kg)	Consume (kg)	Income from sales (Tk)
Chicken						
Duck						

Animals	Milk sales (kg)	Income from Milk sales (Tk)	Milk Consume (kg)	Income from animal selling (Tk)
Cow				
Goat				
Buffalo				

Aquaculture Production and Income:

Nos. of pond	Water area (deci)	Prod. Cost (Tk)	Fish Sales (kg)	Fish Consume (kg)	Income from Sales (Tk)	Estimate of fish In Pond in Tk.

Household Annual Income:

Sources of Income	Amount (Taka)	Sources of Income	Amount (Taka)
Wage/Salary		Livestock Rearing	
Field Crops		Poultry Rearing	
Petty Trading		Fishing	
Homestead Gardening		Remittance	
Rickshwa/Van Pulling		Handicrafts	
Pond Aquaculture		Others.....	
Forestry/Trees			

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, please put tick below.							
Sl	Month	Severity (Put Tick)		Sl	Month	Severity (Put Tick)	
		Acute crisis	Some Crisis			Acute crisis	Some Crisis
01	Boishakh			07	Kartik		
02	Joishto			08	Agrohayon		
03	Ashar			09	Poush		
04	Srabon			10	Mag		
05	Vadro			11	Falgun		
06	Ashin			12	Chaitro		

Post-harvest loss with quantity and causes:

Crops	Quantity	Causes of loss
Paddy		
Vegetables		
Other crops		

Mobility: To the Service Providers/Institutions

<i>[Please ask the question in the 1st column for each institution. if applicable, then ask next column]</i>							
SL	Institutions	Distance from your household (Km)	Type of Road	Rainy season		Winter/dry season	
				Usual mode of transport (*code)	Usual time taken to reach..... (minutes)	Usual mode of transport (*code)	Usual time taken to reach (minutes)
01	Primary School/Madrasha						
02	Nearby Bazar/Hat						
<u>Road Code:</u> No Road-1, Kancha-2, Brick-3, Pacca-4, Canal & River ways-5							
<u>Mode of Transport Code:</u> 1-On foot, 2- Bicycle, 3- By boat, 4- Rickshaw/van, 5- By engine boat, 6- By Taxi/ tempo, 7- By launch, 8- By motor cycle, 9- By bus							

Shocks and coping strategy

1. Did your household experience any kind of shocks or crisis during the last one year? Yes/No
2. If yes, please mention the type of shocks faced by your household or household members and how it was 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	Dacoity/ Theft/ Mastanies in house/business		
8	Loss of business/investment		
9	Divorce/separation		
10	Dowry		
11	Socio-political harassment, including bribe and tolls		
12	Women harassment (Violence)		
13	House destroyed by fire or other reason		
14	Others (specify)		
<p>*Code: 1-Severe, 2- moderate, 3-Low</p> <p>**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, <i>Salish</i> with the UP, By mobilization of community groups/CBO/ NGOs, 12- Did nothing, 13. Others (specify).....</p>			

Thank you for your kind cooperation

Comments: -----

Field Investigator’s Signature & Name:

Verifier’s Signature &Name:

Date:

Date:

Annex 2: List of missing sample and replacement sample households

List of Sample HHs which could not be located due to migration

ID	Phase	Name	Father's Name	H/Wife Name	Bari	Location/ Somaj
13002020	1	Omer Faruk	Abdul Ali	Amena Begum	Moer Faruk's House	Char Kolmi
22001018	2	Md. Ismail	Abdul Quader	Parul Begum	Ismail's hosue	Char Mohiuddin
21002012	2	Md. Babul Uddin	Late: Abdul Aziz	Mohosena Begum	Babul's house	Char Boishakhi
31007015	3	Md. Hossain	Koli Miah	Johura Khatun	Hossain Bepari Bari	Forest Centre
31005017	3	Md. Shahin	Abu Kalam	Saheda Akter	Saheder bari	Mollah Gram
31005015	3	Abdul Mannan	Abdul Mobid	Rahena Begum	Mannaner bari	Mollah Gram
31005003	3	Md. Bellal	Dhanu Miah	Sultana Bgum	Bellal's house	Mollah Gram
31008013	3	Babul	Late: Abdul Quader	Parveen Akter	Babul's house	East 10 No.
31002008	3	Md. Hellal Uddin	Badsha Alam	Surma Begum	Hellerer bari	Sahabuddin Somaj
31002005	3	Md. Bellal	Mahafuzul Hoque	Rahena Begum	Bellal's house	Sahabuddin Somaj
31006015	3	Abdul Quader	Late Ramjan Ali	Mohosena Begum	Abdul Quader's house	Adarshaw gram
42028024	4	Abdul Quddus	Abdur Rob	Nur Jahan	Quddus hosue	West Char Bashar-N
43007016	4	Manik Das	Lal Mohon Doctor	Suchana Das	Lalmohon Doctor's house	Al-Amin Bazar Somaj-NC
45014007	4	Md. Rashed	Late Bodiul Alam	Khatiza Begum	Rashed's house	Bangla Bazar-U
44019001	4	Nur Jaman	Ruhul Amin	Rajja Khatun	Nur Jaman's house	Joypur Bazar-C
44019002	4	Ala Uddin	Ruhul Amin	Rahela Beugm	Alauddin's house	Joypur Bazar-C
44019003	4	Md. Nur Alam	Azizur Rahman	Minara Begum	Nur Alam's house	Joypur Bazar-C
44019004	4	Krishna Podha Das	Late Sudam Kr. Das	Ponita Bala Das	Krishna's house	Joypur Bazar-C
44019005	4	Meheraj	Abul Kalam	Taslima Begum	Meheraj house	Joypur Bazar-C
44019006	4	Md. Nur Nabi	Azizur Rahman	Monowara begum	Nur Nabir bari	Joypur Bazar-C
44019009	4	Afroza	Abdul Malek	Late Bellal	Afrozar Bari	Joypur Bazar-C
44019020	4	Ala Uddin	Mobasher	Monowara begum	Alauddin's house	Joypur Bazar-C
44019023	4	Kashem	Late Tofayel	Rani begum	Kashem's hosue	Joypur Bazar-C
44019025	4	Siddique	Kari Hossain	Rabeya Begum	Siddique's house	Joypur Bazar-C
44019026	4	Sahidur	Abdul Malek	Joshna	Sahdur's house	Joypur Bazar-C
44019027	4	Nur Alam	Md. Hanif	Nilufa	Nur Alam's house	Joypur Bazar-C

List of new sample HHs taken against migrated sample HHs

ID	Old IDs	Phase	Name	Father's Name	H/Wife Name	Bari	Location
31007022	31007015 & 31007021	3	Abdur Rahim	Late Jebod Ali	jahanara Begum	Abdur Rahim's house	Kabir Dubaiya's next house
31008021	22001018	3	Nuruzzaman	Nurunnabi	Tahanur Bevum	East No. 10 Boyer Char	Behind Yashin Mistri's house
31010029		3	Jibona Begum	Mvi. Mostafizur Rahman	Alauddin	House of alauddin	North of Embakment
42028043	42028032	4	Md. Yousuf	Jalal Ahmed	Tonjuba Khatun	Char Bashar	West of coconut tree owner house
44016032	44016023	4	Abdul Mannan			Caring Char	Caring Char
44016033	44016026	4	Sabor Majhi			House of Sabor Majhi	Caring Char
440160031		4	Obaidul Houque	Late Achiol Hoque		Caring Char	Caring Char
44019052	44019040	4	Shamsunnahar Begum			Caring Char	Caring Char
44019053	440119041	4	Ruhul Amin Majhi			Caring Char	Caring Char
44019043		4	Shakhawat Hossain	Enayetullah	Afsana Begum	Shakhawat Hossain's house	Caring Char
44019044		4	Babul uddin	Ruhul Amin	Amena begum	Babul uddin's house	Caring Char
44019045		4	Noruddin	Noor Ahmed	Rokeya Begum	Nooruddin's house	Caring Char
44019046		4	Noor Islam	Goni		Noor Islam's house	Caring Char
44019047		4	Osman Goni		Noor banu	Osman's house	Caring Char
44019048		4	Mustafizur Rahaman	Karimul Mustafa	Parul Begum	Mustafiz's house	Caring Char
44019049		4	Jashim Uddin	Late Jainal Abedin	Jesmin	Jashim's house	Caring Char
44019050		4	Lokman Hossin	Late Hafez Ahmed	Parul Begum	Lokman's house	Caring Char
44019051		4	Md. Ismail	Late Jainal Abedin	Rozina Akhter	Ismail's house	Caring Char
44019054		4	Saiful Islam	Abdul Jalil	Rokeya Begum	Saiful Dubaila's house	Caring Char
44019055		4	Abdul Ohab	Anazul Hoque	Nasima	Ohab's house	Caring Char
44019056		4	Saluddin	Late zulfikar	Noorjahan	Slauddin's house	Caring Char
45014013	45014007	4	Kamal Uddin	Late Aflatul	Anowara Begum	Kamal's house	Urir Char