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Char Development and Settlement Project (CDSP B) Bangladesh

Annual Outcome Survey 2019

Technical Report No 2

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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)**
- **Forest Department (FD)**

and NGOs

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1. Introduction

Since the start of phase IV the M&E system of CDSP has included 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 cover CDSP I, II, III and IV areas 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 all the CDSP chars.

As its title indicates, the survey is carried out on an annual basis. The CDSP IV 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), as well as this round in 2019[1]) cover all four CDSP areas. Annual AOS are continuing during CDSP B which will help identify changes in cropping and productivity that may be the result of loss of water management infrastructure to river erosion as well as continuing increases in production resulting from improvements introduced.

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 7th round of annual outcome surveys (the project ends in mid-2022). Data collection took place in November and December 2019.

2. Methodology

2.1 Sampling procedure

The number of samples for this survey is 200 households from each of the three domains (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 46 out of 600 sample households could not be located from their earlier addresses as recorded in the previous round held in 2017. The main reason is serious erosion in the river Meghna leading to loss of land and out-migration of families. Of these 46 sample households, 40 lost land due to erosion - 8 are in Caring Char, 17 in Char Nangulia, 5 in Noler Char (all CDSP IV) and 10 Boyer Char (CDSP III). The rest (6 cases of displacement) are due to their own family decisions of which 3 in Char Bhatir Tek (CBT), one in Char Bagar Dona (CBD) (both CDSP I/II), one in Char Ziauddin and one in Urir char (both CDSP IV). The 46 missing households were replaced in the sample with others living close to the same locations.

[1] These dates refer to data collection. AOS reports are often published in the following year.

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 Somaj	20
			Mirajpur	21
			Mohammadpur	10
			Molla Gram	20
			Adorsho Gram	20
			East 10 Number	20
			Forest Center	20
			Ali Bazar	32
			Chatlakhali i	18
			Islampur	10
CDSP-IV	200	Char Nangulia	Alamin Somaj	14
			4 no. ward	14
			Haji Gram	7
			Nasirpur	14
			Rani Gram	7
			Sohag Chowdhury Gram	14
			Ismail Bazar	14
		Noler Char	Al Amin Somaj	7
			Dokshin Azim Nagar	14
			Dokshin Mojlishpur Killer Bazar	14
			North Musapue	7
		Caring Char	Adarsha Gram Somaj	14
			Mohammed Somaj	14
			Jagannathpur	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. 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. Some additional indicators were introduced to gather information on changes due to land erosion. The updated questionnaire is attached as Annex 1.

2.3 Field data collection and data analysis

Between October and December 2019 data was collected from the field by four (two men and two women) hired enumerators, along with the two M&E Officers of CDSP B who act as supervisor and a hired Data Entry/Validator and Analyst. The enumerators were trained on for 28-29 October 2019 for 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). Almost all 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 2-3% of children are not going to school in the CDSP III and IV areas may reflect picture of dropout or scarcity of secondary schools. The table also shows that around 22% of women are not earning (or elderly or in education). There is clearly an opportunity for increased female employment, although some women may choose to not work as households become more prosperous. Household size is much he sale as in the previous 2017 AOS, but there has been a small increase in the proportion of children going to school.

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+	2.2	84%	7%	4%	5%	100%
Women 16+	1.88	68%	10%	3%	19%	100%
Child 5-16	1.66	0%	1%	98%	1%	100%
Child under 5	0.84	0%	1%	2%	97%	100%
Total member	6.58					
CDSP III						
3.1 Men 16+	2.11	85%	5%	4%	6%	100%
Women 16+	1.92	66%	6%	3%	25%	100%
Child 5-16	1.72	1%	1%	97%	1%	100%
Child under 5	0.84	0%	1%	1%	98%	100%
Total member	6.59					
CDSP IV						
Men 16+	2.12	90%	5%	1%	4%	100%
Women 16+	1.86	69%	7%	1%	23%	100%
Child 5-16	1.64	0%	0%	94%	6%	100%
Child under 5	0.75	0%	0%	3%	97%	100%
Total member	6.37					

3.2 Participation in Field Level Institutions

CDSP has promoted a range of field level institutions (FLI) to support the work of project implementation and build community ownership of project outputs. In CDSP IV Water Management Groups (WMGs) 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) base 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 three-quarters 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. In general, in all CDSP areas, more households are reporting participation in FLI compared to the previous round of AOS in 2017.

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	9.5%	12%	19%	21%	27.5%	27.5%
FF	7%	20%	22%	38%	27%	41%
SFG	7.5%	9%	38%	40%	37.5%	37.5%
NGO	64.5%	76.5%	62.5%	85.5%	72.5%	91%
TUG	19.5%	24%	50.5%	55%	74.0%	75%
LCS	0.0%	1.5%	0.5%	8%	3.0%	4%

3.3 Settlement status

In the CDSP-IV area 76.5% of households now have khatian land titles (Table 4), compared to 71% in the 2017 AOS. There is no settlement program on Urir Char so the land settlement programme did not cover all CDSP IV households – these are planned to be covered during CDSP-B. 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

	CDSP IV	CDSP-I & II	CDSP-III	CDSP-IV
% of households	**baseline**			
Settlement programme / land title	1.2	69	89	76.5
Occupying *khas* land	91	12	9.5	29.5
Purchased land	8	31.5	22	8.5
Inherited land		14.5	4	1
Sample size (n)	1400	200	200	200

Although 76.5% of CDSP IV households have khatian land titles, Table 5 shows many also occupy other land informally, and almost one third of land (27.5%) is occupied informally and another 18.5% 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 (179 decimals = 0.72 ha) in CDSP IV, with slightly smaller areas being operated in the older CDSP areas. (1 ha=2.47 acres). Since the 2017 AOS in the CDSP IV area the proportion of land occupied via khatian settlement has slightly increased and the proportion occupied informally has slightly decreased.

Table 5: Area of land acquired through different means

	CDSPI&II		CDSP II		CDSP IV	
	decimals per HH	percent of area	decimals per HH	percent of area	decimals per HH	percent of area
Area occupied Land acquired by	193	100%	182	100%	200	100%
Khatian settlement	106	55%	116	64%	101	51%
Inherited	6	3%	3	2%	1	0.5%
Purchased	35	18%	17	9%	6	3.0%
Occupy informally	11	6%	13	7.0%	55	27.5%
Lease in	35	18%	33	18%	37	18.5%
sub-total	193	100%	182	100%	200	100%
Lease out	46	23%	34	19%	21	10%
Net area operated	147	77%	148	81%	179	90%
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 most widely reported principal occupation in all the CDSP areas is now day labour (26-34% of households) followed by crop farming and small trade, with salaried jobs also important in the CDSP I&II area. Farming (crops and livestock) is by far and away the most widely reported secondary occupation (75-82% of households). There has been a general decline in the importance of farming as the principal occupation in all areas. Although this revived somewhat in 2017 it has now fallen back again in all three areas. However farm more households in all CDSP areas are now reporting farming as a secondary occupation. In CDSP IV in 2019, day labour remained the same at 31% as it was at baseline (2011), 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 22%. The increase in petty/small 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.

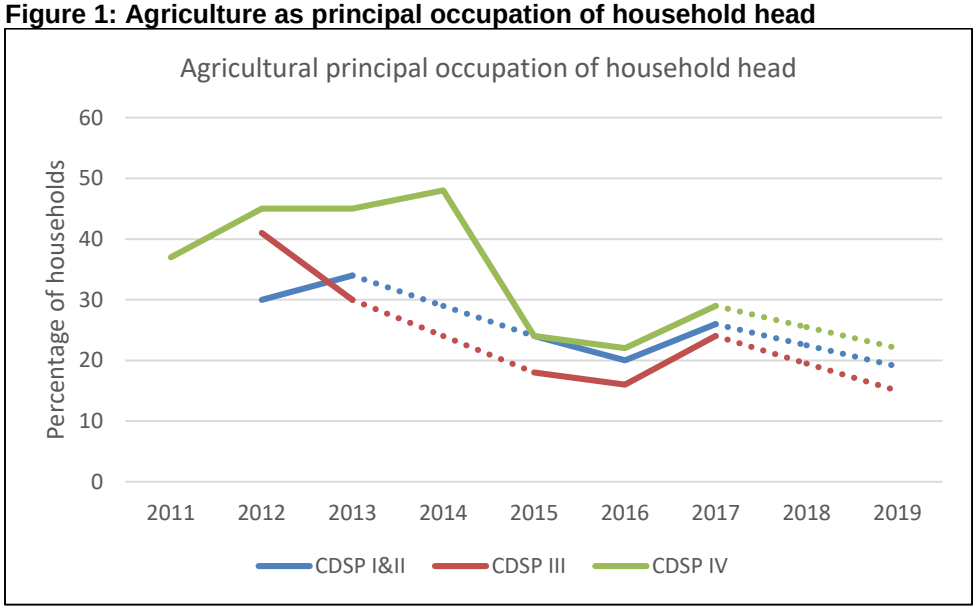
Table 6: Occupation of household head (percentage of households)

Occupation	Baseline 2011	CDSP I & II 2019		CDSP III 2019		CDSP IV 2019	
		primary	second	primary	second	primary	second
Agric/crop farming	37%	19%	69%	15%	74%	22%	71.2%
Livestock		1.6%	6%	1%	8%	2%	7.4%
Day labour	31%	26%	13%	34%	8%	31%	11.9%
Housekeeping	3%	2%	2%	1%	2%	3%	0.7%
Fish/PL catch/dry	3%	4%	3%	5%	2%	4%	0.7%
Salaried job	3%	13%	2%	10%	0%	4%	0.7%
Small trade	9%	18%	3%	26%	3%	22%	3.7%
Rickshaw / boat	4	2%	2%	2%	1%	3%	0.7%
Handicraft		0%	0%	0%	1%	2%	0.0%
Driver	0	7%	0%	3%	0%	5%	1.5%
Other	5	7%	2%	4%	2%	3%	1.5%
Total sample size (n)		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 in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

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 livestock, with housewife as a secondary occupation. This is a reversal of the situation in 217, when housewife was the main primary occupation, with livestock as the main secondary occupation.

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

	CDSP I & II - 2019		CDSP III - 2019		CDSP IV - 2019	
Occupation	primary	second	primary	second	primary	second
Agric/crop farming	0.0%	1.1%	0.0%	0.5%	0%	2%
Day labour	1.5%	0.6%	0.5%	0.0%	1%	0%
Housekeeping	25.9%	75.1%	24.1%	78.5%	17.3%	81%
Fish/PL catch/dry	2.5%	0.6%	1.5%	0.5%	0%	0%
Salaried job	1.0%	0.0%	1.0%	0.0%	1.5%	0%
Small trade	0.0%	0.0%	0.0%	0.0%	0%	0%
Rickshaw / boat	0.0%	0.0%	0.0%	0.0%	0%	0%
Livestock	62.9%	20.4%	70.9%	18.8%	78.1%	17%
Handicraft	5.1%	1.1%	1.5%	1.1%	1%	1%
Driver	0.5%	0.6%	0.5%	0.0%	0.5%	0%
Other	0.5%	0.6%	0.0%	0.5%	0.5%	0%
Total sample size (n)	200		200		200	

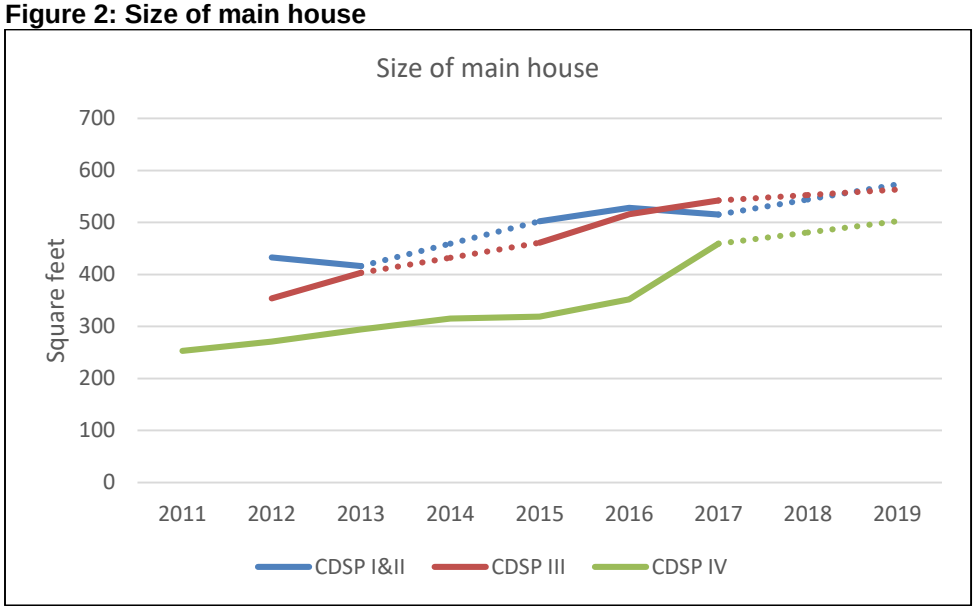
3.5 Housing

The average size of the main houses observed in the CDSP 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 a 98% increase in average size of CDSP IV houses, the gap has now closed to a difference of less than 5%, and since 2017 the average size of houses has increased in all three areas 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. Around 90% of all CDSP households now report tin (and sometimes brick/cement) walls and, compared to only 13% of walls and 16% of roofs at CDSP IV baseline.

Table 8: Housing

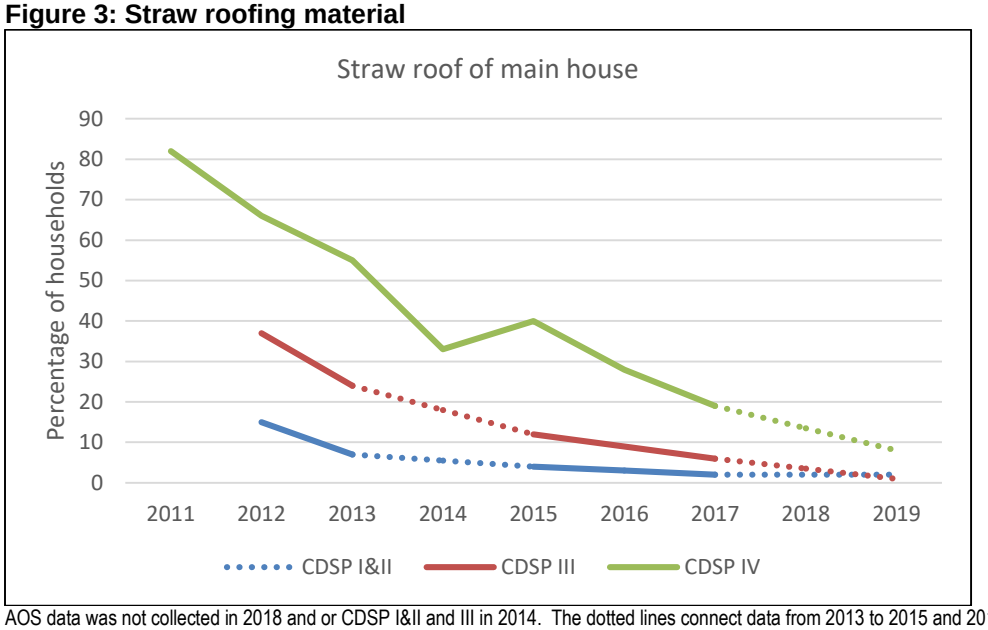
	CDSP IV Baseline	CDSP I & II - 2019	CDSP III - 2019	CDSP IV - 2019
Average size of main house (sq. ft)	253	573	563	502
Type of floor (% of HH)				
Mud	99	86.5%	93.5%	97%
Bricks	1	0.5%	0.5%	0%
Pacca	0	13%	6%	3%
Type of Wall (% of HH)				
Leaf	4	0%	1.5%	0.5%
Straw	34	0%	1.5%	1.5%
Mud	0	0%	0.5%	5%
Bamboo	50	3%	0%	
Tin	13	89%	91.5%	89.5%
Pacca/brick	0	8.5%	5%	3.5%
Type of Roof (% of HH)				
Leaf	2	1%	0%	0.5%
Straw	82	2%	1%	8%
Tin	16	95.5%	98%	90.5%
Pacca	0	1.5%	1%	1%
sample size (n)	1400	200	200	200

Figure 2: Size of main house



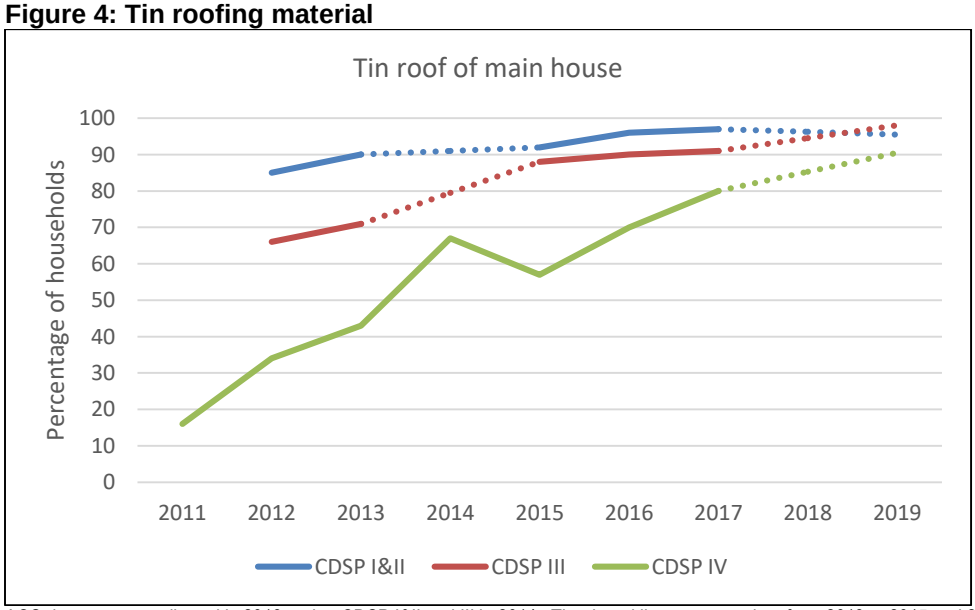
AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

Figure 3: Straw roofing material



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

Figure 4: Tin roofing material



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

The older CDSP areas have themselves made remarkable progress since the start of CDSP IV. In 2012, only 55% of CDSP I&II walls were tin, and while CDSP III had 40% tin walls and 63% tin roofs. Since 2017 the proportion with tin/pucca walls and roofs has generally increased in all CDSP areas.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.

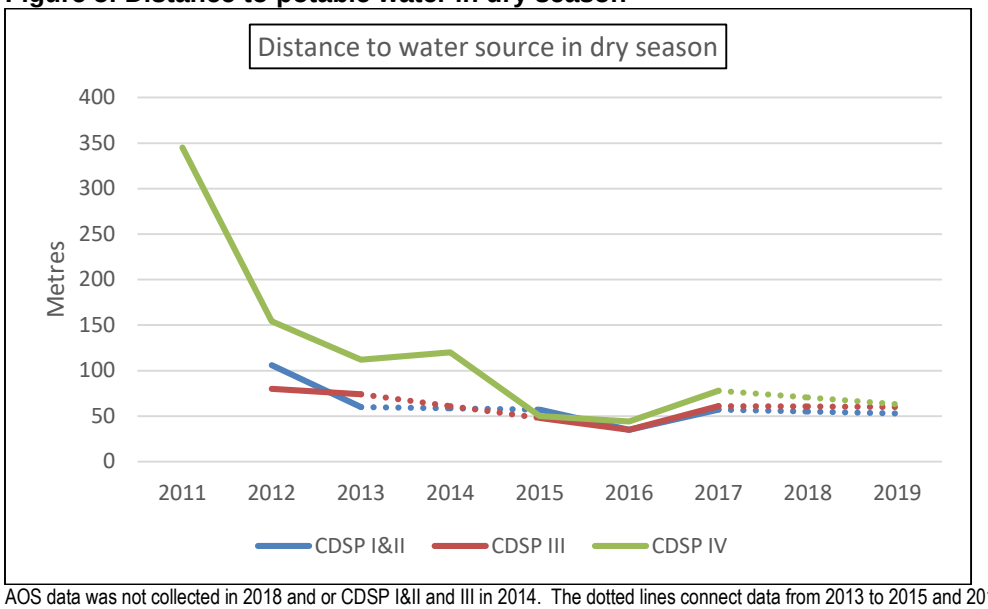
3.6 Water supply and sanitation

Data in Table 9 shows how access to drinking 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 63-71 metres from the home as against 350 metres in the baseline situation (and over 400 metres in the rainy season). 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. Since 2017 there as been a further reduction in the distance to water sources in the CDSP 1&II and CDSP IV areas, and a very small increase in CDSP III.

Table 9: Water and sanitation

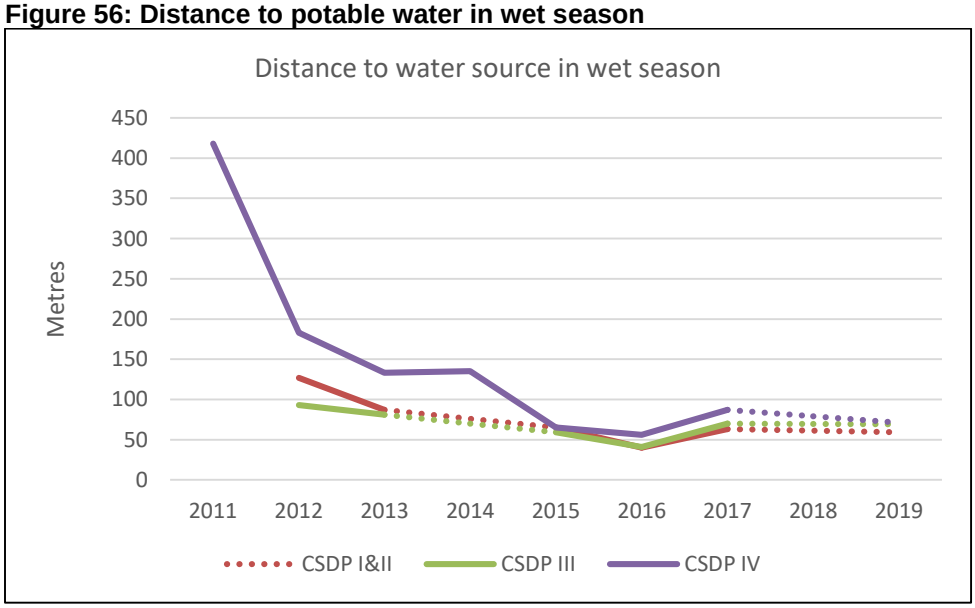
	Baseline CDSP IV	CDSP-I,II. 2019	CDSP-III. 2019	CDSP-IV. 2019
Source of drinking water				
Shallow Tube well	3	48	35	9.5
Deep Tube well	96	50	65	90
Untreated pond water	2	2	0	0.5
Ownership of tubewell				
Owned by HH	5	36	27.5	5.5
Jointly owned	5	3	2	2.5
Neighbour	27	25	31.0	8
Govt./Community	63	10	64	8.5
From CDSP	-	26	4	75.5
Distance from water source				
Dry Season (metre)	345	53	60	63
Rainy Season (metre)	418	59	69	71
Type of latrine used				
No latrine	5	0	8	0
Hanging/open	77	2	2	0
Ring slab (unhygienic)	14	27	31	18
Ring slab (water sealed)	6	65	64	81
Hygienic	0	7	4	2
Source of latrine				
Purchased from market	61	85	85	23
Purchased from NGO/other organization	8	0.5	1	0
Donated by GO/NGO/other organization	31	0	0	0
Installed by CDSP	0	15	15	77

Figure 5: Distance to potable water in dry season



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

Figure 56: Distance to potable water in wet season



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

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 81%). However 18% of CDSP IV (and more in the older CDSP areas) report unhygienic slab latrines – previously 98% had been hygienic. Maybe some latrines installed by CDSP are no longer hygienic. The same applies in the older CDSP areas. It is also worrying that some 2% to 8% of households are still using open/hanging latrines, although in the older CDSP areas this has improved since 2012 when around 14% of these households did not have hygienic or ring slab latrines. Seventy-seven percent of the CDSP IV households report receiving 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 2019	CDSP-III 2019	CDSP-IV 2019
Washing hands before taking food				
Do wash hands		100	100	100
Wash with plain water	96	89.5	92	88.5
Wash with soap	4	10.5	8	11.5
Washing hands after return from latrine				
Do wash hands		100	100	100
Wash with plain water	94	52	47	48
Wash with soap	0	40	44	45
Wash with ash	6	8	9	7
Sample size (n)	1400	200	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 some improvement - from around 8% to about 10.5%, but the improvement in CDSP IV is larger - from only 4% to 11.5%. But fewer households in all areas are washing with soap than in 2017. Washing hands after return from the latrine has also significantly improved across all CDSP areas. In CDSP I&II only 6% of households reported using soap or ash to wash hands in 2012, but now it is 48%. In CDSP III it is 53%. For CDSP IV use of soap or ash is 52% against 6% recorded in 2012. However in all areas there has also been a significant fall (of around 50%) in the use of soap since 2017

Table 11 shows that households across all CDSP areas have improved immunization of their children. Most all (84-87%) of 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. However in the 2017 AOS 99% of households reported immunising their children, so there has been a slight drop across all CDSP areas.

The visits of Health Workers to the community have increased compared to the CDSP-IV baseline situation (6% to 92%), 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 66% (but has fallen back from 92% in 2017 – possibly due to the end of CDSP support for PNGOs). In CDSP I, II and III, the situation was already better in 2012, and is now much the same as it was at the time of the first AOS in 2012.

Table 11: Health and family planning

% of hh	CDSP-IV Baseline	CDSP-I,II	CDSP-III	CDSP-IV
Immunization of the children	52	84	86	87
how vaccinated:				
Upazila health centre		20	10	8
Special government program		80	90	92
Regular visit of Govt./NGO health worker	6	92	85	88
Use of family planning (% of eligible couples)	34	56	63	66
of users Temporary method	94	96	98	95
Permanent method	6	4	2	2
Sample size (n)	1400	200	200	200

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 seven times over the average asset value recorded during in the baseline survey of 2011. Although the value of households 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. The list of assets excludes land and houses – which, if included, will have increased in value considerably.

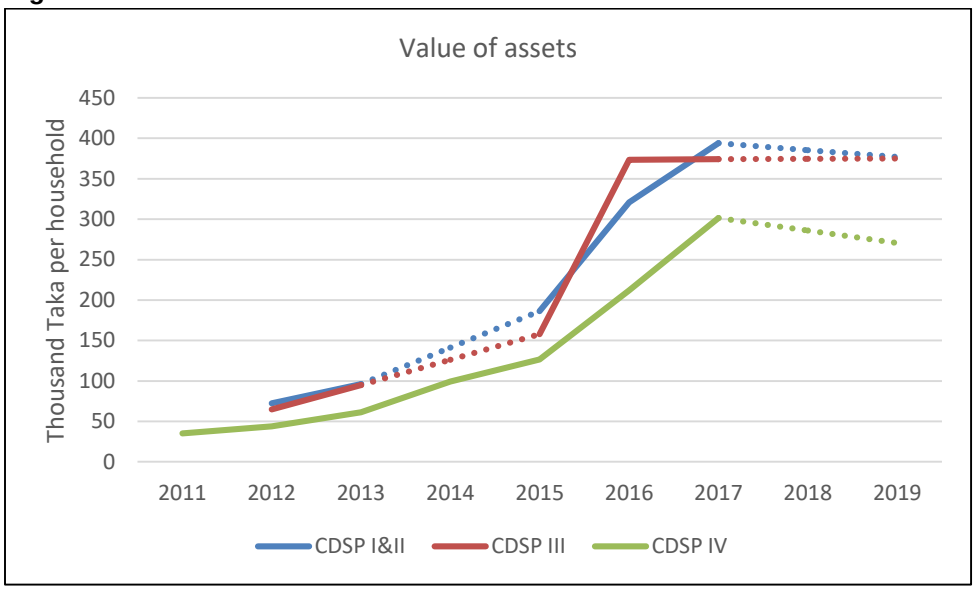
Table 12: Household assets (households in percent and value in Taka)

Asset		CDSP I & II		CDSP III		CDSP IV	
		% of hh	Avg Tk	% of hh	Avg Tk	% of hh	Avg Tk
1	Cot/ *Khaat*	100%	7,722	100%	6,992	100%	5,532
2	Almira	60%	4,344	52%	2,853	42%	2,596
3	Showcase	63%	5,070	52%	4,705	42%	5,333
4	Chair/table	95%	3,571	95%	3,804	90%	2,112
5	*Shinduk* (Wooden box/Trunk-Tin)	48%	3,883	60%	4,172	64%	3,840
6	*Alna* (clothes rack/wardrobe)	52%	774	38%	693	34%	607
7	Ceiling/Table Fan	70%	2,658	34%	1,559	33%	733
8	Radio/Cassette Player	2%	2,667	2%	2,333	1%	800
9	B&W TV	0.5%	4,000	3%	2,800	1%	2250
10	Colour TV	11%	7,086	4%	7,125	2.5%	6,600
11	Mobile Phone	98%	4,252	98%	3,707	97%	3,589
12	Sewing machine	12%	6,250	13%	4,481	11%	5,296
13	Ornaments	93%	37,574	96%	35,138	95%	31,268
14	Bicycle	31%	4,116	26%	3,933	16%	4,922
15	*Rickshaw*/Van	4%	19,500	2%	6,750	0.5%	2,000
16	*Motor cycle*	14%	92,214	13.5%	81,148	15%	89,500
17	Auto rickshaw battery operated	2%	54,000	3.5%	51543	1.5%	100,000
18	Sprayer	17%	850	24.5%	814	38.5%	949
19	Laptop	2%	43,500	0.5%	30000	1%	23,000
20	Bullock cart	0%	0	0%	0	0.5%	12,000
21	Solar	77%	9,578	85%	10,938	83.5%	11,084
22	Shop with land ownership	15%	917,533	18.5%	660,487	19.5%	283,717
23	Tractor for cultivation	2%	48,333	1.5%	63,333	5%	48,500
24	Boat	0%	0	1.5%	103,333	2%	215,000
25	Mechanized boat	2.5%	174,000	5.5%	227,636	3.5%	129,143
26	Thresher	2%	15,250	6.5%	5,939	9%	4,777
27	Water pump	7%	14,857	7%	17,700	14.5%	13,041
28	Fishing net	61%	4,849	75.5%	12,520	79.5%	4,935
29	Fruit/timber trees	97%	65,668	97.5%	75,914	97%	42,974
30	Cow	47%	82,952	56.5%	78,252	73.5%	75,575
31	Buffalos	1%	90,000	2.5%	153,000	3%	212,500
32	Goat	17%	7,424	35%	11,974	41%	7,820
33	Sheep	0%	0	1%	2,200	2.5%	45,100
34	Chicken	86%	2,831	91%	3,530	90.5%	3,522
35	Duck / goose	85.5%	4,678	90%	4,355	90%	4,523
36	Pigeon	26%	1,947	22%	2,225	17.5%	3,049
37	Rice husking machine	2%	31,250	2%	25,000	2.5%	23,000
38	Trolley motorized	1%	118,000	0.5%	80,000	1%	200,000
39	CNG Auto	2%	152,000	1%	550,000	0.5%	320000
40	Others	9.5%	284,395	5%	131,500	5%	89,200
	Average total asset value		377,091		374,910		270,448

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

In CDSP IV there has been an increase in household assets since the baseline survey in 2011 with an increasing proportion of households reporting ownership of fans (0.2% to 33% of households), almira (5% to 42%), chair/table (28% to 90%), bicycle (7% to 16%), mobile phone (46% to 97%), and ornaments/jewellery (54% to 96%). In 2011 no households reported ownership of solar systems, but now these are owned by 83% of households.

Figure 7: Value of assets



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

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 non-farm assets with livestock being a lower proportion.

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
Household assets	21%	22%	21%	26%	865%
Non-farm enterprises	7%	40%	41%	27%	2872%
Farm assets	10%	18%	21%	18%	1246%
Livestock	62%	13%	16%	27%	239%
Other assets	0%	7%	2%	2%	
Total	100%	100%	100%	100%	668%
Total value per household Taka'000	35.2	377.1	374.9	270.4	

Table 14 shows the principal items (in terms of value) in each category of assets. Ornaments are the most valuable household assets, accounting for over 40% of the total value of household assets, followed by motor cycles at 15% to 19%[2]. Solar power systems are another important household asset accounting for around 10% of the value of household assets

[2] Motorcycles are used a taxis so could also be classed as a non-farm business asset.

Table 14: Principal assets in each category

Category of assets	Principal items	Value of principal item as percent of category total		
		CDSP I & II	CDSP III	CDSP IV
Household assets	Ornaments	42%	43%	42%
	Motorcycles	15%	14%	19%
Non-farm enterprises	Shop with land	91%	80%	76%
Farm assets	Trees	95%	96%	88%
Livestock	Cows	81%	74%	75%

The most valuable non-farm productive asset are shops with land - these now account for over three-quarters of asset value in this category and are owned by 15% to 20% of households. The farm productive asset category is dominated by timber and fruit trees[3], which account for around 90% of asset value in this category and are now owned by 97% of households compared to 24% at CDSP IV baseline. In the livestock category, cows account for three-quarters of asset value and are owned by 74% of CDSP IV households and half of households in the CDSP I, II and III areas.

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 18% of the total value of assets owned by all CDSP households (Table 15 and Figure 7). However the value of trees have fallen since the 2017, resulting in a fall in the value of farm assets by around 50%. This decline could be due to households being more realistic in their valuation of trees and a small fall in the number of trees per household – linked to the fall in average size of land holding. This has contributed to a small fall in the total value of assets since 2017 in the CDSP I&II and IV areas and no change in CDSP IV (Table 15).

Table 15: Change in value of assets since 2017

Category of assets	Change in value 2017 to 2019		
	I&II	III	IV
Household assets	14%	15%	30%
Non-farm enterprise	57%	108%	0%
Farm assets	-50%	-56%	-50%
Livestock	-12%	17%	-1%
Other	-23%	8%	-4%
total	-4%	0%	-10%

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

3.9 Annual household income

More households report income from a range of farm sources than for non-farm sources, underlining the importance of this sector (Table 16). Within agriculture, the homestead based activities of vegetables and poultry are reported most widely, although most households also have income from field crops. Within the non-farm sector the most widely reported income sources are daily labour wages (which includes paid farm work), handicrafts and fishing.

Table 16: Sources of income

Sector	Source of income	Percentage of households reporting income source		
		CDSP I & II	CDSP III	CDSP IV
Agriculture related	Field crops	69.5%	74%	80%
	Homestead veg.	73.5%	80%	88.5%
	Aquaculture	55.5%	45%	64%
	Forestry/trees	2%	24%	17.5%
	Livestock	44.5%	51%	65.5%
	Selling straw	61%	66.5%	74%
	Poultry	87.5%	91%	97%
	Date juice	23.5%	33%	23.5%
Non-farm sectors	Daily labour	48.5%	51.5%	57%
	Jobs	28%	23%	16.5%
	Skilled work	14.5%	9%	13.5%
	Petty trade	9%	10.5%	10.5%
	Business	16.0%	23.5%	19.5%
	Rickshaw etc	4.0%	7.0%	4.5%
	Fishing	37.0%	37.5%	45.5%
	Remittance	8.5%	6.0%	11.0%
	Handicrafts	47.0%	43.5%	46.0%
	Pension & social	2.5%	4.5%	3.5%
	Begging	2.0%	0.0%	1.5%
	Other	20.5%	19%	28%

Table 17 shows the average annual income of all households from different sources. The total average annual incomes of the sampled households in CDSP IV is 17% less than households earning of CDSP I&II and 16% less than households earning of CDSP III. Not only is the CDSP IV a more recently accreted area, but has suffered more from recent river erosion. It is also worth noting that average income in CDSP III now exceeds that in CDSP I&II, while income in CDSP IV is now almost equal to that for CDSP I&II..

The farm sector contributes between one quarter and one third of total income, making the larger contribution in newer CDSP areas. The proportion of income from the farm sector has steadily declined, although for CDSP III the share is little changed since 2017. It is worth noting that some non-farm income will stem from farming – such as wages for farm work, marketing and transport of farm inputs and produce, and machine rental.

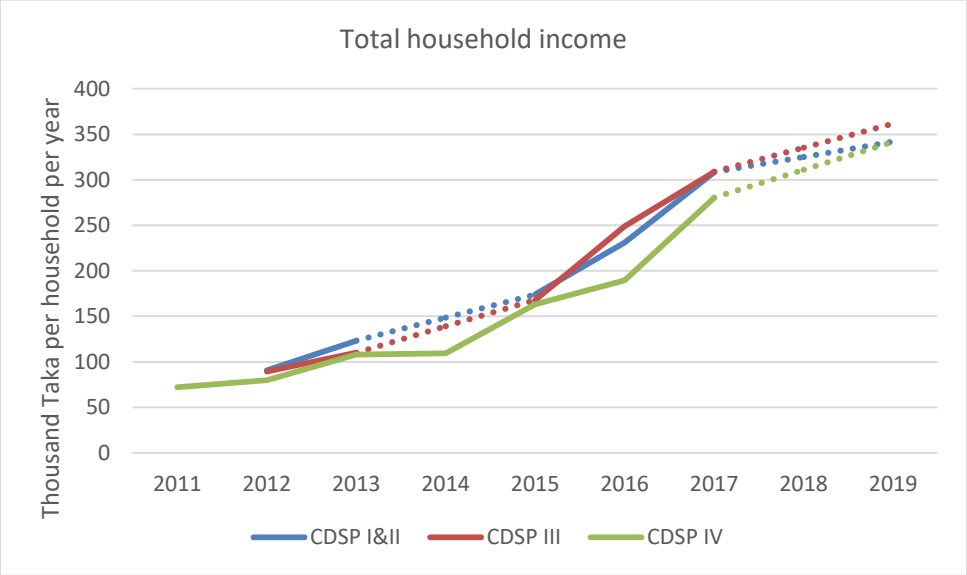
Although, in CDSP IV, agricultural income has increased by over four times since the baseline in 2011, non-farm income has by five times. The fastest growing agricultural source has been livestock and the fastest growing non-farm source is remittances.

Table 17: Annual household income from different sources

	Annual income Taka				Share of annual income				Increase
Income source	**CDSP IV baseline**	**CDSP I &II**	**CDSP III**	**CDSP IV**	**CDSP IV baseline**	**CDSP I &II**	**CDSP III**	**CDSP IV**	**CDSP IV**
Agriculture-related									
Field crops	15,617	25,646	30,033	35,584	60.1%	30.7%	29.5%	32.4%	127.9%
Homestead veg.	3,115	16,035	25,517	15,779	12.0%	19.2%	25.1%	14.4%	406.5%
Aquaculture	2,713	6,575	6,118	10,632	10.4%	7.9%	6.0%	9.7%	291.9%
Forestry/trees		85	775	296	0.0%	0.1%	0.8%	0.3%	
Livestock	2,666	21,163	25,106	32,193	10.3%	25.3%	24.7%	29.3%	1107.5%
Selling straw		3,567	3,864	4,408	0.0%	4.3%	3.8%	4.0%	
Poultry	1,887	8,900	8,965	10,173	7.3%	10.6%	8.8%	9.3%	439.1%
Date juice		1,615	1,280	741	0.0%	1.9%	1.3%	0.7%	
sub-total-Agri Farm	**25,998**	**83,586**	**101,659**	**109,805**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	322.4%
Non-farm									
Daily labour	33,378	73,471	55,337	68,211	72.6%	28.5%	21.3%	29.4%	246.7%
Jobs		55,234	35,307	23,205		21.4%	13.6%	10.0%	
Skilled work		19,620	12,980	24,290		7.6%	5.0%	10.5%	
Petty trade	6,879	32,885	19,690	21,920	15.0%	12.7%	7.6%	9.5%	747.1%
Business		24,491	65,065	36,355		9.5%	25.0%	15.7%	
Rickshaw etc	2,749	1,863	5,746	2,350	6.0%	0.7%	2.2%	1.0%	-14.5%
Fishing	2,093	11,190	33,405	19,715	4.6%	4.3%	12.8%	8.5%	842.0%
Remittance	601	18,081	15,950	19,495	1.3%	7.0%	6.1%	8.4%	3143.8%
Handicrafts	252	2,403	1,827	2,982	0.5%	0.9%	0.7%	1.3%	1083.4%
Pension & social		228	279	159	0.0%	0.1%	0.1%	0.1%	
Begging		402	0	374	0.0%	0.2%	0.0%	0.2%	
Other		18,369	14,436	12,641	0.0%	7.1%	5.6%	5.5%	
sub-total (Non-farm)	**45,952**	**258,235**	**260,022**	**231,697**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	404.2%
Total farm	25,998	83,586	101,659	109,805	36.1%	24.5%	28.1%	32.2%	322.4%
Total non-farm	45,952	258,235	260,022	231,697	63.9%	75.5%	71.9%	67.8%	404.2%
Total	**71,950**	**341,820**	**361,681**	**341,502**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	374.6%

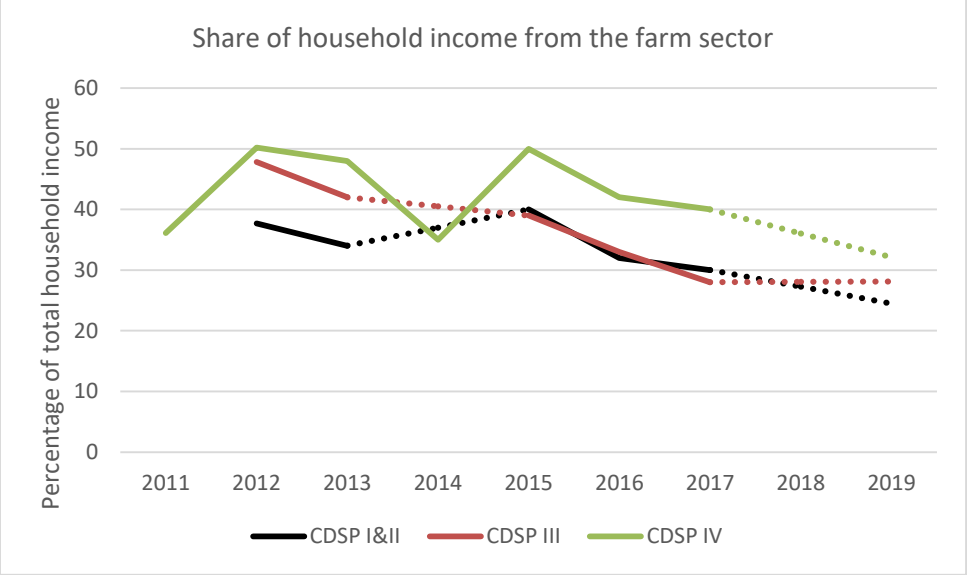
Income from farm and non-farm enterprises is estimated as being net of enterprise operating costs.
Average income in Taka is average for all sample households, not just the households with that income sourc

Figure 8: Average household income



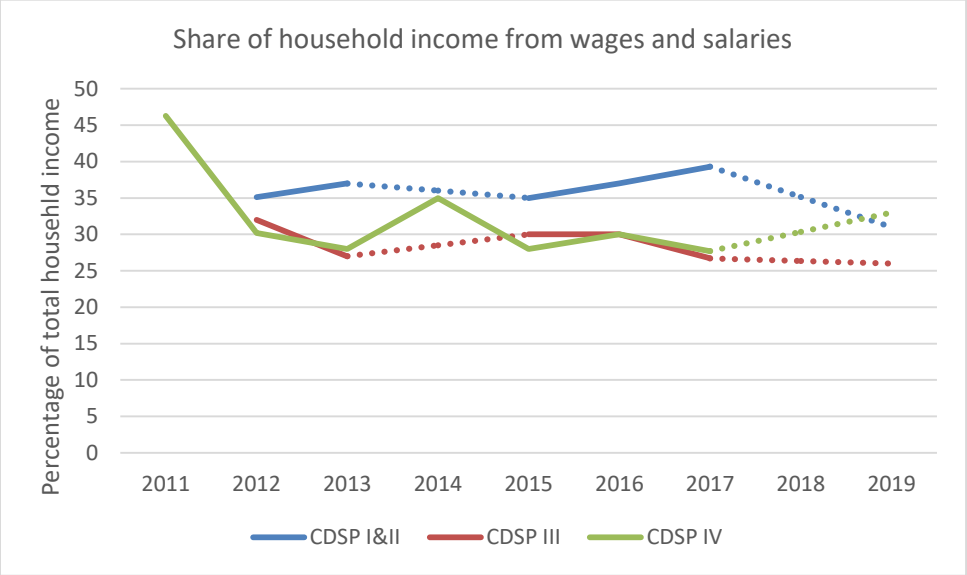
AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

Figure 9: Share of income from the farm sector



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

Figure 10: Share of total income from wages and salaries



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

Table 18 compares income data for all three CDSP areas from the 2019 AOS with the previous 2017 AOS and with the first AOS in 2012. The increase in total household income over the last two years has been a modest 16%, compared with 245% over the preceding five years – making a total increase of 302% over the seven year period. Over the last two years there has been almost no growth in the farm sector, and the share of income coming from the farm sector has been declining since 2015. Within the farm sector, income from field crops has declined significantly over the last two years – probably mainly due to the sharp fall in the value of paddy, but it is also noted that the area of pulses and oilseed has fallen.

In the non-farm sector in 2012 employment (daily labour, regular jobs and skilled work), provided almost 60% of income, followed by petty trade and business on 20%. Employment has now fallen to just under 50%, with petty trade plus business increasing to 27%. Over the last two years there has been strong growth in income from business, fishing and employment (especially skilled work), but income from a number of other non-farm sources has declined, including remittances which previously had grown rapidly.

Table 18: Changes in sources of income since 2012

	Annual income Taka			Share of income			Change	
Income source	**2012**	**2017**	**2019**	**2012**	**2017**	**2019**	**2012-17**	**2017-19**
Agriculture-related								
Field crops	20,145	38,574	30,421	51.6%	39.9%	30.9%	91.5%	-21.1%
Homestead veg.	7,262	14,685	19,110	18.6%	15.2%	19.4%	102.2%	30.1%
Aquaculture	3,774	7,370	7,775	9.7%	7.6%	7.9%	95.3%	5.5%
Forestry/trees		227	385		0.2%	0.4%		69.5%
Livestock	4,621	25,917	26,154	11.8%	26.8%	26.6%	460.9%	0.9%
Selling straw			3,947			4.0%		
Poultry	3,252	8,821	9,346	8.3%	9.1%	9.5%	171.2%	6.0%
Date juice		1,116	1,212		1.2%	1.2%		8.6%
sub-total farm sector	39,054	96,710	98,350	100.0%	100.0%	100.0%	147.6%	1.7%
Non-farm								
Daily labour	28,183	49,751	65,673		24.6%	26.3%	232.7%	32.0%
Jobs		32,991	37,915	59.2%	16.3%	15.2%		14.9%
Skilled work		11,022	18,963		5.4%	7.6%		72.1%
Petty trade	9,753	27,693	24,832	20.5%	13.7%	9.9%	358.5%	-10.3%
Business		17,021	41,970		8.4%	16.8%		146.6%
Rickshaw etc	1,803	4,386	3,320	3.8%	2.2%	1.3%	143.2%	-24.3%
Fishing	3,169	14,297	21,437	6.7%	7.1%	8.6%	351.2%	49.9%
Remittance	4,217	24,782	17,842	8.9%	12.2%	7.1%	487.7%	-28.0%
Handicrafts	506	3,524	2,404	1.1%	1.7%	1.0%	596.9%	-31.8%
Pension & social		514	222		0.3%	0.1%		-56.8%
Begging		409	258		0.2%	0.1%		-36.8%
Other		16,055	15,148		7.9%	6.1%		-5.6%
sub-total non-farm sector	47,630	202,445	249,984	100.0%	100.0%	100.0%	325.0%	23.5%
Total farm	39,054	96,710	98,350	45.1%	32.3%	28.2%	147.6%	1.7%
Total non-farm	47,630	202,445	249,984	54.9%	67.7%	71.8%	325.0%	23.5%
Total	86,684	299,155	348,334	100.0%	100.0%	100.0%	245.1%	16.4%

Income data is the average for CDSP I/II, III and IV.

Survey respondents were asked to place their own households in one of four wealth ranks – at the present time and five years ago. Table 19 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. However CDSP III seems to have a higher proportion of poor households than either CDSP I&II or CDSP IV. On the other hand there has a higher proportion of households to medium ranks than CDSP I&II and CDSP III. Given that these are self-assessments, caution should be used in drawing conclusions from this data.

Table 19: Wealth ranking

	CDSP I&II		CDSP III		CDSP IV	
	now	5 years ago	now	5 years ago	now	5 years ago
Rich	24%	0%	19%	0.0%	20%	0%
Medium	66%	10%	66%	6.5%	72%	7%
Poor	10%	56%	14%	45.5%	7.5%	59%
Very poor	0.5%	34.5%	0.5%	48.0%	1%	34%
Total	100%	100%	100%	100%	100%	100%

Compared with the 2017 AOS, slightly fewer households now say they are rich and fewer say they are poor, with more in the medium wealth category.

3.10 Crop production

3.10.1 Damage to crops from salinity, flooding and waterlogging

A core intervention of CDSP has been water management infrastructure to reduce such damage and improve the environment for crop growth. Data in Table 20 shows that over 80% of farmers report no damage from salinity, flooding and waterlogging to aman paddy and rabi crops. Exceptions to this, with more farmers reporting damage (but still under 40%) are aman from flooding and waterlogging in CDSP III are IV (more so in CDSP IV) In almost all cases the damage is rated as slight. Around half to one quarter of farmers report trees being damaged by salinity, flooding and waterlogging in all three areas.

Table 20: 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	89%	90%	84%
		Slight	9%	5%	13%
		moderate/heavy	2%	5%	3%
	Rabi crops	no damage	88.5%	75%	86%
		Slight	11%	22.5%	12%
		moderate/heavy	0.5%	2.5%	2%
	Trees	no damage	77.5%	61.5%	50.5%
		Slight	22.5%	35%	37.5%
		moderate/heavy	0%	3.5%	12%
Flooding	Aman	no damage	84%	73.5%	60.5%
		Slight	14.5%	22.5%	26%
		moderate/heavy	1%	4%	13.5%
	Rabi crops	no damage	88.5%	82.5%	86.5%
		Slight	11%	15.5%	8.5%
		moderate/heavy	0.5%	2%	5.0%
	Trees	no damage	76%	61%	47.0%
		Slight	24%	33.5%	38%
		moderate/heavy	0%	5.5%	14.5%
Waterlogging	Aman	no damage	74%	71.5%	63.5%
		Slight	25.5%	25.5%	25.5%
		moderate/heavy	0.5%	3%	11%
	Rabi crops	no damage	81.5%	82.5%	86%
		Slight	18.5%	16.5%	10.5%
		moderate/heavy	0%	1.0%	3.5%
	Trees	no damage	61.5%	61%	53%
		Slight	37.5%	32.5%	35%
		moderate/heavy	1%	6.5%	12%

If we compare data in Table 20 with the previous round data (Table 21), it reveals that CDSP effort has been successful with a significant reduction in damage. This is despite the loss of a significant amount of water management infrastructure to river erosion.

Table 21: Damage to crops during period of 6th round (AOS 2017)

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%

Although Tables 19 and 20 show low and reducing levels of crop damage from water-related factors, most respondents also said that salinity, flooding and drainage had got worse over the last five years, although the situation had generally improved in the last one year. But there was a general improvement over both time spans in terms of water shortages/drought. There is no evidence to support increased salinity, flooding and waterlogging from cropping patterns and crop productivity, or from other studies and surveys, so this data has been omitted from this report.

3.10.2 Cultivated area

Data in Table 22 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. Most households (63% CDSP I&II, 67% CDSP III and 74% CDSP IV) have cultivated land for field crop production. The average area of cultivated land per household 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 22: Land utilisation

	Land type	CDSP I&II	CDSP III	CDSP IV
Percentage of households who operate	homestead	100%	100%	100%
	pond	97.5%	98%	98%
	cultivated	63%	67%	74%
	fallow	9%	8%	7%
Average area per household in decimal	homestead	36	33	33
	pond	24	23	30
	cultivated	85	91	114
	fallow	2	1	3
	total	**147**	**148**	**179**
	Total sample (n)	**200**	**200**	**200**

Compared with the 2017 AOS, there has been a slight fall in proportion of households with cultivated land in the CDSP III and IV areas, and small fall of between 5% and 10% in the average area of all types of land per household (which confirms data on the rising population). This fall has reduced the amount of cultivated land per household (areas of homestead, pond and fallow land are little changed).

3.10.3 Crop area and cropping intensity

Calculations of cropping intensity in Table 23 use two methods. Method 1 is 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. 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 140% (method 1) or 143% (method 2), for CDSP III the result is 148% (method 1) or 146%, (method 2) and for CDSP IV 127% or 131%. As might be expected cropping intensity is lower in the CDSP IV area compared with the older areas.

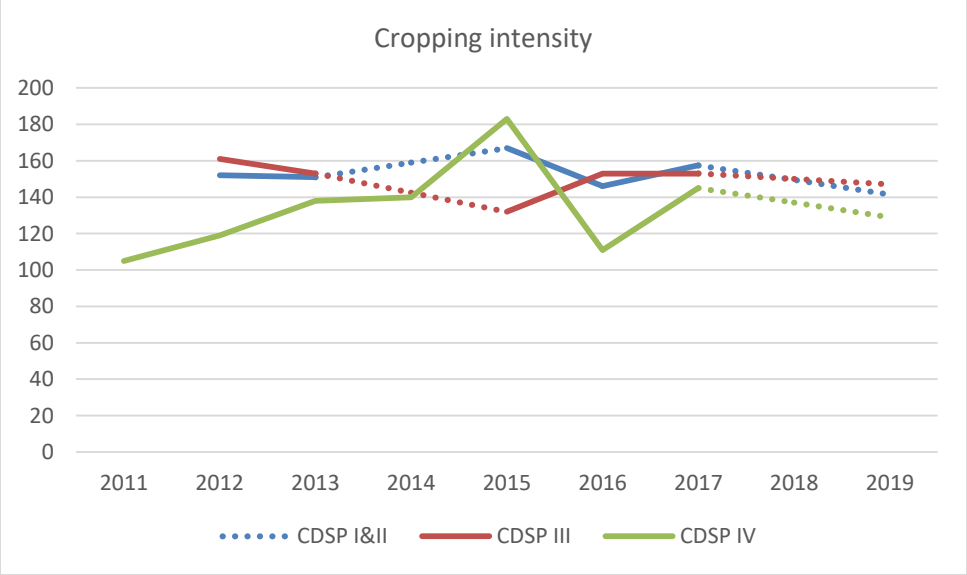
There has been a small decline in cropping intensity compared with the 2017 AOS, which recorded intensities in the range 145% to 158%.

Table 22: Average area cropped and cropping intensity.

	Land Area, CI & Sample size	Units	CDSP I&II	CDSP III	CDSP IV
Method 1	Total area of field crops	decimal/hh*	191	200	197
	Total area cultivated	decimal/hh*	137	135	155
	Cropping intensity (CI)		140%	148%	127%
	Sample size (n)		124	134	147
Method 2	Area cropped once	decimal/hh*	78	73	107
	Area cropped twice	decimal/hh*	57	61	49
	Area cropped thrice	decimal/hh*	1	1	0
	Total area cropped	decimal/hh*	135	135	156
	Total area of field crops	decimal/hh*	194	198	204
	Cropping intensity		143%	146%	131%
	Sample size (n)		124	134	147

*** decimals per household who cultivate land**

Figure 11: Cropping intensity



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist..

Cropping in all CDSP areas is dominated by paddy, which is cultivated by over 98% of farmers (Table 23) and accounts for around 80% of the crop area in CDSP I&II and IV, and 70% in CDSP III Paddy is predominantly rainfed transplanted aman, with almost no aus now being grown. Over the last three or four years boro has become a significant crop in CDSP I&II and CDSP IV, with the area more than doubling over the last two years, and it now accounts for 15% of the total area of paddy in CDSP I&II and 8% in CDSP IV. In areas where the deep aquifer in the only source of fresh groundwater, irrigation of boro using this groundwater may not be sustainable and could threaten supplies of potable water. The increase in boro has been largely offset by a decline in the aman area, so there has only been a modest increase in paddy area in CDSP I&II and III, and a slight fall in CDSP IV. However boro, grown using hybrid seeds, is very much more productive than aman (50% to 100% higher yields are obtained), so total rice production will have increased. Notwithstanding the risk of over-exploitation of groundwater resources and current low market prices for paddy, farmers have expressed a strong preference for hybrid boro paddy.

Table 23: Cultivation of different crops and vegetables

	Name of crops	Percentage of farmers who grow			Percentage of cultivated area		
		CDSP I&II	CDSP III	CDSP IV	CDSP I&II	CDSP III	CDSP IV
Cereals	Aus	0.8%	0.0%	0.0%	0.6%	0.0%	0.0%
	Aman	78.2%	94.0%	80.3%	80.8%	96.2%	81.6%
	Boro	39.5%	13.4%	27.9%	31.1%	8.4%	17.9%
	Maize	0.0%	0.0%	2.7%	0.0%	0.0%	1.4%
	Total	99.2%	98.5%	98.0%	112.5%	104.5%	100.9%
Pulses	keshari[1]	13.7%	6.7%	4.1%	5.2%	3.7%	3.5%
	mung[2]	6.5%	10.4%	2.0%	2.0%	3.3%	0.9%
	felon[3]	15.3%	11.2%	4.8%	2.5%	1.8%	0.6%
	moshuri[4]	0.8%	0.7%	0.0%	0.1%	0.0%	0.0%
	mash kolai[5]	0.8%	0.0%	0.0%	0.1%	0.0%	0.0%
	Total	26.6%	20.9%	10.2%	9.9%	8.7%	5.1%
Oilseeds	soybean	10.5%	36.6%	3.4%	5.9%	23.4%	1.9%
	mustard	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	groundnut	11.3%	8.2%	3.4%	3.1%	1.7%	0.5%
	sesame	1.6%	0.0%	8.8%	1.2%	0.0%	5.7%
	Total	20.2%	39.6%	14.3%	10.2%	25.1%	8.1%
Spices	Chilli	26.6%	30.6%	23.8%	2.3%	3.4%	2.4%
	Onion	0.8%	0.7%	1.4%	0.1%	0.0%	0.0%
	Garlic	3.2%	3.0%	4.1%	0.1%	0.2%	0.1%
	coriander	0.0%	0.7%	0.7%	0.0%	0.0%	0.0%
	turmeric	0.8%	1.5%	1.4%	0.0%	0.0%	0.0%
	Total	27.4%	30.6%	24.5%	2.6%	3.7%	2.5%
Roots and tubers	Sweet pot	4.8%	7.5%	6.8%	0.5%	0.5%	0.6%
	Cassava	0.8%	0.7%	0.7%	0.0%	0.1%	0.0%
	Total	5.6%	7.5%	7.5%	0.5%	0.6%	0.6%
Vegetables	country bean	8.9%	11.2%	34.7%	0.4%	0.7%	2.7%
	long bean	0.8%	2.2%	8.2%	0.1%	0.6%	0.8%
	ridge gourd	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%
	bottle gourd	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%
	sweet gourd	0.8%	1.5%	2.0%	0.0%	0.1%	0.1%
	bitter gourd	0.8%	1.5%	2.0%	0.1%	0.0%	0.1%
	ribbed gourd	1.6%	2.2%	0.7%	0.1%	0.2%	0.0%
	Dhundul	0.0%	1.5%	0.0%	0.0%	0.1%	0.0%
	Okra	4.0%	3.0%	0.7%	0.5%	1.7%	0.0%
	cucumber	1.6%	2.2%	7.5%	0.0%	0.3%	1.1%
	Radish	2.4%	2.2%	0.7%	0.0%	0.0%	0.0%
	cauliflower	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%
	Cabbage	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%
	spinach	1.6%	1.5%	0.7%	0.0%	0.0%	0.0%
	lal shak	3.2%	4.5%	3.4%	0.0%	0.1%	0.0%
	puishak	2.4%	1.5%	0.0%	0.0%	0.0%	0.0%
	Tomato	4.8%	8.2%	6.8%	0.2%	0.1%	0.1%
	Brinjal	5.6%	9.0%	6.8%	0.1%	0.2%	0.1%
	Total	14.5%	22.4%	38.1%	1.7%	4.4%	5.1%
Melon & Other	Water melon	4.0%	0.7%	4.8%	2.2%	0.6%	4.9%
	Other	0.8%	0.0%	0.0%	0.2%	0.0%	0.0%
	Total	4.8%	0.7%	4.8%	2.3%	0.6%	4.9%
Total	**Total**	100.0%	100.0%	100.0%	139.7%	147.6%	127.2%
	N	**124**	**134**	**147**	**16,963**	**18,107**	**22,787**

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

Since 2017 there has been a general decline in the area of most other crops. The area under pulses has fallen to under 10% of the cultivated area, largely due the continuing decline in keshari – a low value crop. The area under oilseeds, mainly soybean, has also fallen[4], although they still cover 25% of cultivated land in CDSP III (see Table 24). The area of spices has declined, as have vegetables in the CDSP I&II and IV areas, although this has been more than offset in CDSP IV by a large increase in the area under watermelons. Most of these non-rice crops are grown in the rabi season and their decline in area has, to some extent, been offset by an increase in boro paddy.

Table 24: Change in cropping pattern since 2017

		CDSP I&II	CDSP III	CDSP IV
2017	cereals	106.6%	98.9%	102.5%
	pulses	15.9%	13.1%	21.6%
	oilseeds	22.4%	29.8%	7.4%
	spices	4.5%	6.5%	4.2%
	vegetables	3.4%	2.3%	7.2%
	melons	1.7%	0.0%	0.8%
	other	2.1%	0.9%	1.0%
	total	156.6%	151.5%	144.7%
2019	cereals	112.5%	104.5%	100.9%
	pulses	9.9%	8.7%	5.1%
	oilseeds	10.2%	25.1%	8.1%
	spices	2.6%	3.7%	2.5%
	vegetables	1.7%	4.4%	5.1%
	melons	2.2%	0.6%	4.9%
	other	0.7%	0.6%	0.6%
	total	139.7%	147.6%	127.2%
change in percentage points	cereals	6.0%	5.6%	-1.5%
	pulses	-6.0%	-4.4%	-16.5%
	oilseeds	-12.2%	-4.7%	0.7%
	spices	-2.0%	-2.8%	-1.7%
	vegetables	-1.7%	2.1%	-2.1%
	melons	0.4%	0.6%	4.0%
	other	-1.4%	-0.3%	-0.5%
	total	-16.8%	-3.9%	-17.6%

In CDSP IV, 1.9% 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 5.1% 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. However the area under sorjon has declined – in 2017 it covered 3.2% of cultivated land. It is known that some of the sorjon area has been lost to river erosion and it is likely that fear of erosion discourages investment in developing new sorjon areas.

[4] It is possible that market/price issues are behind the fall in the area of soybean. However this survey did not aim to collect information on the economics of different crops. Another possible reason for the fall in area of unirrigated rabi season crops, such as pulses and oilseeds, is unexpected weather events such as unexpected and excessive rainfall or low temperatures.

3.10.4 Production, consumption and sale of field crops

Details of paddy production are in Table 25. The predominant type of paddy now grown in all three areas is HYV aman (48.5% in CDSP I&II, 60.5% in CDSP III and 53% in CDSP IV). But 1.5%-8% of farmers in still grow a local aman variety, Razashahil – this being more popular in the newer CDSP areas. No other type of local aman was reported, nor was any local aus, although a very few farmers grow HYV aus.

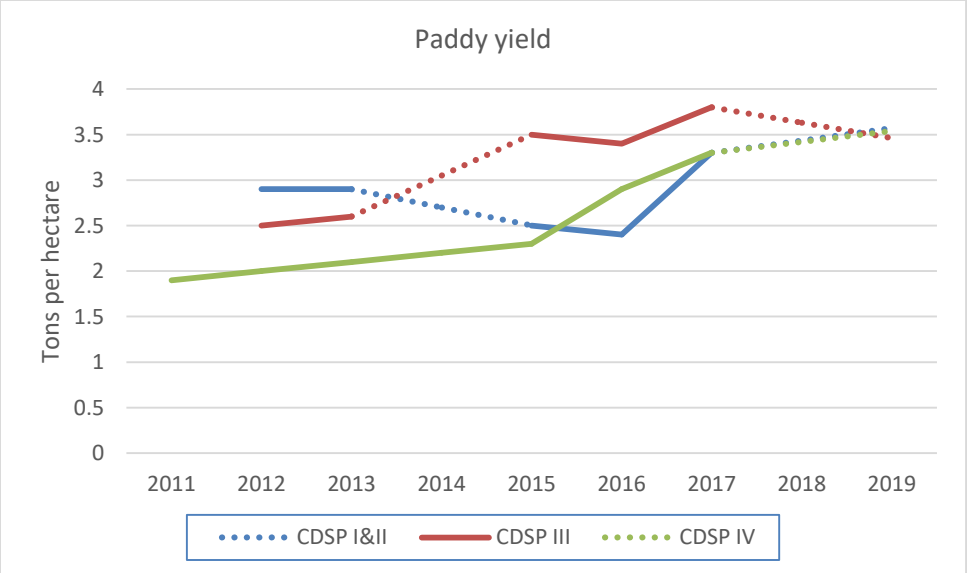
Table 25: Paddy production

1.Type of Paddy	CDSP I&II				CDSP II				CDSP IV			
	no. of hh	% of hh1	decimals	dec./hh2	no. hh	% of hh1	decimals	dec./hh2	no. of hh	% of hh1	decimals	dec./hh2
Aus - local	0	0	0	0	0	0	0	0	0	0	0	0
Aus HYV	2	1%	140	70	1	0.5%	40	40	2	1%	70	35
Aman Razashail	3	1.5%	750	250	7	4%	1366	195	16	8%	5255	328.4
Aman HYV	97	48.5%	14296	147.4	121	60.5%	15978	132	106	53%	13760	129.8
Aman - other	1	0.5%	136	136	1	0.5%	60	60	0	0%	0	0
Boro - HYV	26	13%	2613	100	12	6%	1133	94.4	24	12%	3036	126.5
Boro - hybrid	21	10.5%	2116	100.8	5	2.5%	318	63.6	9	4.5%	1219	67.7
All types of paddy	123	100%	20051	163	132	100%	18875	143	147	100%	23388	159

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

Figure 12 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 12: Overall yield of paddy



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

Based on data on the area grown and total production, the yield of HYV aman has been calculated (Table 26). The yield has risen slightly over the last two years, but is not particularly high by the standards of Bangladesh. Too few farmers grow other types of paddy to give an adequate sample.

Table 26: Yield of HYV Aman paddy

	2019 AOS		2017 AOS	
	Kg per ha	sample n	Kg per ha	sample n
CDSP I&II	3243	97	3203	108
CDSP III	3818	121	3779	127
CDSP IV	3630	106	3417	133

Table 27 has data on paddy production and utilisation from all three CDSP areas. Two-thirds of all households grow paddy – with growers producing on average 2.32 tons per year. Of this 1.24 tons (53%) is consumed and 1.02 tons (43%) is sold. Paddy is sold by 35% of all households (and just less than half of all households who grow paddy or receive paddy as rent for land). Overall 44% of total paddy production is sold. Compared with the 2017 AOS, 3% fewer households produce paddy, production per household is 5% higher, slightly less is consumed at home, and significantly more (33%) is sold – in 2017 36% of paddy was sold, now 44% is sold[5].

Table 27: Utilisation of paddy

	no.of hh	% of hh[1]	tons	ton/hh
Total paddy produced	402	67%	933.76	2.323[2]
Consumed at home	426	71%	539.32	1.243[3]
Kept for seed	156	26%	12.20	0.028[3]
Sold	210	35%	440.76	1.016[3]
Total paddy utilised	434	72%	992.28	2.329[3]
N	600	100%		
Percent of paddy sold	44%			

[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 28. This shows that, overall, field vegetables are the most important of these crops in terms of the total value of sales for all crop producers. However the value of oilseeds sold in CDSP I&II and III just exceed the value of vegetable sales in these two areas.

[5] Although the overall area of paddy has changed little, and aman yields are only slightly higher, the increase in area of higher yielding boro paddy will have increased production. Although sales are higher, income will have been constrained by the sharp fall in the price of paddy.

Table 28: 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	0%	0	0%	0	0	0%
Pulse crops	17%	51	61%	6730	673	50%
Oilseeds	12%	73	96%	13435	1890	29%
Root crops	3%	13	83%	5160	129	58%
Spices	16%	12	75%	3850	462	50%
Field vegetable	10%	30	100%	17450	1745	58%
All crop producers (n)	115				115	
CDSP III						
Wheat maize & millet	0%	0	0%	0	0	0%
Pulse crops	14%	56	29%	4136	455	45%
Oilseeds	28%	83	96%	14638	3879	17%
Root crops	5%	11	80%	4325	173	39%
Spices	20%	16	68%	5959	804	44%
Field vegetable	15%	23	100%	24317	3648	38%
All crop producers (n)	163				163	
CDSP IV						
Wheat maize & millet	0%	0	0%	0	0	0%
Pulse crops	8%	72	88%	6021	421	39%
Oilseeds	11%	87	100%	6214	652	32%
Root crops	6%	13	64%	5314	186	43%
Spices	18%	18	78%	6650	932	45%
Field vegetable	38%	30	97%	30149	9196	35%
All crop producers (n)	147				147	

[1] Percentage of all crop producers. [2] Average/percentage of households who grow the crop. [3] Average sales value for those households

Compared with 2017 there has been a fall of about 21% in the value of sales of non-rice field crops. This is largely attributed to a decline in oilseeds and pulses, but spice sales also declined. Although sales of field vegetables fell sharply in CDSP I&II, they more than doubled in CDSP III and increased by 12% in CDSP IV so overall vegetable sales were up by 9%. Field vegetables account for 58% of total sales of non-rice field crops, but this increase was not enough to offset the decline in sales of other crops, so overall sales are down by 21%.

3.10.5 Homestead vegetable production

Data in Table 28 shows that about 95% of CDSP IV households, and 86% in the other areas, cultivate vegetables, root crops and spices around their homesteads (Table 28). Compared with the 2017 AOS, there has been an increase in the proportion of households who are homestead growers in CDSP I&II, with little change in the other areas. 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 29).

Table 29: Types of homestead crops grown by farmers

		percent of homestead farmers who grow		
Homestead crops		CDSP 1&2	CDSP 3	CDSP 4
Spices	Chilli	2%	3%	9%
	Onion	0%	0.5%	0%
	Garlic	2.5%	0%	2.5%
	Coriander	3%	5.0%	7.5%
	Turmeric	12.0%	16.5%	20.0%
	sub-total	19.5%	25%	64%
Roots & Tuber	Sweet potato	2.0%	3.5%	2.5%
	Cassava	0.0%	0.0%	0.5%
	sub-total	2%	3.5%	3%
Vegetables	country bean	79.5%	84.0%	86.5%
	long bean	58.5%	61.5%	70.0%
	other bean	3.0%	4.0%	8.5%
	ridge gourd	11.5%	11.0%	9.5%
	bottle gourd	47.5%	48.5%	55.5%
	sweet gourd	19.5%	23.0%	27.0%
	bitter gourd	24.0%	29.0%	27.0%
	ribbed gourd	42.0%	40.0%	41.5%
	sponge gourd	39.5%	40.5%	41.0%
	Okra	4.0%	6.5%	9.0%
	Cucumber	17.5%	17.0%	24.5%
	Radish	12.0%	13.5%	27.5%
	Carrot	0.5%	1.0%	3.5%
	cauliflower	0.5%	1.0%	0.5%
	Cabbage	2.0%	1.5%	1.5%
	Spinach	19%	14%	12%
	lal shak	32%	36%	36.5%
	Puishak	34.5%	30.0%	31.5%
	Tomato	58%	34.5%	39%
	Brinjal	35%	36%	41.5%
Total number of growers		168	176	189
Total growers as % of all HH		84%	88%	.95%
All HH (n)		200	200	200

Over 50% of homestead vegetable growers sell some of their production (Table 30) – with more sellers in the CDSP IV area – where 76% of growers make sales and average sales are Tk8,462 per grower per year – this being about 59% of total homestead production. The total value of sales of homestead vegetables exceeds that of field vegetables in the CDSP I&II and III areas, and is almost equal in the CDSP IV area. Total sales of vegetables (field and homestead) in CDSP IV are over double that of CDSP III and over eight times that of CDSP I&II.

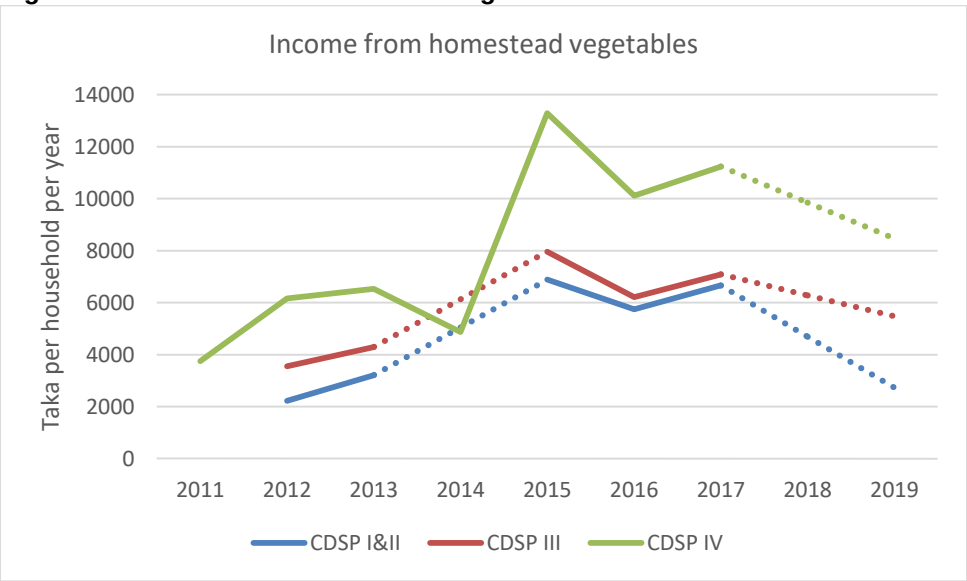
Table 30: Sales of homestead vegetables

	CDSP I&II	CDSP III	CDSP IV
Households growing homestead vegetables as percent of all households	84%	88%	94.5%
Households selling homestead vegetables as percent of all growers	40%	54%	76%
Average sales per grower per year – Taka	2728	5473	8462
Average percentage of homestead production that is sold	50.5%	54.6%	59.4%
Average sales of homestead vegetables- average for all 200 sample household Taka	2292	4816	7997
Average sales of field vegetables – average for all 200 sample household Taka	1003	2973	8167
Average total sales of vegetables – average for all 200 sample household Taka	3295	7789	16164
Homestead sales as percentage of total sales	70%	62%	49%

Compared with the 2017 AOS, a smaller percentage of homestead growers sell vegetables and sales per grower are lower. On the other hand sales of field vegetables have increased in CDSP III and IV (maybe this includes watermelons in CDSP IV), so the proportion of total vegetable sales coming from homesteads has decreased – although overall homestead sales still exceeds that of field vegetables.

Figure 13 shows that income from homestead vegetables is higher in CDSP IV than in the older areas. Data from different years may not be consistent – being ether the value of sales or the value of total production – which may account for some of the sharp year to year fluctuations.

Figure 13: Income from homestead vegetables



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

3.10.6 Fruit and trees

Virtually all sample households have fruit trees (Table 31). CDSP IV households report on average, over 75 fruit trees. Although these are mostly banana (65 per HH in CDSP IV, 59 per HH in CDSP III and 55 per HH in CDSP I&II), almost all households report mango and guava trees. CDSP III households have 67 fruit trees with CDSP I&II having on average 57. 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 75 per HH in both CDSP I&II and CDSP IV, and 64 per HH in CDSP III. Taking all trees together, households in the three areas have much the same numbers of trees.

Table 31: 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	62.5%	4.4	65.5%	3.1	81.5%	5.1
Lemon	49%	2	50%	2.7	45.5%	1.8
Banana	55.5%	49.3	77%	58.8	82.5%	65.4
Papaya	50%	3.9	68.0%	3.9	73%	3.6
Mango	94%	18	90.5%	11.2	85.5%	9.7
Jamrul	34%	1.5	32.5%	1.9	30%	1.5
Starfruit	41%	1.4	34.5%	1.3	30.5%	1.5
Kul	55.5%	1.9	74.5%	2.1	84.5%	2.5
Other	70%	5.8	54%	5.7	57%	3.3
total fruit	98.5%	56.9	100%	67.3	99%	75.5
Palm trees						
Beetle	88.5%	34.3	87.5%	33.4	72%	20.5
Coconut	98%	15.9	96.5%	17.9	92.5%	10.9
Other	50.5%	6.7	66.5%	9.9	56.5%	8.4
total palm	98.5%	51.5	98%	55.2	94%	32
Timber trees						
Raintree	97%	28.3	99%	29.4	92%	37
Casuarina	48.5%	16.6	57.5%	17.3	55.5%	15.7
Mahogany	80.5%	26.2	64.5%	19.4	57.5%	21.8
Other	71.5%	13.6	47.5%	7.9	54.5%	14
total timber	99%	74.7	94.5%	64	86.5%	75.2
Total all trees						
Sales of fruit	66%	11090	69.0%	10850	67.0%	7404
% consumed	98.5%	71.6%	99.0%	70%	98%	77%
Total hh (n)	200		200		200	

Percentage of all sample households Average number for al sample households

Compared with the 2017 AOS, there has been a fall in the number of fruit and timber trees in all three areas, and in palm trees in CDSP I&II. However average sales of fruit per household has increased from Tk4,965 to Tk 7,404, and more is also 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 32 shows that around 95% of the households in all CDSP areas rear poultry. The average number of chickens per poultry keeping household has increased by 1.5 times in CDSP IV areas, and the number of ducks has also increased. Some CDSP IV households (17.5%) also keep pigeons, with 20.5% in CDSP III and 25.1% in CDSP I&II. Compared to the 2017 AOS, there has been a fall in the average number of chickens per household (from 10-12 to 7-9) but production and consumption of eggs and birds has increased in all three areas.

Table 32: Poultry rearing

	CDSP-IV Baseline	CDSP-I &II	CDSP-III	CDSP-IV
HH rear poultry (% of all HH)	89%	92.5%	95%	96.5%
Average nos. of chicken per HH that own	6	7	8	9
Average nos. of duck per HH that own	7	8	9	9
Average nos. of pigeon per HH that own		7	9	9
Annual production of eggs (Nos./ HH)*	156	643	661	641
HH consumption of eggs (Nos./ HH per year)*	47	341	317	314
Income from eggs (Tk/ HH per year)*	817	3224	3607	3325
No of chickens & ducks consumed / HH /year*		24	21	22
No of chickens & ducks sold / HH /year*		18	22	17
Income from sales of chickens, ducks and pigeons (Tk/ HH per year)*		8874	7456	7033

'* average for all 200 sample households

3.11.2 Livestock

Table 33 shows that most households rear bovines (primarily cattle), with a higher proportion in CDSP IV and fewer in CDSP I&II. This has not changed much since 2017, nor has the number of animals per household. Despite increasing demand for milk and meat, the number of animals is more or less stable, with increased mechanized cultivation (tractors replacing draught animals) and reduced grazing on fallow land with the increase in crop cultivation, proving a disincentive to keep 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. There has also been some increase in these indicators since the 2017 AOS.

Table 33: Cattle and buffalo

	CDSP-IV Baseline	CDSP-I &II	CDSP-III	CDSP-IV
Number of HH rearing cattle/buffalo (% of all HH)	75%	47%	58.5%	73.5%
Number of cattle/buffalo (average for all HH)		1.3	1.7	2.4
Number of HH with milking cows (% of all HH)		24%	31%	35.5%
Number of HH producing milk (% of dairy cow HH)		88%	89%	82%
Avg. milk production (Lt per year)	114	305	319	318
Avg. milk consumption (Lt per year)	64	126	133	134
Number of HH selling milk (% of dairy cow HH)		91%	91%	96%
Avg. income from milk (avg for dairy cow HH) Tk	2,850	8991	10488	12936
Number of HH selling cattle (% of cattle HH)		29.5%	32.5%	46.5%
Number of animals sold (avg for cattle HH)		1.8	2.6	2.2
Income from animal sales (avg for cattle HH) Tk.		57,190	97,969	56,559

Beef fattening has become an important activity and 46.5% of CDSP IV, 29.5% of CDSP I&II and 32.5% of CDSP III cattle keeping households report sales in the last year, with average sales of 1.8 to 2.2 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. Since 2017 the number of cattle selling households has fallen, but the number of animals sold and their value per household has increased.

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 34 shows that around 25% of the CDSP households that own cattle/buffalo do so via share-ownership arrangements, and that around 20% of animals are share-owned.

Table 34: Share-ownership of cattle and buffalo

		owned	shared	Total*	n
CDSP I&II	% of households	76%	24%	100%	94
	% of animals	85%	15%	100%	233
CDSP III	% of households	78%	22%	100%	117
	% of animals	83%	17%	100%	340
CDSP IV	% of households	63%	37%	100%	147
	% of animals	78%	22%	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 35% of households own goats (including a limited amount of share-ownership) – compared with 29% in CDSP III and 15% in CDSP I&II. The proportion of households with goats in CDSP IV has increased – it was only 17% at baseline and 25% in 2017. On average each owning household will have around two animals, and will sell a little more than one animal per year.

Table 35: 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	15%	200	1.93	30	0%	200	0	0
	Consume	0%	200	0	0	0%	200	0	0
	Sold	10%	200	2.45	20	0%	200	0	0
	Sales Tk	17%	0	7060	33	0	0	0	0
CDSP III	Owned	29%	200	2.36	58	0%	200	0	0
	Consume	0%	0	0	0	0	0	0	0
	Sold	15%	200	2.33	30	0.5%	200	4	1
	Sales Tk	35%	0	7159	70	0	0	0	0
CDSP IV	Owned	35%	200	2.06	69	2%	200	18.25	4
	Consume	0.5%	200	1	1	0.5	200	1	1
	Sold	16%	200	2.37	32	1%	200	12	2
	Sales Tk	40%	0	6249	79	2%	0	3250	4

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 36). Total fish production for households with ponds in CDSP IV has almost five times and now exceeds the other CDSP areas. The increase is due to supports from CDSP in regards to fish culture, pond management and fingerlings production. Fish production, consumption and sales has also increased in all CDSP areas since the 2017 AOS.

Table 36: Aquaculture

		CDSP IV baseline	CDSP I&II	CDSP III	CDSP IV
Owning a fish pond	% of all HH	99%	98%	98%	98%
Cultivating fish	% of pond HH	51%	99%	99%	90%
Consuming fish	% of pond HH		100%	100%	90%
Selling fish	% of pond HH		59%	47%	66%
Area of pond	Decimal/pond HH		24	25	35
Area cultivated	Decimal/pond HH		19	19	25
Total production	Kg/pond HH	43	184	157	225
Yield	kg/decimal	1.7	9.7	8.4	9
Amount consumed	Kg/pond HH	29	89.48	83.49	93.79
Amount sold	Kg/pond HH	14	66.6	80.7	113.4
Average price	Tk/kg	105	155	145	146
Sales value	Tk/year	1,470	10,593	11,576	16,375

3.12 Food security

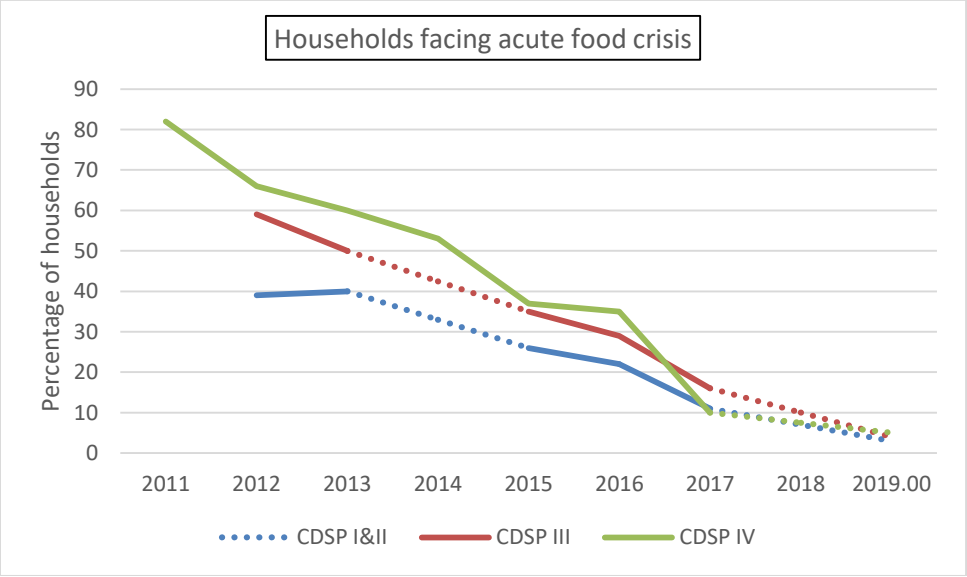
Survey respondents were asked how many months of a year they can meet their basic food (i.e. rice) needs from their own production. Table 37 shows that, on average, CDSP IV households can meet household basic food needs from their own production for 11 months, 4 months more than in the baseline situation. In the older CDSP areas the average period is much the same – maybe a little worse than CDSP IV.

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 5% of CDSP IV households said that they faced such a crisis, a significant improvement compared with 82% in the baseline situation. Even fewer CDSP I&II and CDSP III households reported a food crisis. The considerable progress made in food security is shown in Figure 14 with the number of households facing an acute food crisis halving since 2017.

Table 37: 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	10	11
HH faced acute crisis in the last year (% of HH)	82%	3%	4%	5%
Sample size (n)	1400	200	200	200

Figure 14: Households facing an acute food crisis



AOS data was not collected in 2018 and or CDSP I&II and III in 2014. The dotted lines connect data from 2013 to 2015 and 2017 to 2019 where data for 2015 and 2018 does not exist.

3.13 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 14 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 38 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 reduced significantly (2.5% to 9.5%), but is still a source of loss – and displacement due to flood cyclone – which has been reduced to a low level (1%-2% report). Serious illness of household members remains a major shock – with 23-27% reporting this in the last year. However, two other important sources of loss in the baseline survey have been reduced: (i) death or theft of livestock or poultry (from 3.5% to 4.5%) and dacoitary, theft and mastanies in house/ business (2% to 0.5%). Over the last few years losses from river erosion have reduced (0.5%-4%) in CDSP IV, but at the baseline level it was 8%. Overall, households in CDSP IV now face a similar level of shocks and crises to those in the older CDSP areas. It should be remembered that the survey could not cover those households (40 out of 600) who moved away in the last year having lost their land to erosion.

Table 38: 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	2.5	4
Serious disease of any member	20	27.5	23	25.5
Displacement due to flood/ cyclone/ tornado	42	2	2	1
River erosion	8	0.5	4	3
Loss of crop due to flood/ drought	47	6.5	2.5	9.5
Loss/ death/ theft of livestock/ poultry	15	3.5	4.5	4
Damage to house from flood or storm		0	0	0
Dacoity/theft/ mastans in house or business	15	0.5	2	0
Loss of business/ investment	1	3	0.5	1.5
Divorce/ separation	1	0.5	1	1
Dowry	3	0.5	3.5	2.5
Socio-political harassment, including bribes and tolls	1	1	0.5	2.5
Women harassment (Violence)	0	1	0	0
House destroyed by fire or other reason	2	0	0	0
Others	--	3.5	1.5	1
Total responses (n)		92	87	104
Sample size (n)		200	200	200

Respondents were asked to rank the impact of shocks as severe, moderate or low (Table 39). 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.

Table 39: 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	3.5%	0.5%	0%	2.5%	0%	0%	3%	1%	0%
2	Serious disease of any member	4%	24%	0%	3.5%	19.5%	0.5%	6%	17.5%	2.5%
3	Displaced by flood, cyclone	0.5%	1%	0.5%	0.5%	1.5%	0%	0.5%	1%	0%
4	River erosion	0%	0.5%	0%	4%	0%	0%	3%	0.5%	0%
5	Crop loss from flood/drought	1.5%	5%	0%	0.5%	2%	0%	2%	6.5%	1%
6	Loss of livestock/poultry	1%	2.5%	0%	1%	3%	0.5%	0.5%	3.5%	0%
7	House damaged by flood/ storm	0%	0%	0%	0%	0%	0%	0%	0%	0%
8	Dacoity/ Theft/ Mastanies	0%	0.5%	0%	0%	2%	0%	0%	0%	0%
9	Loss of business/investment	1%	2%	0%	0%	0.5%	0%	0%	1%	0.5%
10	Divorce/separation	0.5%	0%	0%	1%	0%	0%	0.5%	0.5%	0%
11	Dowry	0%	0.5%	0%	1.5%	2%	0%	0.5%	2%	0%
12	Socio-political harassment	0%	1%	0%	0%	0.5%	0%	0%	2.5%	0%
13	Women harassment (Violence)	0.5%	0.5%	0%	0%	0%	0%	0%	0%	0%
14	House destroyed by fire etc	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	Others	1.5%	2%	0%	0.5%	1%	0%	0.5%	0.5%	0%
	Sample size (n)	200			200			200		

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 40. 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 take materials on credit support from community groups and NGOs – showing the importance of CDSP FLI.

Table 40: Actions to mitigate and recover from shocks

	CDSP I&II	**CDSP III**	**CDSP IV**
Sell land	1%	1%	3%
Sell livestock	4%	7%	6%
Sell trees	3%	1%	4%
Use savings	76%	60%	61%
Mortgage land	0%	3%	1%
Mortgage other property	1%	2%	0%
Help from relatives	10%	8%	8%
Take loan	38%	18%	33%
Take materials on credit	5%	14%	11%
Aid or relief	1%	2%	0%
Complain to authorities/Mobilise community groups / NGO	1%	0%	1%
Do nothing	13%	15%	12%
Other	4%	3%	5%
Total**	157%	134%	145%
Total responses (n)	92	87	104

** There have been multiple actions as reported for mitigation and shocks, total is more than 100%

Compared with the 2017 AOS, there is greater use of savings and loans, but fewer people turn to NGOs or community groups for assistance, and more are inclined to do nothing.

4. Summary and conclusion

The 2019 AOS shows that the average household size is over six persons – larger than is usual in rural Bangladesh. The vast majority of children (97% of those aged 5 to 16 years) are **going to school**, slightly more than in 2017. Participation in **field level institutions** has increased since 2017. In the CDSP IV area 76.5% of HHs have **legal titles for their land**, although 27.5% 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 22% now, while petty trade increased from 9% to 22%. Day labour is the more widespread occupation, being the principal occupation of 31% of CDSP IV household heads, the same as 31% at baseline. In all areas the primary occupation of the spouse of the household head is overwhelming that of livestock rearing, with housewife as a secondary occupation.

There have been substantial improvements to **housing**, with CDSP IV households largely catching 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 to around 70 metres. 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 meals and over 40% after using the latrine.

Households across CDSP show improvement regarding **immunization of children**. More than 80% of CDSP households ensure immunization of their children. The visits of Health Workers to the community have increased all CDSP areas, bith due to CDSP IV and 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.

Although there has been a large increase in the value of **household and productive assets** the total value has fallen back a little in the last two years – mainly due to the lower value estimated for trees.

Overall **average household income** has increased by four times since 2012, but in the last two the increase was only 16%. Although more households report income from a range of farm sources than from non-farm sources, over 70% of total income comes from non-farm sources – and this proportion is steadily increasing. Within the farm sector net income from field crops still has the largest share (at about 30%), but has declined from over 50% in 2012, with almost as much (27%) now coming from livestock.

In the non-farm sector in 2012 employment (daily labour, regular jobs and skilled work), provided almost 60% of income, followed by petty trade and business on 20%. Employment has now fallen to just under 50%, with petty trade plus business increasing to 27%. Over the last two years there has been strong growth in income from business, fishing and employment (especially skilled work), but income from a number of other non-farm sources has declined, including remittances which previously had grown rapidly

Overall over 80% of farmers report no **damage** to aman paddy and rabi crops from salinity, flooding and waterlogging. Where there is damage, this is more often in the CDSP IV area, but mostly this is only slight damage. and waterlogging in CDSP III are IV (more so in CDSP IV) In almost all cases the damage is

rated as slight. Around half to one quarter of farmers report trees being damaged by salinity, flooding and waterlogging. Less damage is reported than in the 2017 AOS and most farmers think the situation has improved in the last one year,.

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 63% (CDSP I&II) and 74% (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.

There has been a small decline in **cropping intensity** since 2017, with declines in the areas of pulses and oilseeds. Cropping intensity remains lower in the CDSP IV area than in the older areas, suggesting that there is further potential to increase crop production when all chars get full flood protection.

Paddy: over the last three or four years boro has become a significant crop in CDSP I&II and CDSP IV, with the area more than doubling over the last two years. Irrigation of increasing areas of boro using groundwater may not be sustainable and could threaten supplies of potable water. The increase in boro has been largely offset by a decline in the aman area, so there has only been a modest increase in paddy area in CDSP I&II and III, and a slight fall in CDSP IV.

Average paddy yield is 3.5 tons/hectare, and has risen slightly since 2017. In all CDSP areas 43% of all paddy produced is sold, with just over one third of all households (and half of paddy producers) selling paddy. Compared with the 2017 AOS, significantly more (almost 60% more) paddy is sold, but income will have been constrained by the sharp fall in paddy prices.

Other crops are grown largely for sale. Overall field vegetables are the most important of these crops crop in terms of the value of sales, although the value of oilseeds (mainly soybean) slightly exceed that of field vegetables in CDSP I&II and III. Compared with 2017 there has been a fall of about 21% in the value of sales of non-rice field crops. Declines in sales of oilseeds and pulses have more than offset an increase in sales of field vegetables.

Homestead production: almost 90% of all households cultivate vegetables and spices around their homesteads. Over 50% 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 equals or exceeds that of field vegetables in all three CDSP areas. Although sales of homestead vegetables have fallen since 2017, total sales of vegetables (field and homestead) in CDSP IV are over double that of CDSP III and over eight times that of CDSP I&II.

Almost all households have **fruit and timber trees**. Although the average number of trees per household has fallen since 2017, the value of fruit sales has increased, and more fruit is being consumed at home.

Poultry are reared by at least 92% of households. Although the average number of birds per household has increased since the start of CDSP IV, as has egg and meat production, since 2017 there has been a fall in the average number of chickens per household. Although production and consumption of eggs and meat continues to increase.

About half of all households **rear bovines** (mainly cattle) with significantly more in CDSP IV than in CDSP III and CDSP I&II. There has been a move from keeping draught animals to milk and meat production, and production and consumption of milk has greatly increased as have sales of animals. 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 in 2011. Total fish production consumption and sales continues to increase.

In the CDSP IV area the proportion of households facing acute **food crisis** has reduced from 82% to 5% since 2011, and is now only a little more 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 11 months of a year compared with only 7 months in 2011.

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 conclusion: data from the AOS show that the improvement in livelihoods and living standards since the start of CDSP IV is still continuing. As the area develops, living standards for CDSP IV households have steadily caught up with those in the older CDSP phases. But how have things changed since 2017 when the previous AOS was carried out? At that time CDSP IV activities were winding down and then ceased altogether. By late 2019, when data for this survey was collected, significant CDSP-B/AF activities were yet to start.

Data from the 2017 and 2019 AOS shows that a number of positive gains have been made over the last two years. These include:

- More households now have land titles, and more land is being held with a formal title
- More households in all three areas are members of Field Level Institutions
- Despite the loss of water management infrastructure, the extent and severity of water-related damage to crops is reported to have reduced.
- Although there has been little change in the overall area of paddy, there has been a very significant increase in the proportion of more productive boro. The yield of aman has also risen. There has been a substantial increase in the volume of paddy sold,
- Sales of field vegetables, the most important non-rice crop, have increased, as have sales of fruit.
- The production, consumption and sale of poultry, livestock, milk and pond fish have all increased
- Average household income has increased
- Wealth ranking shows an increase in the number of non-poor households.
- Food security has improved, with fewer households reporting food shortages
- The size and quality of houses has improved, as has access to potable water
- More children are going to school

On the other hand the AOS data also shows a number of indicators which have not improved:

- Average land holding, especially cultivated land, has reduced in size, reflecting rising population density
- The area of non-rice crops, especially pulses and oilseeds, has reduced, and this has resulted in lower cropping intensity.
- Sales of non-rice crops (other than field vegetables) are also lower,
- Sales of homestead vegetables are lower
- Income from crops has fallen significantly, which may be due low market prices for paddy as well reduced sales of non-rice crops.
- The average number of timber and fruit trees owned by households has fallen
- The total value of household and productive assets has fallen. This is due to a fall in the value of productive assets – the value of household assets has increased. The major constituent of this fall is the decline in the value of trees

- Fewer households report having satisfactory sanitation arrangements, and fewer wash their hands with soap after using the latrine
- Fewer couples are adopting family planning.

Two recommendations come out of this analysis:

- In areas where the deep aquifer is the only source of fresh groundwater an investigation is needed into the extent that groundwater is being used for irrigation, and whether this is sustainable and/or a threat to supplies of domestic water.
- Identify reasons behind recent changes in cropping patterns – particularly the fall in areas under pulses, oilseeds and other non-rice crops, and switch from aman to boro paddy. These reasons may involve economic factors (prices and production costs) as well as physical factors – changing water management conditions and weather patterns.

Annex 1
Annual Outcome Survey (Round 7) Questionnaire 2019

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			

Sl	Type of Assets	Own[Tick]	Quantity	Present Value (Taka)
32	Goat			
33	Sheep			
34	Chicken			
35	Duck / goose			
36	Pigeon			
37	Rice husking machine			
38	Trolley motorized			
39	CNG Auto			
40	Others (specify			

12. Crops grown

	Area Cultivated				Area Cultivated	
Cereals	In field (decimal)	In homestead (tick if grown)		Vegetables	In field (decimal)	In homestead (tick if grown)
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/Date/Coconut etc. trees	Beetle	
	Coconut	
	Juice	
	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 (Excess rainfall)/ ingress from river / sea	Aus			
	Aman			
	Boro			
	Rabi field crops			
	Homestead vegetable			
	Trees			
Drainage (lack of/damage of sluices, khals, bridge, culverts)	Aus			
	Aman			
	Boro			
	Rabi field crops			
	Homestead vegetable			
	Trees			
	Aus			

Drought (lack of rainfall)	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 strategy

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

If yes, What type of shocks were faced by your household or household members and how were they 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).....

25. Effect of recent loss of Infrastructures (like bridges, slices, embankment)

Did your household have experience any kind of shocks or crisis during due to loss of infrastructures mentioned below: Yes/No).

If yes, respond for such infrastructure.

List of infrastructure lost		Indicate shocks specifying magnitude**(*Code)**	How it was coped with **(**Code)**
1	Bridges at janata bazar lsite		
2	Sluice DS II at Nangulia site		
3	Displacement due to Flood/cyclone/ tornado		
4.			
5.			
***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)..................			

26. Current status of protective infrastructure

At the current time to what extent is your land protected by embankments and sluices …………

Code: 01= fully protected, 02 = partially protected, 03 = not at all protected

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 New Samples Taken against Migrated Sample Households

ID	Old IDs	Phase	Name	Father's Name	H/Wife Name	Bari	Location: Somaj/Upazila/Nearby
21002022	21002006	2	Abdul Kader	Late Mofajjal Hossain	Anwara Begum	Abdul Kader Bari	Char Boishakhi
31010030	31010021	3	Md. Rasel	Abdul Malek	Fatema Begum	Abdul Malek Bari	South Chatla Khali, Boyer Char
31010031	31010001	3	Md. Enayetullah	Md. Siraj Hossain Saiful Islam	Hafsha Khatun	Islampur Somaj	Boyer Char, Horni
31010032	31010003	3	Md. Belal	Md. Mafiz	Fatema	Belal Mia Bari	Boyer Char, Horni
31010033	31010004	3	Md.Gias U Munir Hossain	Siraj Hossan	Morium Begum	Munir Hossain Bari	Islam Somaj, 1 No. Horni, Boyer Char
31010034	31010005	3	Md. Abdul Karim	Late Mokbul Ahmed	Amena Khaton (2nd wife)	Mokbuk Bari	Islam Somaj, 1 No. Horni, Boyer Char
31010035	31010007	3	Munir	Safiul Alam	Taslima Begum	Purbo Chatla Khali	Colony-2, 1 No. Horni, Boyer Char
31010036	31010008	3	Abdul malek	Safiuddin	Parvin akter	Chatla Khali	Chatla Khali, Boyer Char
31010037	31010011	3	Ojiullah (Mofiz)	Late Tofazal Hossain	Goshanara begum	Cycle Centre Mofiz BariMofij Dirver'house	Chatla Khali, Boyer char, Hatiya, Noakhali
31010038	31010012	3	Kohinoor Begum	Late Khairul Mustafa	Selim Uddin	Selim Sarder Bari	Chatla Khali, Boyer Char, Hatiya
31010039	31010013	3	Md. Delwar Hossain	Late Shamsul Haque	Bibi Jahanara begum	Delwar Bari Nr. Cyclone Centre	Chatla Khali, Boyer Char, Hatiya
31002021	31002008	3	Ojiullah				Sahabuddin somaj, Boyer Char, Hatiya
31002022	31002005	3	Md. Motaleb				Sahabuddin somaj, Boyer Char, Hatiya
42020038	42020028	4	Abu Taher	Late Hajiullah	Rasheda Khatun	Abu Taher House	Nasipur, Char Nangulia, Hatiya
42028045	42028030	4	Nurun Nahar Begum	Mustafijur Rahaman	Nizamuddin	Mustafizer bari	Char Bashar, Char Nangulia, Hatiya
42028046	42028031	4	Ms. Aleya Bagum	Md. Noor Islam	Babul Majhi	Babul Majhi Bari	Char Bashar, Char Nangulia, Hatiya
42028047	42028025	4	Noor Uddin	Montajul Karim	Nurunnahar Begum	Montaj Bari	Char Bashar, Char Nangulia, Hatiya
42028048	42028026	4	Minara Begum	Md. Mustafa	Md. Jashim Uddin	Halal Mazir bari	Char Bashar, Char Nangulia, Hatiya
42028049	42028024	4	Abdul Hoque	Late Nurl Ahmed	Slema Khaton	Joinal Bari South site	Sohag Choudry Gram, Nangulia

ID	Old IDs	Phase	Name	Father's Name	H/Wife Name	Bari	Location: Somaj/Upazila/Nearby
42028050	42028023	4	Mustafijur Rahaman	Asadul Hoque	Norjahan Begum	Mustafiz Bari	South Sohag Chowdhuri Gram, Nangulia, Hatiya
42028051	42028034	4	Md. Hanif	Late Noor Nabi	Jotsna Begum	Nabir Bari	Sohag Choudry Gram, Nangulia
42028052	42028011	4	Md. Abdul Mannan	Late Khoshed Alam	Norjahan Begum	Manna (manu Mia) Bari	South Sohag Chowdhuri Gram, Nangulia, Hatiya
42028053	42028044	4	Md.Abul Kalam	Late TasilAhmed	Ratna Begum	Kalam Bari	South Sohag Chowdhuri Gram, Nangulia, Hatiya
42028054	42028043	4	Md. Emran Hossain	Late Modinul Hoque	Jesmin Akhter	Emran Bari	South Sohag Chowdhuri Gram, Nangulia, Hatiya
42028055	42028033	4	Md.Nijam	Late Moulovi Noor Ahmed	Noorjahan	Nijam Bari	Sohag Chowdhuri Gram, Nangulia, Hatiya
42028056	42028041	4	Md. Nizal Uddin	Late Md. Abdul Hoque	Fatema Khaton	Dipjol Bari	Sohag Chowdhuri Gram, Nangulia, Hatiya
42028057	42028036	4	Abu Bakar Siddique	Let Mokbul Ahmed	Rajima Khaton	Abu Bakar Siddique Bari	Sohag Chowdhuri Gram, Nangulia, Hatiya
42028058	42028035	4	Md. Nantu	Late Shamsul Hoque	Foran Begum	Nantur near Beri	Sohag Chowdhuri Gram, Nangulia, Hatiya
42059033	42059024	4	Ms. Rina Akter	Mokbul Ahmed	Abu Yusuf	Abu Yusuf Bari	Al Amin somaj, Char Nangulia, Hatiya
42059034	42059004	4	Nuruzzaman	Late Habib Ullah	Majan Begum	Nuruzzaman Bari	Al Amin somaj, Char Nangulia, Hatiya